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look hard at it, to study it, to consider the fact that alternatives have been tried and we weren't able to get them through. And then I would like to ask your strong support for this package. The country is at stake here, and we need you. We need you bad.

So, thank you all very much. And now for the experts. Thank you.

Note: The President spoke at 1:16 p.m. in Room 450 of the Old Executive Office Building. In his remarks, he referred to John H. Sununu, Chief of Staff to the President; Secretary of the Treasury Nicholas F. Brady; and Richard G. Darman, Director of the Office of Management and Budget.

Remarks at the Presentation Ceremony for the Presidential Awards for Excellence in Science and Mathematics Teaching October 2, 1990

To our Secretary of Energy, Jim Watkins, delighted to see you sir; and Ted Sanders, the Under Secretary of Education; Fred Bernthal; Dr. Bill Phillips; and all of you here in the Rose Garden.

I am very pleased to have this opportunity to join you today and add my congratulations to those that you have already received. Presidential Awards for Excellence in Science and Math Teaching have been presented for the past 8 years to secondary schoolteachers, but this is the first year that elementary schoolteachers have also received these awards. So, you are the pioneers in what will be a continuing effort to honor the achievement of this nation's many outstanding schoolteachers.

You are a very select group—107 teachers from the more than 1½ million elementary school instructors in this country. For many students, you represent their very first exposure to science and math, which gives you a vital responsibility. Most kids who go on to become scientists or engineers first became interested in those subjects in elementary school or junior high. And most often, the reason they do is because they are exposed to a teacher like you—like each one of you—someone who can speak their language, communicate with them, spark their imagination, and evoke the sense of wonder that is inherent in science and math.

Kids are natural-born scientists, but too many of them lose interest when their only exposure to science is through long lists of facts. And you've discovered how to bring

out the fun in science and math, and in so doing, you provide a model and an inspiration for elementary schoolteachers everywhere.

You're also helping to meet a crucial national need. We live in an increasingly complex and competitive world, and the link between science and technology and our standard of living is stronger today than ever before. At a time when our international position in certain key industries is being challenged, we face impending shortfalls of qualified scientists and engineers. The students who can fill those shortfalls are in the classrooms right now, and we must ensure that they are given the education and the encouragement that they need.

Just a little over a year ago, I met with the Nation's Governors at Charlottesville for the first education summit, a first step towards building a strong partnership among this administration, the Governors, educators, parents and, indeed, community leaders. And this historic event resulted in a sense of direction and national goals for individual and collective efforts to improve the quality of education for all Americans.

Well, three of those goals directly involve science and math. By the year 2000, American students must demonstrate competency in five critical subjects, including science and math, with their progress measured in grades 4 and 8 and 12. We must also make American students the first in the world in science and math by the year 2000. And we must ensure that every adult American

must be able to read and have the skills, including technological skills, to compete in a global economy.

So, these are ambitious goals, but they are faithful to the ambitions of this country. And as a people, we've set tough goals before: to send men to the Moon or to serve the cause of freedom abroad. And we know that when the challenge is great, great things happen in America.

Already, a great many things are happening at the Federal, State, and local level. The Department of Energy and NASA are opening up their research labs to students and teachers so that they can experience cutting-edge science firsthand. And the Department of Education and the National Science Foundation are working together and with the States on strengthening research, assessment, and curricula. Equally exciting are things that are happening in the States themselves.

But achieving the goals that I announced last January will require that everyone get involved. That means parents; it means teachers, school administrators, businesses, and universities.

Parents really are especially important. And it is very difficult for you as teachers to go out and do your job if you don't get help from parents, and that's why we want to see parental empowerment in education. We must make American education the best it can be, and that takes two things: greater parental involvement and, in my view, greater choice in education.

Reading about your accomplishments makes me confident that we will succeed. The letters of recommendation that helped bring you to Washington are really spectac-

ular; and they give ample testimony to your ingenuity, your determination and, indeed, enthusiasm. In one letter, the parents of a kid named Woody write: "When we used to ask Woody what happened in school, he would tell us about recess. And now he tells us about science." You know, that really is a wonderful, wonderful statement about Woody's teacher, it seems to me. Another one, another letter, writes of a teacher who "studies with the mind of a scholar; perceives through the eyes of a child; and communicates with the voice of an understanding, compassionate, and energetic motivator." And all of the letters are unanimous about one thing: the enthusiasm that each one of you bring to the classroom, an enthusiasm that goes beyond the classroom, that touches everyone that you know.

You are truly remarkable people, and you're able to take children and lift them up and inspire them and broaden their horizons and then aim them off in new directions. So, the country owes you an immense debt of gratitude. But your real rewards can't be printed on some scroll, one piece of paper. The real rewards are the students who will remember you and what you have done for them for the rest of their lives.

Thank you all very much for being here today, and God bless each and every one of you for your wonderful commitment to the young people of this country. Thank you.

Note: The President spoke at 1:35 p.m. in the Rose Garden at the White House. In his remarks, he referred to Frederick M. Bernthal, Acting Director of the National Science Foundation, and William D. Phillips, Associate Director of the Office of Science and Technology Policy.

Statement by Press Secretary Fitzwater on the President's Meeting With Jonas Savimbi of the National Union for the Total Independence of Angola

October 2, 1990

The President met for 30 minutes today with UNITA leader Jonas Savimbi. The President pledged our continued support

for Dr. Savimbi and his movement. The President believes that the steadfastness of that support is a key factor in pushing the

Mutual of America Life Insurance Co. Mrs. Hesselbein is a volunteer on two college boards of trustees: Juniata College, Huntingdon, PA, and Allentown College of St. Francis de Sales, Allentown, PA. She is also on the board of visitors of the Peter F. Drucker Graduate School Management Center at Claremont College Graduate School in Claremont, CA.

Vernon E. Jordan, Jr. Mr. Jordan is currently a senior partner in the Washington, DC, office of the law firm of Akin, Gump, Strauss, Hauer & Feld. From 1972 to 1981, he was president of the National Urban League. Mr. Jordan has received many awards in recognition of his accomplishments, including, in 1977, the Alexis de Tocqueville Award of the United Way of America, a special tribute to his leadership in the field of voluntarism. He has authored a

weekly newspaper column which has appeared in over 300 newspapers; broadcast commentaries on current issues for the Westinghouse broadcast network; and has been a frequent guest on major national television broadcasts, including "Meet the Press," "Issues & Answers," and "Face the Nation." Mr. Jordan is a trustee of the Ford Foundation, governor of the New York Hospital, a member of the board of directors for the United Way of America, the former chairman of the board of trustees for the Atlanta University Center (recently retired), and the chairman of the National Academy Foundation. Mr. Jordan was reared in Atlanta, GA, where he was born on August 15, 1935. He received his B.A. from DePauw University in 1957 and graduated from Howard University Law School in 1960.

Remarks at the Presentation Ceremony for the Excellence in Science and Math Teaching Awards October 24, 1989

Welcome to the White House on this glorious fall day. I'm sorry if I'm just a little bit late. I was sitting in there trying to solve a few quadratic equations. [Laughter] Somewhat more difficult than balancing the budget, I might say. And then I thought it might be appropriate to have a moment of silence in memory of those substitute teachers back home. [Laughter]

It really is a pleasure to have you all here. And to Erich Bloch, the Director of the National Science Foundation, and to my colleague, confidant, Dr. Bromley, our Science Advisor, and to the outstanding teachers we honor today—you've taken one of the Nation's most vital and yet too often unappreciated tasks. And because you've committed yourselves to excellence on the frontlines of American education, you really do represent our best hope for the future.

So many Americans remember a special teacher who made a quiet but crucial difference in their lives. And it might have been the teacher who brought math to life explaining ratios by using the gears of a bicycle, or maybe it's a teacher who revealed the powerful drama in the life of a single cell or who sparked speculation about

the expansion of the universe. Of course, those of us who haven't been to school in a while get our scientific understanding from those Gary Larson cartoons—[laughter]—like the one where, after detailed calculations, Einstein discovers that time is actually money. [Laughter]

Now, you've seen all the surveys about American students' poor performance in scientific knowledge compared to their peers around the world. We've all seen them. We agonize over them. And it is a serious problem, but you are not just complaining about it. You're doing something about it, and you're showing that excellence is not just possible in American education—it ought to be the norm. And you and the outstanding teachers across the country that you represent are creating centers of excellence in classrooms of every kind, setting standards for the rest of the country to follow, and creating exceptional students.

This year a high school student from Denver named Steven Gubser won the 20th International Physics Olympiad in Warsaw. When the United States began competing in the tournament in 1986, some thought that our students wouldn't really

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have a chance against students from Europe and the Far East. But our teams have consistently distinguished themselves, capped by this gold medal performance. This is the standard of excellence that America's students and teachers should aspire to and that more can attain. Our problem is not that we don't have American students excelling at science and math—we just don't see enough of them. Of course, there were a few outstanding students in my time. I had a friend who was so smart once that he knew how to convert meters to gallons—[laughter]—in his head.

The work of outstanding teachers like yourselves has a profound impact not just on the students you teach but on the Nation as a whole. And the link between science and technology and our standard of living is stronger today than ever before. At a time when our international position in certain key industries is being challenged, we face impending shortages of qualified scientists and engineers. So, your work is helping to meet a crucial need, a national need.

Not every student will be a physics olympian or make a career as a scientist, but growing numbers will have jobs based on new technologies: farm workers producing genetically engineered crops; auto workers involved with robotics, cybernetic systems, electronic controls; service people maintaining computers and telecommunication systems. It'll be new skills and the ability to learn them quickly and adapt that will be crucial to their future and America's future.

When I met with the Nation's Governors in Charlottesville last month at that educational summit, they told me, as the business community continues to tell me, that a clear consensus is emerging on the crucial need to improve math and science education in this country. And that's why we're establishing a National Science Scholars program for top math and science students across the country. And for students of all abilities we're working to set national goals

for math and science education. We're going to be looking to you for advice and guidance on those goals and the steps we can take together to attain them. I want to encourage you to work with this administration, and certainly with the Governors in the 50 States, to refine our approach to math and science education. All of you as teachers know the larger role that education plays in a free society.

Every student in America, even those who don't choose technical careers, will need enough scientific and mathematical understanding to make decisions about the technologies of the 21st century. You understand the importance of a literate and informed citizenry, and you're acting on that understanding and for the sake of every student you teach every day.

You know, a few minutes ago I said that all of us—just about all of us—can think of special teachers, teachers that touched our lives forever. But it's also true that the greatest minds in science and mathematics were inspired and directed by teachers of their own, and that's worth remembering. What you're doing today has the potential to unleash the genius of an entire new generation. And for all that you've done and all that you will continue to do, we three here—and I expect I speak for the two distinguished scientists that join us, but I know I speak for Dan Quayle, our able Vice President, and Barbara, who is so committed to helping you all, especially in the field of literacy—for all you've done, we want to just thank you and congratulate you and urge you to keep it up. And may God bless this vital work that you do. Thank you so much for coming to the White House.

Note: The President spoke at 10:02 a.m. in the Rose Garden at the White House. In his remarks, he referred to D. Allan Bromley, Science Advisor to the President and Director of the Office of Science and Technology Policy.

Remarks in a Teleconference With Schoolchildren During the Annual National Space Science Symposium September 17, 1991

The President. Well, Dick, Admiral Truly, thank you very, very much; and to Charlie here and Tammy down there someplace, Lisa.

I was watching part of the program before we came in. I saw some of you all there. And let me say how exciting I think the efforts of the spacemobilers and the astronauts are to teach students about space and space exploration. When I was a kid, we had some idols we thought were out of this world. With people like Charlie and Tammy Jernigan, they really are out of this world. And you know what I mean.

It's also a privilege to be with so many fine students interested in learning about the future of space. And I especially want to salute the national winners of the Space Science Student Involvement Program who are in the studio with us here today. Their academic achievement, you guys can learn from them, their academic achievement deserves real special recognition.

So looking forward to today, for a few minutes I was a hero with one of my young grandkids, younger guy than you. When I told her I was going to be on television, she thought I'd finally made it on to "Sesame Street." [Laughter]

And as you begin the school year, just think of what you can make of the future. Many of you are the class of the year 2000. In NASA lingo, that means "T" minus 8 years, 3 months, and 13 days. And you, the students of today, will help keep America the world's leader. And all of you, if you work hard, but all of you can turn learning into an adventure.

And to do this you have to prepare not just by studying, but by studying hard, especially math and science. And that means doing what I too often fail to do, that means homework. And it means setting goals both for you and for America.

This is why our administration and the Nation's Governors created six national educational goals, one of which is to be the first in the world in math and science. And together you can help say of American education, "All systems are go."

And since this telecast began, the astronauts orbiting in the space shuttle *Discovery* have traveled halfway around the planet Earth. Just think about that: Just since the program began, about 12,000 miles. Even if you don't end up working in space, what you learn about math and science and all the rest of the subjects you study will help you for the rest of your life. So, do your best. Make America proud. Help achieve a lift-off to learning.

And now, Charlie, having heard some questions I understand they've got a few more questions, and maybe you and I can answer them. I hope they give the tough ones to this guy, and I'll take the easy ones. [Laughter]

Mr. Bolden. Well, Mr. President, I think they're ready, and we're going to give you two questions from here before we switch down to Texas for some. So, who has a question for the President?

The President. There she goes. What is it?

Q. I go to Stevens Elementary School. My teacher is Miss Hamilton.

The President. Is she a hard teacher?

Q. No.

The President. No? Okay.

Q. Do you want your grandchildren to live and work in space?

The President. Oh, I'd love it if one of them would do that. We've got 12, so we've got a lot to choose from, girls and boys. But I think it would be wonderful. I don't know whether they'll make it, but if they're going to, they've got to start in, as I'm sure some of you are: recognize the importance of school first and then as they get a little older concentrate on that math and science and all the things that Charlie can tell you about that are important to it. But I think it would be wonderful because I think the challenge for our country, a lot of it, lies out there in space.

Mr. Bolden. Next question. Let me see your hands, and, Admiral Truly, I think there's one right by you.

Q. I would like to ask you how is space technology helping you as the President?

The President. Well, there are many ways it helps. I'm not sure exactly in terms of my day-to-day responsibilities as President, but space technology helps in so many practical ways. One I think of is, and I guess it affects

whether you're President or whether you're just a plain citizen, is in medicine. Some of the research that they have done has a direct application to medicine. Other parts of research that interest me, I guess, again, not just because I'm President, but citizen, is what they learn about weather, what they learn about crops internationally in terms of feeding the world.

One of the worries I have is there are a lot of hungry people in the world. And how do we, as the United States, use our advanced science that NASA taught us so much about to help other people? And we've got to help people at home, but we also have an obligation. Somebody is hungry halfway around the world, we need to help them. And the science that comes out of the space program in terms of agriculture is very, very important.

So, that is just a couple of ways, but I'm sure there are many, many more.

Mr. Bolden. Mr. President, we're going to switch now down to Tammy Jernigan and the crew in La Porte and give them an opportunity to ask us about four questions. So, Tammy, if you would go around the room and give us your question.

Ms. Jernigan. Thank you, Charlie. Mr. President, I've been so really excited here at College Park Elementary to ask you some questions.

Q. Mr. President, how will you know that we're first in science and math?

The President. Well, I don't know. There are all kinds of objective ways of measuring. But one of the goals that we have is to have voluntary testing at various levels: 4th, 8th, and 12th grade. They have measures now to determine what countries are ahead, and, regrettably, we're about 12th in that special field. So, in addition to just getting a feeling of it by the results, by how well people do in life, there will be, under our national education goals, there will be national testing. And I think this will help. I think the schools are interested. The Governors are interested, and I think it will help us answer your question better, once that starts.

Q. Mr. President, how did you come up with your goals?

The President. I didn't hear you. Tell me one more time. I was listening, but I just didn't get it. What was it?

Q. Mr. President, how did you come up with your goals?

The President. The education goals, a very good question. I'll tell you what we did. We met with all the Governors. And I went down to Charlottesville, Virginia, and met with the Governors. And then they went back to the States and working with the White House staff and the Governors' staffs we came up with these national goals. They made suggestions. We'd offer our suggestions. And 50 Governors came together with the White House to set, for the first time in our history, national goals. And they are: to be first in math and science. We talk about "ready to learn," and that means Head Start program. We talk about "nobody is too old to learn." That includes me. I'm trying to learn a computer. Everybody in this room probably knows how to do it better than I do. But I'm not too old to learn even though I'm getting up there, 67 years old. I remember when I was your age I thought if I got 67, wow, over the hill, gone, history. [Laughter]

But we've got these good sensible goals now. And now the thing we're going to try to do is get each State to work with their communities to solve these, to come up with solutions so that we meet these education goals.

Who else has got it? Nice to see you again, incidentally.

Q. Mr. President, why do we want to put a person on Mars?

The President. Well, I think it's going to just go to the cutting edge of the science. And everything that's happened in space, from the very first vehicle into space to the very last, has taught us a lot about the real world and all outside our own world.

And so, I think it would just be a quantum leap forward in terms of our knowledge as to what the universe is about. And I hope that in addition it would have very practical answers to some of the problems we face on Earth. So, it's going to what they call a cutting edge. It's going out front. It's exploring. It's like the guys in the wagon trains that used to go across this country. They were the pioneers. Now, the pioneers are Charlie and Lisa and Tammy and others. And it's a wonderfully exciting thing. So, it's expensive. It's going to take a

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while to do it, but we've always got to be in the forefront. At the United States, more and more countries are looking to us for everything in the world, including being the leader in science and technology.

Q. Mr. President, what if you are talented in art and you drop out of school because you can make a bunch of money?

The President. Talented in art and you drop out of school to make a bunch of dough? Well, first place, I hope—maybe if you're asking about yourself or someone in your family, I hope they are talented in art. But I don't think you ought to drop out of school. You can have one discipline. You can have one area of expertise. But to be a full human being you need a wide array of knowledge.

And so my advice to somebody that fit that description—really good in art, maybe good enough to start selling paintings or doing sculpture, or whatever it is, is a grade school or a high school student—finish your education. That's only a part of your life, a vital part of your life. But you need to be a whole person, a whole man, a whole woman. And you can't do it if you are less than fully educated.

So, if you know somebody, if you asked me the question because you know somebody that fits that description and they were looking for a little advice: Keep up with the art. Do what you do best, but don't neglect being a whole person. And you only get that from a full education.

Good question though.

Ms. Jernigan. Mr. President, we understand we're out of time. We really appreciate the time that you've spent with us here today.

Bye.

The President. All right. Thanks. You guys had good questions.

Mr. Bolden. Tammy, thanks very much to you and the kids down there in La Porte. And we're going to swing back up here and give our kids an opportunity to ask just a few more questions before the President has to leave. So, how about more questions?

Q. My question is, do you think current problems like drugs and crime will follow us to space?

The President. I'll tell you, I've got some good news. We're making dramatic progress in the fight against narcotics. It's

just beginning to happen, but we're making great progress. And the best progress is amongst kids your age and a little bit older who are turning away from drugs because they know how bad it is. But no, there would be no room for drug use in space. The life that Charlie's described for you and you've heard about from La Porte, Texas, today, is too complex: One person's life depends on another. And you can't have any kind of thing like drug use in space.

What grade are you in?

Q. Fourth.

The President. Fourth grade. Can't have it in the fourth grade. You ruin your lives. And the good news is, as I say, is people are beginning to understand this more. The bad news is, we're not there yet. I just met with the President of Peru before I came over here. And they grow something like 40, 60 percent of the coca leaf, and we're working with them to try to eliminate this. And they say to us, "Hey, you help us eliminate this coca leaf." That's where the cocaine comes from. "But you use 80 percent of the narcotics in the world. The demand in your country, Mr. Bush, is 80 percent."

So, what we've got to do is continue with the education programs and the neighborhood programs and the State programs and the community programs and, yes, the White House programs. So we teach people you simply can't use drugs whether it's space—it's not going to go out into outer space—nor cities, nor homes, nor families, wherever. We just can't do it.

Q. Would you like to go on a trip to space to help build a space station?

The President. Yes, I'd like to. I don't think I'll make it though. [Laughter] I don't think they'd let me in. I don't think Admiral Truly, who's the boss of this program, would have a guy my age. I think health-wise I might be able to make it. And I'm not sure Charlie would want an old guy up there with him on his next space mission which he's going to undertake what, next spring?

Mr. Bolden. Next spring sometime.

The President. Your question wasn't am I going to do it, but would I like to. I'd love to do it. I really would love to see the world as these people have seen it. And I think I'd be a better President if I had.

Q. I want to ask you, how difficult is it to be our President?

The President. It depends on what's happening out there, I'll tell you. And some days it's very difficult, and some days it's not so bad. But I think the answer is: In the first place, it's exciting; it's fun; I like it. There are so many things to be done both here and abroad. And the thing about that one is to get good people with you.

One of the reasons our space program has been successful, the leader in the whole world, is because we've attracted really good people. And the same thing is true for the White House. So, you know, at times like during the war and stuff, it gets a little complicated and difficult. And then at times, you just feel, look we can do anything we set our sights on. But I think the advice is: Get good people around you.

Q. I want to know what kind of work—is the work hard that you do?

The President. You mean President? Well, it's pretty long hours. I get up every morning at 5 a.m. This might be of real interest to you. Our dogs are like alarm clocks. We have two dogs, you know, Millie and Ranger. They're like alarm clocks. They wake at 5 a.m. every morning. And so I have a long day. So, I go home and go to the Oval Office. Then in the evening I work. I have an office in the White House, the big White House part, the residence. And sometimes it's very difficult and complicated, and you worry about people and how they're doing: drugs or the cities or whatever else it is. But I don't know that it's harder than your teacher's job or the astronaut's job. I don't think it's a question of difficulty. Again, it's a question of, "Are you up for it? Do you think you can do it? Do you want to make a contribution?" Something like that.

Q. And I want to know, how do you feel about sending people into space?

The President. Sending people in there? Well, in the first place, clearly people don't go into space unless they want to, unless they've got a drive, unless they've got a mission. And then, you worry about it, as President. But I think their neighbors worry about it, his friends. It's something when you see something dramatic like a lift-off. But I view it as a challenge. I think Char-

lie's lucky. He's a good man. I think he's lucky to be in space.

Mr. Bolden. We have time for one more question, and you've been having your hand up, so go ahead.

Q. Mr. Bush, would you consider letting Millie be the first American dog in space? *[Laughter]*

The President. First dog in space?

Q. American.

The President. I don't think I'd let Millie do it because I don't think she could pass the physical. She has lupus, and that's a disease. And I don't think any of the doctors at NASA would let her go. Other than that, if they were going to take a dog out there, I'd let Ranger. I've got a dog named Ranger, Millie's son. He could go maybe. But I don't think people would like the President's dog getting to be the first dog in space. They'd all say, "Hey, how come my dog didn't get to go." You know what I mean? So, I don't think Millie's going to go either. But anyway, that's an interesting question because they do take different kinds of animals. I guess you do, or don't you?

Mr. Bolden. Different kinds of animals. Yes, sir, Mr. President.

The President. No dogs yet?

Mr. Bolden. No dogs yet that I know of, like you said, on an American space flight.

Mr. President, we want to thank you very much. I know you've been very, very busy. And you've taken a lot of your personal time out to be with us today. And I know the kids are excited. So, I thank you for them.

Admiral Truly, we thank you very much. I want to thank Lisa McLeod. Tammy, I'd like to really thank you and the kids down there in La Porte. I want to thank our television audience because you've been superb. We've had lots of fun here together. We want to thank the public television stations who've chosen to carry us today. And we want to encourage all of you to take heed at the words that you heard today: study, study, study; read, read, read. We really appreciate your being with us. So, so long.

Note: The President spoke at 2:38 p.m. from the auditorium of the National Aeronautics and Space Administration on NASA Select

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TV via a two-way video and audio satellite hookup. In his remarks, the President referred to: NASA Administrator Richard H. Truly; Lisa McLeod, NASA Aerospace Education Specialist; Elizabeth Hamilton, a teacher at Stevens Elementary School; and President Alberto Fujimori of Peru. Astronauts Charlie Bolden in Washington, and Tammy Jernigan in La Porte, Texas, led the teleconference. Students participated in the teleconference from: Stevens Elementary School, Washington, DC; Bucknell Elementary School, Alexandria, VA; Ashburton Elementary School and Harlem Park Elementary School in Baltimore, MD; and College Park Elementary School, La Porte, TX. A tape was not available for verification of the content of these remarks.

**Nomination of Elaine L. Chao To Be
Director of the Peace Corps**
September 17, 1991

The President today announced his intention to nominate Elaine L. Chao, of California, to be Director of the Peace Corps. She would succeed Paul D. Coverdell.

Currently Ms. Chao serves as Deputy Secretary at the U.S. Department of Transportation in Washington, DC. Prior to this, Ms. Chao served as Chairman on the Federal Maritime Commission, 1988-1989; Deputy Administrator of the Maritime Administration at the U.S. Department of Transportation, 1986-1988; and vice president for syndications of BankAmerica Capital Markets Group, 1984-1986. She was selected as a White House Fellow and worked in the Office of Policy Development at the White House in 1983-1984. From 1979 to 1983, she worked as an international banker at Citicorp in New York.

Ms. Chao graduated from Mount Holyoke College (B.A., 1975) and Harvard Business School (M.B.A., 1979). She was born March 26, 1953, in Taipei, Taiwan. Ms. Chao is a resident of California.

**Exchange With Reporters at the Grand
Canyon, Arizona**

September 18, 1991

Q. Mr. President, a question about Iraq while you're there, sir? Could you take a moment?

The President. No, I can't.

Q. Can we ask you an environmental question?

The President. No, not right now. I'm in a learning process here.

Environmental Policy

Q. This is a great photo op, but your critics say your policy doesn't measure up, sir.

The President. That's not what we're hearing today, Jim [Jim Miklaszewski, NBC News]. If you listened carefully to the briefing, you'd see great progress has been made. That's a very important point.

That's the last question I might take because we're getting a good briefing here.

Iraq

Q. Mr. President, with all due respect, sir, could you at least tell us if time is running out on Saddam? Has he run out of time?

The President. A long time ago.

Q. We're told that you're moving troops back to Saudi Arabia, sir. Is that true?

Environmental Policy

Q. Mr. President, on the environment, are your critics just wrong about the administration's record on the environment?

The President. Now we're doing—now we're focusing on domestic.

Q. Are your critics just wrong?

The President. Wrong about what?

Q. About their criticism of the administration's policy on the environment.

The President. Yes, they're wrong. They're wrong. You've heard about the progress.

Q. Why wasn't this plant cleaned up years ago?

The President. We've got the Clean Air; we've got the revision of the Clean Air. We're signing an agreement today, and progress is being made. That's the good point. But I think the critics are—you can't respond to the extremes in the critics. We've got some critics and perfect reason

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

THE PRESIDENT'S STRATEGY FOR IMPROVING
MATHEMATICS AND SCIENCE EDUCATION

TESTIMONY OF

THE HONORABLE D. ALLAN BROMLEY, DIRECTOR
OFFICE OF SCIENCE AND TECHNOLOGY POLICY

THE HONORABLE LAMAR ALEXANDER, SECRETARY
DEPARTMENT OF EDUCATION

THE HONORABLE WALTER MASSEY, DIRECTOR
NATIONAL SCIENCE FOUNDATION

THE HONORABLE RICHARD TRULY, ADMINISTRATOR
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

BEFORE THE

COMMITTEE ON EDUCATION AND LABOR

AND THE

COMMITTEE ON SCIENCE, SPACE AND TECHNOLOGY

UNITED STATES HOUSE OF REPRESENTATIVES

FEBRUARY 27, 1992

INTRODUCTION

Chairman Ford, Chairman Brown, members of the Committee on Education and Labor, and members of the Committee on Science, Space, and Technology, it is a pleasure to appear before you today to present the President's strategy for strengthening mathematics and science education in America.

One month ago, President Bush reiterated in his State of the Union address his commitment to making the United States the world leader in education:

(C)hanges are here, and more are coming. The workplace of the future will demand more highly skilled workers than ever, more people who are computer literate and highly educated. We must be the world's leader in education. We must revolutionize America's schools.

The President recognizes, as all of us here recognize, that jobs, education, and science and technology are now inextricably intertwined. Science and technology are among the primary catalysts for the dramatic changes now sweeping our businesses, homes, schools, and other sectors of our society. To respond positively to these changes and to reap fully the benefits they offer, our Nation's citizenry must understand and utilize science and technology rationally, responsibly, and productively. Simply put, education, training, and literacy in science and technology will mean more and better jobs, a more competitive economy, and a higher standard of living.

We face significant challenges, however, in raising our educational achievement to satisfy our national needs. No single program, agency, or level of government can respond totally to the necessary but extraordinary tasks of bringing student achievement, teacher preparation, and adult training up to the competitive standards our Nation requires. Instead, what is needed is a comprehensive, integrated national strategy to strengthen mathematics and science education at all levels and for all participants, a strategy that draws upon the resources, expertise, and commitment of the private and public sectors, including the federal, state, and local governments.

The President and the Nation's governors have embarked on a decade-long campaign to improve educational performance, focused on attainment of six specific National Education Goals. Three of these Goals speak directly to the importance of increasing science and mathematics achievement and literacy among our students and citizenry.

Based upon these goals, the President has constructed two complementary initiatives to improve mathematics and science education. The first is the President's unified interagency initiative in mathematics and science education, described in the FY 1992 and FY 1993 reports, "By the Year 2000: First in the World." The second is AMERICA 2000, a broader educational initiative designed to attain all six National Education Goals. These two initiatives, including their goals, will be described below.

As part of these initiatives, the President will launch several new efforts to increase the utilization and effectiveness of federal resources for mathematics and science education. These efforts include special programs to enhance the skills of mathematics and science teachers; new emphases on educational technologies; and a new effort directing federal laboratories to undertake projects to improve mathematics and science education and make surplus computers and scientific equipment available to local schools.

Federal agencies are also strengthening their own educational programs and activities. These efforts increasingly involve collaboration with other federal agencies, state and local governments, and the private sector. The sum total of these activities is a renewed commitment and specific plan of action for making America the world leader in mathematics and science education.

Chairmen and members of your two committees, the witnesses before you today represent four key players in the President's strategy for improving mathematics and science education. The Department of Education, the National Science Foundation, and the National Aeronautics and Space Administration, working closely with the White House Office of Science and Technology Policy and other federal agencies and departments, have developed an integrated, coordinated approach for making the United States first in mathematics and science education. We look forward to discussing with you the challenges we face, the goals that our Nation has set for itself, and our common course of action to prepare our students and citizens for the twenty-first century.

OUR NATION'S EDUCATIONAL CHALLENGE

Our Nation, like the world around it, is experiencing dramatic changes, resulting in large measure from advances in science and technology. With these changes come growing demands to revolutionize our schools and to invest in our future through education and training. Now more than ever we must take action to provide for a more highly skilled work force and more highly educated and more technically literate society. Education, literacy, and science and technology are the ingredients for producing more and better jobs, a more competitive economy, and a higher standard of living.

Our Nation's educational achievements, however, have not kept pace with our needs. The state of America's educational system has been documented over the past decade by a number of studies and assessments, which indicate the following:

- Based on the latest international assessments, American elementary, middle, and high school students continue to score below their international peers in mathematics and science achievement. America's children also watch more television and do less homework than do their peers in most countries surveyed.

- Elementary school mathematics and science teachers are frequently under prepared to teach in their fields, and are often further handicapped by outdated and inadequate textbooks and equipment.
- Nearly 30 percent of U.S. high schools offer no courses in physics; 17 percent offer no courses in chemistry; and 70 percent offer no courses in earth or space science.
- The average amount of instruction time devoted to science in grades 4-6 is only one half-hour per day, while in grade 3, seven out of ten teachers spend less than two hours per week on science instruction.
- Women, minorities, and persons with disabilities will make up 65 percent of net new entrants into the U.S. work force between now and the year 2000, yet few obtain science or mathematics degrees, and fewer still pursue scientific or technical careers.
- Large sectors of the American public are characterized by low levels of science and mathematics literacy.

The problems of student achievement, teacher competency, and adult performance are substantial, complex, and interrelated. Meeting these challenges exceeds the resources and capabilities of any single program, agency, or government. Instead, our Nation needs a comprehensive, integrated national strategy to strengthen mathematics and science education at all levels and for all participants.

Recognizing the need for a national strategy, the President and the Nation's governors convened in September 1989 the Nation's first Education Summit and initiated a decade-long campaign to increase educational performance at all levels. At the center of this campaign are six National Education Goals, which are intended to capture America's attention and to energize America's resolve to restructure its schools and to raise its expectations for student, teacher, and adult performance. Three of the six goals -- Goals #3, 4, and 5 -- are directly relevant to mathematics and science education:

- Goal #3. By the year 2000, American students will leave grades 4, 8, and 12 having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so that they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.
- Goal #4. By the year 2000, U.S. students will be first in the world in science and mathematics achievement.

Goal #5. By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

To accomplish these ambitious but vital goals, the federal government must play a leadership role in education reform. Although the federal government provides only six percent of the Nation's total support for elementary and secondary education, the federal government is the user and patron of a large segment of the Nation's scientific and technical work force, and is critically dependent upon the achievements of this work force. Furthermore, the federal government is the primary source of student support at the graduate level, and, in some graduate fields, the only source of support. To spur improvements in mathematics and science education, the federal government can draw upon its great and unique resources to mobilize national support, develop comprehensive strategies, and support programs and activities nationwide.

As previously noted, President Bush has exerted such leadership by constructing two complementary initiatives to improve mathematics and science education. The first is the President's unified interagency initiative in mathematics and science education, described in the FY 1992 and FY 1993 reports, "By the Year 2000: First in the World." The President's mathematics and science education initiative is fully integrated with and supportive of the President's second educational initiative, AMERICA 2000. AMERICA 2000 is a national effort designed to mobilize state, local, and private resources to improve education school by school, community by community. AMERICA 2000 is designed to achieve all six National Education Goals, including those most relevant to mathematics and science education. These two initiatives are described below.

BY THE YEAR 2000

Background on CEHR. The reports "By the Year 2000: First in the World" describe the President's interagency initiative in mathematics and science education. This Presidential initiative represents the collaborative efforts of sixteen federal departments and agencies, working through the Committee on Education and Human Resources (CEHR) of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET). The CEHR is an interagency committee consisting of senior officials from the participating departments and agencies, who meet on a regular basis to develop recommendations and analyses relevant to mathematics and science education.

The CEHR, like other FCCSET committees, is an important forum for coordinating federal activities in science and technology. In particular, CEHR is charged with identifying and reviewing federal programs supporting science, mathematics, and engineering education; improving interagency planning, coordination, and communication; recommending appropriate priorities and strategic objectives; developing and updating long-range plans; and supporting the efforts of the National Education Goals Panel and other organizations to reform math and science education.

Interagency coordination through the CEHR offers a number of distinct benefits to the public and private sectors. Working through the CEHR, federal agencies are able to assemble and assess information on the entire federal effort in mathematics and science education, and thereby establish clear and consistent priorities; maximize the effectiveness of scarce resources; target high-priority areas for support; avoid unnecessary duplication of effort; and generally improve communication and collaboration among federal agencies. Successful programs can be more easily replicated, and their results more readily assessed and disseminated, thus raising the overall quality of the federal effort in education. Furthermore, the CEHR has established a network of mathematics and science education professionals across all federal agencies, who can serve as valuable sources of information, expertise, and coordination. Together, these activities facilitate interagency collaboration, joint funding of projects, and reliable evaluations of the total federal effort.

State and local governments and the private sector also benefit from CEHR activities. The government-wide inventory of mathematics and science education programs published by the CEHR has been an invaluable resource for teachers, administrators, and other people needing access to federal educational programs, laboratories, resources, and expertise. The net result of CEHR activities will be better education for students, a stronger teaching force, improved collaboration between the public and private sectors, greater public support for mathematics and science education, and higher scientific literacy among the Nation's citizenry.

Toward these ends, the CEHR has developed a comprehensive framework to set the strategic objectives and priorities for the federal effort in mathematics and science education. The CEHR has identified four key objectives for the federal education initiative: (1) improving science and mathematics performance; (2) strengthening the elementary and secondary teacher work force; (3) ensuring an adequate supply of new entrants into the science and technology work force, including women, minorities, and persons with disabilities; and (4) improving the science literacy of the American public.

To accomplish these objectives, the CEHR framework establishes implementation priorities within and among four educational levels -- elementary and secondary education, undergraduate education, graduate education, and general public science literacy. Among these four levels, the CEHR considers elementary and secondary education to be the highest priority. Within elementary and secondary education, the priorities established by the CEHR are, in order, teacher preparation and enhancement; curriculum reform; organizational and systemic reform; and student support, incentives, and opportunities. The priorities for each of the four educational levels, which appear in Figure 1 at the end of this testimony, are consistent with the National Education Goals adopted by the President and the governors.

The FY 1993 mathematics and science education initiative. The President's FY 1993 budget request represents the second year that mathematics and science education has appeared as a Presidential initiative, and the third year that President Bush has proposed significant increases for federal programs in mathematics, science, engineering, and technology education.

For FY 1993, the President is requesting a total of \$2.1 billion for improving mathematics and science education across all educational levels. This total represents an increase of \$138 million or 7 percent over the FY 1992 enacted levels for these programs, and a \$626 million or 43 percent increase over their FY 1990 enacted levels.

The most notable increase in federal support for mathematics and science education has been in the area of elementary and secondary education, which has grown by 123 percent between FY 1990 and the FY 1993 request. The President is requesting \$768 million for elementary and secondary education in FY 1993 (37 percent of the total federal request for mathematics and science education), an increase of \$117 million or 18 percent from FY 1992. The President is also requesting \$481 million for undergraduate education (23 percent of the total); \$750 million for graduate education (36 percent of the total); and \$93 million for science literacy (4 percent of the total). These allocations -- particularly the emphasis on elementary and secondary education -- are consistent with the National Education Goals, AMERICA 2000, and the CEHR priorities framework. Additional information on individual program elements included in the FY 1993 budget request is provided in Figure 2 at the end of this testimony.

Of the sixteen agencies participating in the Committee on Education and Human Resources, eleven provide direct support for mathematics and science education. The other five agencies provide facilities, expertise, or other important contributions. The FY 1993 request for each of the eleven funding agencies is provided in Figure 3 at the end of this testimony. Key features of the agency budget requests include the following:

- Five agencies will support approximately 90 percent of the total federal effort in mathematics and science education in FY 1993. They are, in order of support, the National Science Foundation (\$537 million in FY 1993); the Department of Defense (\$416 million); the Department of Health and Human Services (\$416 million); the Department of Education (\$393 million); and the Department of Energy (\$113 million). The six other participating agencies -- the Department of the Interior, NASA, the Department of Agriculture, the Smithsonian Institution, the Environmental Protection Agency, and the Department of Commerce -- will collectively contribute \$217 million in FY 1993 for mathematics and science education.
- The percentage increases in support for mathematics and science education in FY 1993 are highest for the Department of Education (34 percent); the Environmental Protection Agency (18 percent); and the Department of

Agriculture (11 percent). In dollar terms, the largest increases are requested by the Department of Education (\$98 million) and the National Science Foundation (\$15 million).

- At the elementary and secondary level, the Department of Education (\$371 million) and the National Science Foundation (\$286 million) collectively will fund 86 percent of the total federal effort in FY 1993.
- At the undergraduate level, the Department of Defense (\$176 million) and the National Science Foundation (\$146 million) collectively will fund 67 percent of the total federal effort in FY 1993.
- At the graduate level, the Department of Health and Human Services (\$364 million) and the Department of Defense (\$235 million) collectively will provide 80 percent of the total federal effort in FY 1993.
- In the area of science literacy, the Department of the Interior (\$43 million) and the National Science Foundation (\$31 million) collectively will fund 80 percent of the total federal effort in FY 1993.

AMERICA 2000 AND MATHEMATICS AND SCIENCE EDUCATION

AMERICA 2000 is a long-term national strategy to attain the six National Education Goals. The federal effort under AMERICA 2000 will be limited but vigorous. Spearheaded by the Department of Education, the federal government will support education reform by setting standards; highlighting successful activities and examples; contributing funds when appropriate; providing flexibility in exchange for accountability; and pushing for change.

AMERICA 2000 has four interdependent parts:

- Track 1. For today's students, we must radically improve our Nation's schools, all 110,000 of them, to make them better and more accountable for results.
- Track 2. For tomorrow's students, we must invent a New Generation of American Schools to meet the demands of a new century.
- Track 3. For those of us already out of school and in the work force, we must keep learning if we are to live and work successfully in today's world. A "Nation at Risk" must become a "Nation of Students."
- Track 4. For schools to succeed, we must look beyond the classrooms to our communities and our families. Schools will never be much better than the

commitment of our communities. Each of our communities must become a place where learning can happen.

AMERICA 2000 and the President's initiative in mathematics and science education are complementary. All four tracks in AMERICA 2000 support the three National Education Goals most directly relevant to mathematics and science education, in addition to the other three national goals.

AMERICA 2000 calls for the development of world class standards to define what American students should know and be able to do in specific subject areas, including mathematics and science. The need for these standards is illustrated by the recent results of the International Assessment of Educational Progress, which indicate that those countries with the highest student achievement also had the highest expectations of performance for their youth. The congressionally-created National Council on Education Standards and Testing recently released its report endorsing the development of voluntary standards for both mathematics and science, as well as for other subjects.

A consensus on world-class standards in mathematics and science is beginning to develop. The National Council of Teachers of Mathematics has published its Curriculum and Evaluation Standards for School Mathematics and Professional Standards for Teaching Mathematics. World-class standards for the study and teaching of science are under development by the National Academy of Sciences, the National Science Teachers Association, and other organizations. The National Science Foundation and the Department of Education are actively engaged in supporting standards development. Both agencies are providing support to the Mathematical Sciences Education Board of the National Academy of Sciences, as well as to the newly established Coordinating Council on Education, which will develop science standards. NSF is also currently supporting projects implementing the mathematics standards developed by the National Council of Teachers of Mathematics. When completed, these standards, together with assessments to measure progress toward these standards, will guide both the content and methods of teaching, as well as define the expected performance of our students.

Implementation of these standards is the next major step. A number of states have already begun to develop mathematics and science curriculum frameworks based upon these voluntary standards. States will then use these curriculum frameworks to provide guidance on content, instruction, and assessment to their schools. The Department of Education will support the development and implementation of such state curriculum frameworks in mathematics and science. Furthermore, the Department has begun to establish a National Clearinghouse for Science and Mathematics Materials, as well as regional consortia that will collect and disseminate information on exemplary programs and materials in mathematics and science.

Accompanying the emergence of world-class standards are new methods of assessing student knowledge. The National Goals Panel and the National Council on Education Standards and Testing have each called for new forms of testing and accountability. Secretary Alexander chaired the Mathematical Sciences Education Board's committee on assessment, which led to the report For Good Measure: Principles and Goals for Mathematics Assessment. The National Assessment of Educational Progress tests have begun to include new forms of assessment. Their 1990 mathematics tests contained some performance-based items to assess student achievement. The Department of Education supports a major research center on student testing, as well as a number of other centers that also conduct related work. The Department also will support pilot studies to explore performance assessment. At the National Science Foundation, seven major awards have been made in the area of assessment. These activities can strengthen and broaden the ability of teachers to diagnose instructional needs. The development of more authentic assessment procedures will permit better diagnosis of the strengths and weaknesses of students, thereby leading to development of more effective instructional materials.

Just as AMERICA 2000 supports the objectives of the initiative coordinated through the CEHR, CEHR activities likewise support implementation of AMERICA 2000. In its construction of the FY 1993 mathematics and science education strategy, the CEHR was guided by both the National Education Goals and AMERICA 2000. The CEHR strategy is designed primarily to promote achievement of Goals #3, 4, and 5, and to complement and enhance the AMERICA 2000 strategy. For example, the emphasis placed on elementary and secondary education by the CEHR strategy is consistent with Tracks One and Two of AMERICA 2000, which call for improving today's and tomorrow's schools, respectively. Similarly, Tracks Three and Four of AMERICA 2000, which deal with lifelong learning and community support for education, are relevant to the CEHR's new focus on general public science literacy. This is the first year in which science literacy has been identified separately within the CEHR budget, as well as the first year in which a strategy for increasing public awareness about science has been articulated.

NEW EFFORTS IN FY 1993

As part of the CEHR and AMERICA 2000 initiatives, the President is proposing three major new efforts in FY 1993 to improve mathematics and science education: (1) enhancement of teaching skills of mathematics and science teachers; (2) a new program authorizing federal laboratories to play a direct role in strengthening mathematics and science education and to provide schools with surplus computers and scientific equipment; and (3) new efforts in educational technologies, including the use of computers, computer networks, and other advanced technologies in the classroom.

Enhancement of mathematics and science teachers. The most important near-term action to improve mathematics and science education is to enhance the content knowledge and pedagogy of the Nation's current teaching force. If the U.S. is to become

first in the world in mathematics and science achievement, then our teachers must be able to deliver a world-class education to their students.

For these reasons, and consistent with the AMERICA 2000 emphasis on teacher training, the President's FY 1993 budget proposes an improved program for training the Nation's current mathematics and science teachers, with the objective of preparing these teachers to provide curricula that are tied to world-class standards. As an initial step, the FY 1993 budget proposes to double (to 45,000) the number of teachers receiving federal assistance for intensive training. Such training generally lasts a minimum of 20 days and includes a follow-up period, during which assistance is provided to teachers to adapt new disciplinary knowledge and pedagogical techniques to classroom settings. When combined with the short-term training opportunities provided to 725,000 teachers under existing programs, federal efforts in teacher training will reach almost half of the Nation's elementary and secondary mathematics and science teachers. Over time, the teacher enhancement initiative will provide in-depth, up-to-date training for all of America's elementary and secondary mathematics and science teachers.

The teacher enhancement initiative will involve the complementary efforts of the National Science Foundation, the Department of Education, and the Department of Energy and other mission agencies with federal laboratory facilities. In particular, the National Science Foundation will provide intensive training and follow-up opportunities to nearly 25,000 teachers, through its merit-based teacher enhancement program. To broaden and strengthen the impact of this program, NSF will increasingly emphasize and encourage: (1) development of "leadership teams" of educators and administrators, who can return to their school systems and provide quality training to their colleagues; and (2) development of school system-wide and district-wide projects. NSF is also encouraging awardees in its other programs, such as the Statewide Systemic Initiative, to stress activities that increase the competencies of science and mathematics teachers.

The Department of Education, through the Eisenhower National Program, will support in-service professional development projects for elementary and middle-school mathematics and science teachers, to improve teachers' subject matter knowledge, and to improve the teaching of mathematics and science, particularly in grades K-8. Grants will go to the local school districts to ensure that the core subjects of mathematics and science are taught in a well-articulated and non-repetitive manner throughout the K-12 years. To attain this end, the projects are to be designed and carried out by experienced master teachers of mathematics and science at the high school level, working directly with elementary and junior high teachers in their own districts. Close collaboration with university scholars and educators who are knowledgeable about world-class standards in mathematics and science will be required, but local schools and school districts will remain the focus of these efforts. The Department of Education will also require that funding in the higher education portion of the Eisenhower State Grants program be used only for teacher training experiences of at least 20 days duration.

Federal laboratory assistance -- training and equipment. The Department of Energy has initiated an active program at five national laboratories to utilize existing facilities to train students and teachers in science and mathematics. Based on this experience, the Department will lead an interagency effort to establish at federal laboratories programs to provide training and research experience for elementary and secondary teachers of mathematics and science, and, when possible, for students, their parents, and the public as well. These programs would involve partnerships with universities, state and local school authorities, and training programs administered by the National Science Foundation and the Department of Education.

The laboratories can also contribute to the availability of equipment for classroom laboratories, an essential ingredient for world-class education. Studies have shown that student performance and interest in mathematics and science can be enhanced significantly by access to and experience with computers and other scientific equipment. Yet, in times of tight budgets, schools and school districts often defer investment in such equipment. In 1990, for example, 80 percent of the Nation's eighth graders did not have access to computers in their mathematics classrooms. In the mid-1980s, two-thirds of all classrooms in grades 4-6 had no scientific equipment at all. To address this situation, the CEHR is examining mechanisms to make available to local school systems excess federal personal computers and scientific equipment. The amount of excess federal personal computers and related equipment is expected to rise in coming years, due to the turnover of federal equipment currently in use.

Educational technologies. A major objective of the AMERICA 2000 strategy is to establish national electronic networks that will link American schools and other sites where learning occurs. The teaching of mathematics and science is ideally suited for the use of electronic dissemination technologies. In an era when scientific discoveries are made daily and recently published textbooks quickly become obsolete, electronic networks allow students, educators, and researchers to receive and share up-to-date information on science and technology, thus providing an invaluable supplement to standard curricula.

The Administration proposes to focus attention on accelerating the availability of educational technology in the classroom. Federal agencies are presently engaged in two major activities in this area. First, the National Science Foundation, the Department of Agriculture, and the Department of Education, through its Star Schools program, support distance learning programs, which include improving access by rural school systems and smaller colleges to educational resources. Second, the Departments of Energy and Defense, the National Science Foundation, and NASA presently use telecommunications technologies to disseminate scientific and technical information in support of agency programs and missions and to provide technical training to federal employees. These technologies include satellite broadcasting, fiber optics, and computer networks. For example, NASA's telecommunications system Spacelink and education videoconferences provide educators with instructional information on aerospace research

and the aerospace program, current NASA news, classroom materials, and other information targeted specifically to teachers and students. In addition, the National Science Foundation is capitalizing on rapid advances in telecommunications and networking by proceeding with the development of the National Research and Education Network (NREN), as proposed in the President's High Performance Computing and Communications (HPCC) Initiative. Under the HPCC initiative, the National Science Foundation will develop sophisticated educational databases, as well as requisite network facilities, standards, and user-friendly software that will meet the varied needs of students, educators, and research scientists.

The CEHR agencies plan to hold a major conference to identify the users and providers of existing and proposed educational technologies, and later review the merits of those technologies. Educational technologies that demonstrate the most promise for revolutionizing classroom instruction may be selected for support under special fast-track demonstration programs. This conference will also be of importance to the High Performance Computing and Communications Initiative, mentioned above.

AGENCY-TO-AGENCY COLLABORATION

The CEHR provides one mechanism for interagency coordination; agency-to-agency collaboration is yet another. Several agencies have recently negotiated Memoranda of Understanding and other agreements to facilitate cooperation, and thus further maximize the effectiveness and availability of scarce federal resources.

In February 1992, the National Science Foundation and the Department of Education signed a Memorandum of Understanding (MOU) to institute a formal mechanism for interaction between the two agencies. The NSF-ED MOU focuses primarily on elementary and secondary education, where the responsibilities of the two agencies most coincide and for which combined agency resources comprise nearly 85 percent of the total federal effort. The MOU will lead to more effective planning, information exchange, and collaboration between the two agencies in science, mathematics, engineering, and technology education. More effective planning and collaboration, in turn, will lead to more effective resource utilization; promote achievement of the National Education Goals; and generally strengthen the programs of both agencies.

Under the MOU, the Department of Education and the National Science Foundation will develop a joint five-year plan and common priorities; identify complementary strategies and agency roles; and review new and existing programs. Milestones will be established, and progress toward their achievement monitored. To accomplish these tasks, the two agencies have appointed a working group of nine senior-level officials, who will meet regularly to set an agenda and to identify program areas that will benefit most from collaboration. The working group will make extensive use of program experts within both agencies to work on issues involving program design, management, and implementation. The program areas proposed for consideration under this MOU

include teacher enhancement and preparation, telecommunications and networking, dissemination strategies, and program evaluation.

Other agencies have negotiated similar agreements. NASA is broadening its interagency collaboration to increase and leverage its education outreach programs at the elementary, secondary, and higher education levels. One such example at the precollege level is the Tri-State Education Initiative, involving 28 school systems in the adjoining states of Mississippi, Alabama, and Tennessee. NASA, the Department of Education, the Tennessee Valley Authority, and the private sector are working closely with the newly formed consortium to develop a quality education system to permit the citizens to obtain the necessary skills for gainful employment in America's high-technology economy. NASA is also supporting several of the Department of Education's AMERICA 2000 efforts, which can serve as innovative models that could be adopted for educational systemic change elsewhere in the country.

At the higher education level, the Department of Energy, NASA, and seven other agencies have established a joint effort to centralize agency information for university users about student educational opportunities, fellowships, and research opportunities. This program, known as the Federal Information Exchange (FEDIX) is designed to help improve communication between the academic community and the federal government.

NASA and the National Science Foundation are also collaborating to strengthen the ability of certain academic institutions to compete for academic research funding. NASA's Space Grant College and Fellowship Program includes a component that is modeled after NSF's Experimental Program to Stimulate Competitive Research (EPSCoR), which is designed to assist institutions in those states that historically have been less successful in competing for federal research funds. NASA's programs include an explicit component to establish a communications and interaction framework involving NASA, NSF, and the academic community. The Department of Defense, the Department of Energy, and the Environmental Protection Agency have also initiated EPSCoR-inspired programs, while a similar program is currently under design by the National Institutes of Health.

EXPEDITING THE TASK AHEAD

Over the past two years, President Bush has acted aggressively to put in place the organizations, plans, and programs needed to improve mathematics and science education in America. The Education Summit, the National Education Goals, and the two complementary strategies that quickly followed are only the first steps. The CEHR agencies will augment ongoing educational programs with new initiatives, which will reflect the goals and priorities developed to date. The CEHR will undertake a number of organizational and programmatic activities to coordinate these efforts:

- Strategic Planning Working Group. The CEHR is establishing a Strategic Planning Working Group to ensure that the CEHR initiative is fully integrated with AMERICA 2000. The Working Group will lay out a multiyear strategic plan for CEHR to address each educational level.
- Working Group on Technology Education. National Education Goal #5 and AMERICA 2000's Track 3 both refer to the need for students and adults to be prepared for productive employment and to possess the knowledge and skills needed to compete in a global economy. The CEHR will expand its program inventory to include technical education. To do so, the CEHR must determine relevant fields and occupations that qualify as technical training; decide on minimal skill levels and activities appropriate for consideration; identify program activities that depict federal involvement in this area; and develop a baseline.
- Working Group on Federal Schools. The Department of the Interior will lead the CEHR agencies in an examination of how the federal government teaches mathematics and science in the federal school systems, including the Bureau of Indian Affairs school system and the Department of Defense Dependent Schools system. The Working Group will identify ways to ensure that educational expertise and resources found elsewhere in the federal government is utilized most effectively in these schools. Federal schools should be models of effective science and mathematics education for the country.
- New Statewide Directory of Federal Education and Human Resource Programs. During 1992, the CEHR will develop a state-by-state directory of all federal programs in mathematics, science, and technology education. This directory will provide parents, teachers, and school administrators with current and complete information on federal programs available at the local and national levels.

In addition to activities developed and coordinated through the CEHR, the agencies are pursuing a variety of unilateral means to strengthen their mathematics and science education programs to maximize their effectiveness. For example, agencies are seeking to improve evaluations of the federal educational effort and the dissemination of successful results and, through research, better understand the processes of teaching and learning.

Evaluation and dissemination of the total effort. Evaluation and dissemination represent special opportunities for the CEHR agencies. CEHR priorities and initiatives require careful review to sharpen their direction and determine their impact. Likewise, materials about effective practices identified through CEHR initiatives need to be publicized, supported, and disseminated to maximize the effectiveness of the federal investment.

Evaluation and dissemination most often focus on individual programs within agencies, where the bulk of the CEHR member activities occur. The CEHR enables agencies to share information on effective evaluation and dissemination techniques. For example, certain agencies, such as NSF and DOE, emphasize primarily the development of exemplary materials, while other agencies, such as the Department of Education with its National Diffusion Network, support the infrastructure to disseminate such materials. The CEHR can be the mechanism for bringing together complementary parts into an integrated federal effort.

Research on Teaching and Learning. In order to reach world-class levels of achievement in mathematics and science by the year 2000, it is essential that we better understand and appropriately reform both teaching and learning techniques. Research efforts are underway to determine the means by which such a dynamic transformation may occur.

The Department of Education supports research on teaching and learning of mathematics and the sciences primarily through two national centers -- the National Center for Research in Mathematical Sciences Education (NCRMSE), and the National Center for Science Teaching and Learning (NCSTL). The NCRMSE conducts research in cognition and understanding of mathematics in key curricular areas and provides needed assessments. In particular, the Center is identifying a variety of assessment practices that are aligned with emerging world-class standards in mathematics. The Center is also looking at the kinds of intuitive mathematical knowledge that children from differing cultural and socioeconomic levels bring to their school settings. Classroom implementation of the Center's research on children's cognition of addition and subtraction (a project that also receives funds from NSF) is now in place.

The National Center for Science Teaching and Learning is identifying and studying the external factors that influence science teaching and learning. These factors include social and cultural factors, public expectations and societal initiatives, school organizations, new technologies, economic and political forces, and integration of science across content areas. Knowledge gained from this Center will be crucial to the successful implementation of systemic change.

The National Science Foundation has a full program of basic and applied research on effective teaching and learning of science and mathematics at all educational levels. For example, "Project IMPACT" has designed, implemented, and is evaluating models to enhance student understanding and support teacher improvements in predominantly minority public schools. NSF's "Teaching for Conceptual Understanding and Self-Regulation through Collaborative Problem Solving in Science" is examining learning and problem-solving by middle schools students and developing appropriate instructional strategies and materials. "Problem Solving in Quantitative Science: Practical Instruction and Cognitive Models" will translate past laboratory studies into interactive instructional methods to teach general problem-solving strategy, general material, and decision and checking processes. Finally, NSF's "Teachers' Learning from Reform: The

Case of Mathematics Instruction in California" will study the influence of texts, tests, teacher enhancement and policy makers on the implementation of the California Mathematics Framework by elementary school teachers.

WORKING TOGETHER FOR EDUCATIONAL EXCELLENCE

The task of reforming America's educational system requires a coordinated, cooperative effort among many players. The Administration neither can nor should attempt to tackle this job by itself. Just as the Administration has designed its strategies to include cooperation and coordination among federal, state, and local governments and the private sector, so too is the Administration looking to establish a cooperative working relationship with Congress to turn these integrated strategies into reality. Our appearance before you today is a testament to our collective need to establish new ways to work together.

We feel it is particularly important that the unified, coherent nature of the federal initiatives in mathematics and science education should not become lost among disparate committee jurisdictions. Rather, we should look for ways to work with Congress to preserve and promote the integrated interagency framework developed by the CEHR as it is considered by the various responsible congressional committees. Similarly, we need to promote the priorities and relative strengths put forward by the CEHR agencies in their FY 1993 budget requests. And we need to promote the comprehensive nature of AMERICA 2000, without which we cannot hope to attain the six National Education Goals by the year 2000.

Your two committees -- the Committee on Education and Labor and the Committee on Science, Space, and Technology -- have jurisdiction over the principal agencies supporting mathematics and science education. These agencies include the Department of Education, the National Science Foundation, the National Aeronautics and Space Administration, the Department of Labor, the non-defense programs of the Department of Energy, and the technology programs at the Department of Commerce. When considering future authorizations and legislation for these agencies, we hope that the Committees will support the unified framework developed by the CEHR agencies, a framework that builds upon the strengths of each agency; promotes synergism and effective use of resources; and avoids unnecessary duplication and overlap.

We also seek Congress' support for the four components of AMERICA 2000. The four tracks of AMERICA 2000 are themselves interrelated and interdependent -- the loss or weakening of any one track will have detrimental impacts upon the other three, and thus upon the Nation's ability to spur comprehensive educational reform. To this end, we urge Congress to pass the "AMERICA 2000 Excellence in Education Act."

Chairman Ford, Chairman Brown, members of your two committees, that concludes our testimony. Thank you again for this historic opportunity to appear before both of your committees to present the President's strategy for improving mathematics and science education. We would be pleased to respond to any questions you may have.

**Appendix: FY 1993 Mathematics and Science Education
Budget Highlights by Agency**

National Science Foundation. In FY 1993, the National Science Foundation (NSF) will aggressively pursue its strategy to spur systemic reform of state school systems. Through the alliances and partnerships among all major players in the educational system forged under NSF's state systemic reform initiative, NSF will support exemplary projects for reform of state elementary and secondary educational delivery systems; school system-wide or district-wide teacher enhancement activities; and teacher preparation programs that link schools of education with disciplinary departments within universities. In addition, NSF will intensify efforts to make fundamental changes in the science, mathematics, and engineering education of underrepresented minority students. Systemic programs, which cover the elementary and secondary and undergraduate continuum, will raise the quality of education received by such students and increase the number choosing to participate in these fields.

To satisfy its rapidly expanding responsibilities and ensure its leadership role in science, mathematics, engineering, and technology education, the Foundation is designing a new organizational structure for its educational programs. This organizational reform will improve the formulation of NSF programs and advance the Foundation's reform agenda. Furthermore, NSF will be strengthening its monitoring and evaluation activities; expanding its dissemination mechanisms; and providing better technical assistance to potential bidders and awardees of NSF grants.

The Foundation's FY 1993 budget request for mathematics and science education totals \$537.2 million, an increase of \$15.4 million or 2.95 percent from FY 1992. NSF's budget request includes the following:

- \$286.2 million for elementary and secondary education;
- \$146.3 million for undergraduate education;
- \$73.9 million for graduate education; and
- \$30.8 million for public science literacy.

Department of Health and Human Services. In FY 1993, the Department of Health and Human Services (HHS), particularly the National Institutes of Health, will extend its efforts to improve public understanding of the life sciences by expanding its speakers bureau, developing exhibits, and supporting national media programs on a variety of biomedical research issues. HHS will continue to encourage and support direct involvement of its scientists in elementary and secondary classrooms and with elementary and secondary teachers in a variety of settings. For 1993, as part of its new Science Teaching Enhancement Award Program, HHS will implement a Pre-Service Teacher Training Program targeted at future K-12 teachers.

The Department of Health and Human Services' FY 1993 budget request for math and science education totals \$416.5 million, an increase of \$4.5 million or 1.1 percent from FY 1992. HHS's budget request includes the following:

- \$21.8 million for elementary and secondary education;
- \$25.0 million for undergraduate education;
- \$364 million for graduate education; and
- \$5.6 million for public science literacy.

Department of Defense. The Department of Defense's efforts to ensure that the Nation has an adequate supply of future scientists and engineers are supported through the Department's graduate and post-doctoral grant programs. Undergraduate programs are also available to improve educational performance and teaching methods for skill training programs for DOD personnel.

The Department of Defense's FY 1993 budget request for math and science education totals \$416.0 million, which is equal to the FY 1992 appropriation. DOD's budget request includes the following:

- \$4.97 million for elementary and secondary education;
- \$176.2 million for undergraduate education; and
- \$234.8 million for graduate education.

Department of Education. For FY 1993, the Department of Education (ED) will continue to support the development of world class national standards for student achievement in science and the development of state K-12 curriculum frameworks in math and science, and plans for teacher education certification, inservice staff development, and recertification appropriate to the standards. The Department is also seeking \$36 million for a new teacher enhancement program, to be tied to the standards and curricular framework. Under this program, expert math and science teachers from secondary schools will provide intensive inservice training to all elementary and middle school teachers in selected schools districts. The Department has also proposed that 25 percent (\$62 million) of the funds for the Eisenhower Mathematics and Science State Grant Program be used by institutions of higher education in each state only for teacher training efforts of at least twenty days duration.

Finally, the Department is proposing two new competitive grant programs for bilingual education, which are designed to: (1) provide bilingual instructional programs focusing on mathematics and science to students with limited English proficiency; and (2)

provide bilingual education teacher training, with a particular emphasis on mathematics and science.

The Department of Education's FY 1993 budget request for math and science education totals \$392.5 million, an increase of \$98.7 million or 33.6 percent from FY 1992. The Department's budget request includes the following:

- \$371.2 million for elementary and secondary education;
- \$21.0 million for undergraduate education;
- \$0.33 million for public science literacy.

Department of Energy. In FY 1993, the Department of Energy (DOE) will sponsor the Second Annual National Science Bowl for high school students. The Bowl will involve 32 teams selected from regional competitions among approximately 12,000 students. Other DOE activities will include expanded support for rural-urban partnerships with DOE laboratories, and expanded alliances between DOE laboratories and facilities with minority colleges and universities. These alliances are intended to encourage students to pursue careers in environmental sciences and waste management. DOE will also lead a new interagency teacher enhancement initiative that will utilize the federal laboratories.

The Department of Energy's FY 1993 budget request for math and science education totals \$113.2 million, an increase of \$4.65 million or 4.3 percent from FY 1992. DOE's budget request includes the following:

- \$32.4 million for elementary and secondary education;
- \$56.9 million for undergraduate education;
- \$19.6 million for graduate education; and
- \$4.3 million for public science literacy.

Department of the Interior. In FY 1993, over 3 million teachers and students will be reached through the National Park Service's "Parks as Classrooms" program, which builds science activities around park resources. At the same time, 2,000 teachers will participate in the U.S. Geological Survey (USGS) Joint Education Initiative (JeDI) workshops. These workshops will teach them how to use CD-ROM technology to improve their high school science classes. In addition, 100 college professors will improve their teaching skills during short-term USGS faculty preparation programs. Over 500 students will work as summer interns for the U.S. Fish and Wildlife Service during FY 1993, thus improving their science skills and becoming exposed to science and its principles through fish and wildlife issues.

The Department of the Interior's FY 1993 budget request for math and science education totals \$88.4 million, an increase of \$5.7 million or 6.9 percent from FY 1992. The Department's budget request includes the following:

- \$25.3 million for elementary and secondary education;
- \$8.7 million for undergraduate education;
- \$11.1 million for graduate education; and
- \$43.3 million for public science literacy.

National Aeronautics and Space Administration. In FY 1993, NASA will begin to implement its ten-year Education Strategic Plan, developed in concert with the National Education Goals and the President's CEHR initiative. This strategic plan will guide the agency's efforts in both precollege and higher education, with significant emphasis to be placed on underrepresented groups, educational technology, evaluation, dissemination, and leveraging activities. NASA will complete in FY 1993 the congressionally directed feasibility and implementation study regarding the proposed National Scholars Program, designed to increase substantially the number of underrepresented groups at the PhD level in science and engineering over a ten-year period. The agency also will significantly expand its teacher enhancement programs.

Finally, NASA will complete in FY 1993 the implementation of the National Space Grant College and Fellowship Program. The Program encompasses 50 state consortia of colleges, universities, nonprofit organizations, industry, and state and local governments, a total of approximately 350 institutions. A significant component of this Program is educational outreach at the elementary and secondary level, emphasizing the CEHR priorities.

NASA's FY 1993 budget request for math and science education totals \$82.2 million, an increase of \$4.5 million or 5.8 percent from FY 1992. NASA's budget request includes the following:

- \$16.7 million for elementary and secondary education;
- \$32.4 million for undergraduate education; and
- \$33.2 million for graduate education.

Department of Agriculture. With its commitment to advance minority participation in mathematics and science, the Department of Agriculture (USDA) has more than doubled the funding for the 1890 Institution Teaching and Research Capacity Building Grants Program since the program was launched in FY 1990. USDA has also expanded its Graduate Fellowship Grants Program to reduce shortages of scientific expertise and is stimulating curricula revitalization and faculty development through its Higher Education Challenge Grants Program.

The Department of Agriculture's FY 1993 budget request for math and science education totals \$22.65 million, an increase of \$2.3 million or 11.3 percent from FY 1992. USDA's budget request includes the following:

- \$0.72 million for elementary and secondary education;
- \$13.5 million for undergraduate education; and
- \$8.43 million for graduate education.

Smithsonian Institution. The Smithsonian Institution intends in FY 1993 to strengthen and expand its programs in education, especially at the elementary and secondary level. Major efforts include: (1) Leadership Institutes (located at the National Science Research Center), which prepare educators from across the country to spearhead efforts to improve elementary science education in their districts; (2) Project Star (Smithsonian Astrophysical Observatory), which develops innovative high school teaching materials in astronomy and trains master teachers to implement courses based on the materials; and (3) Education Outreach (National Air and Space Museum), which develops and disseminates materials to assist teachers, especially in fostering school children's interest in science.

The Smithsonian Institution's FY 1993 budget request for math and science education totals \$10.0 million, an increase of \$80,000 or 0.84 percent from FY 1992. The Smithsonian's budget request includes the following:

- \$0.63 million for elementary and secondary education;
- \$0.50 million for graduate education; and
- \$8.9 million for public science literacy.

Environmental Protection Agency. In FY 1993, the Environmental Protection Agency (EPA) will provide \$3 million in grants to consortia of post-secondary institutions to operate an environmental training and education program, and more than \$2 million to provide grants to support local, state, and non-profit environmental education. The EPA Office of Environmental Education (OEE) is developing a clearinghouse of

information on environmental education materials, which will eventually include information from all federal agencies. An internship program for college students and fellowship program for in-service teachers to improve training of environmental professionals will also be established.

The Environmental Protection Agency's FY 1993 budget request for math and science education totals \$9.8 million, an increase of \$1.5 million or 18.1 percent from FY 1992. EPA's budget request includes the following:

- \$8.0 million for elementary and secondary education;
- \$0.8 million for undergraduate education; and
- \$1.0 million for graduate education.

Department of Commerce. In FY 1993, the Department of Commerce (DOC) will expand from 25 to 30 the number of fellows participating in its National Institute of Standards and Technology/National Research Council Postdoctoral Research Associateships Program.

The Department of Commerce's FY 1993 budget request for math and science education totals \$3.9 million, and increase of \$180,000 or 5 percent over FY 1992. The Department's educational programs are focused on the graduate level.

Figure 1: FY 1993 Federal Math/Science Education Priority Framework

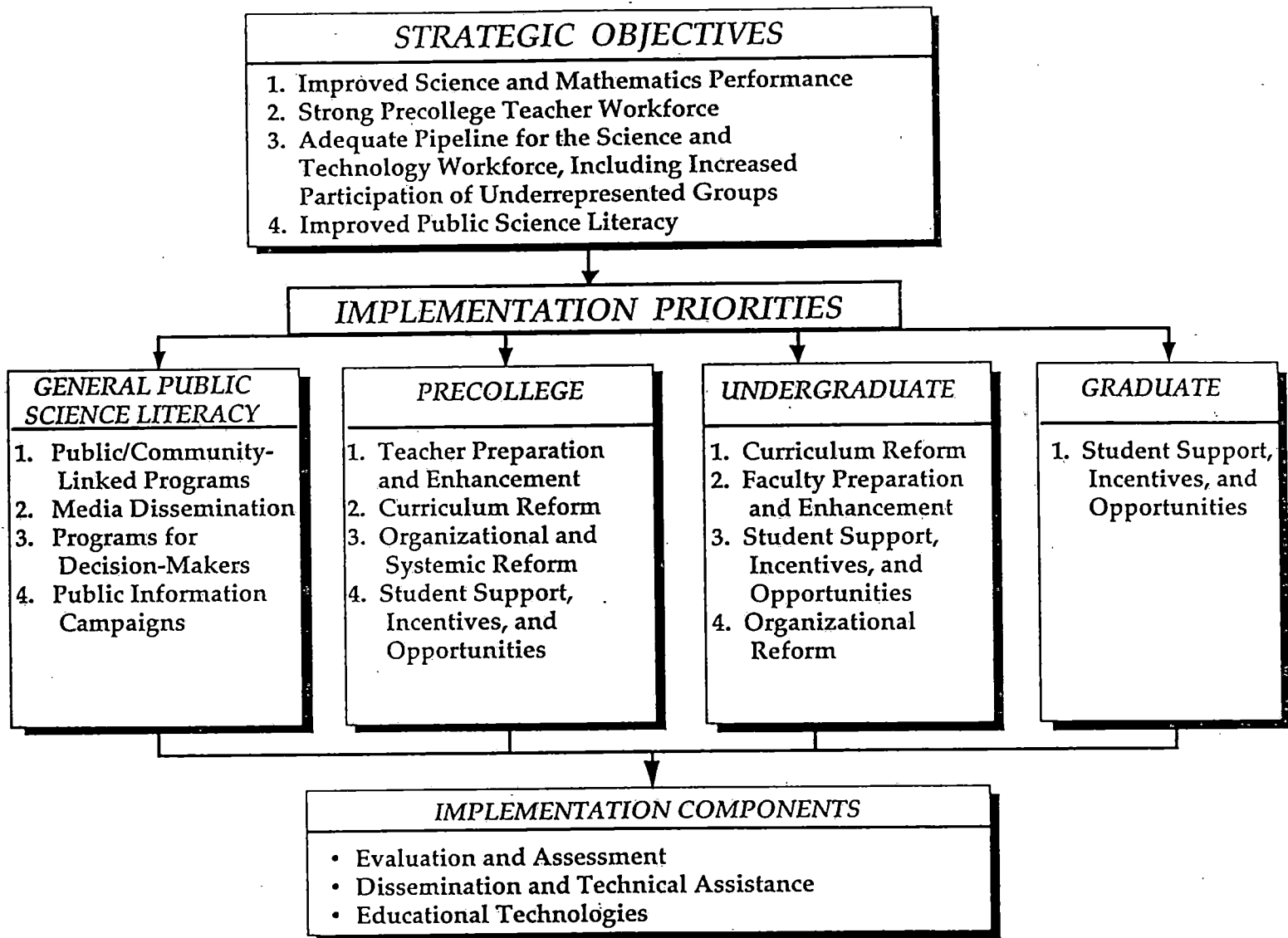


Figure 2: FY 1992-1993 Growth by Program Element (dollars in millions)

Major Categories/Elements	FY 1992 Baseline	FY 1993 Total Request	Change	Percent Change
Grand Total	\$ 1,954.74	\$ 2,092.23	\$ 137.49	7%
Precollege	\$ 650.71	\$ 767.95	\$ 117.24	18%
Precollege Teacher Preparation and Enhancement	382.56	436.51	53.95	14%
Precollege Curriculum and Materials Development	83.35	91.58	8.23	10%
A. Precollege Instructional Materials Development	61.65	65.87	4.22	7%
B. Precollege Educational Technologies	21.71	25.71	4.00	18%
Precollege Student Incentives and Opportunities	46.48	68.08	21.60	46%
A. Precollege Direct Student Support	27.80	63.46	35.66	128%
B. Bridging to Postsecondary	18.68	4.62	-14.06	-75%
Precollege Organizational Reform	60.34	72.65	12.31	20%
Precollege Comprehensive or Multifaceted Programs	27.35	31.40	4.05	15%
Precollege Dissemination and Technical Assistance	17.63	17.84	0.21	1%
Precollege Program Evaluation and Studies	24.10	40.90	16.80	70%
A. Precollege Evaluation and Assessment	11.10	10.90	-0.20	-2%
B. Precollege Data Collection and Studies				
C. Precollege National Standards and Testing	13.00	30.00	17.00	131%
Precollege Other Total	8.89	8.99	0.10	1%
Undergraduate	\$ 444.25	\$ 480.77	\$ 36.52	8%
Undergraduate Program Evaluation and Studies	3.60	3.90	0.30	8%
A. Undergraduate Evaluation and Assessment	3.60	3.90	0.30	8%
B. Undergraduate Data Collection and Studies				
Undergraduate Educational Technology	31.00	31.00	0.00	0%
Undergraduate Dissemination and Technical Assistance				
Faculty Preparation and Enhancement	36.66	49.22	12.56	34%
Undergraduate Curriculum and Materials Enhancement	103.45	97.71	-5.74	-6%
A. Undergraduate Course and Curriculum	80.28	74.59	-5.69	-7%
B. Undergraduate Laboratory Equipment	23.17	23.12	-0.05	0%
Undergraduate Student Incentives and Opportunities	168.55	190.05	21.50	13%
A. Undergraduate Financial Assistance	131.63	134.65	3.02	2%
B. Undergraduate Research Experiences and Coops	36.67	50.05	13.38	36%
C. Bridging to Four Year or Graduate School	0.25	5.35	5.10	2040%
Undergraduate Organizational and Operational Reform	25.90	32.40	6.50	25%
Undergraduate Comprehensive or Multifaceted Programs	56.30	58.04	1.74	3%
Undergraduate Other Total	18.80	18.46	-0.34	-2%
Graduate	\$ 768.88	\$ 750.20	\$ -18.68	-2%
Predctoral Fellowships	99.77	99.54	-0.23	0%
Predctoral Traineeships	180.28	160.81	-19.47	-11%
Postdoctoral Fellowships	98.79	98.70	-0.09	0%
Postdoctoral Traineeships	154.79	155.62	0.83	1%
Graduate Program Evaluation and Studies	0.10	0.10	0.00	0%
A. Graduate Evaluation and Assessment	0.10	0.10	0.00	0%
B. Graduate Data Collection and Studies				
Graduate Other Total	235.16	235.43	0.27	0%
Public Science Literacy	\$ 90.89	\$ 93.32	\$ 2.43	3%
Education Programs for Decision Makers	1.74	5.10	3.36	193%
Media Dissemination	21.73	22.09	0.36	2%
Public or Community Linked Dissemination	56.90	59.50	2.60	5%
Public Information Campaigns	6.95	6.33	-0.62	-9%
Public Science Literacy Program Evaluation and Studies	3.57	0.30	-3.27	-92%
A. Public Science Literacy Evaluation and Assessment	3.57	0.30	-3.27	-92%
B. Public Science Literacy Data Collection and Studies				
Public Science Literacy Other Total				

Figure 3: FY 1993 Budget Request by Agency and Major Program Area
(dollars in millions)

MAJOR CATEGORIES	Total Request	USDA	DOC	DOD	ED	DOE	HHS	DOI	SI	NSF	NASA	EPA
GRAND TOTAL	2092.23	22.65	3.68	415.97	392.53	113.21	416.45	88.43	10.04	537.20	82.27	9.80
Precollege Total	767.95	0.72		4.97	371.20	32.39	21.84	25.30	0.63	286.20	16.70	8.00
Teacher Preparation/Enhancement	436.51			0.63	286.50	16.84	5.19	2.00	0.33	114.80	7.92	2.30
Curriculum Development	91.58				2.70	4.51	2.54	6.90	0.22	67.70	5.00	2.01
Comprehensive/Organizational Reform	104.05				20.00	3.58	4.14			74.00	0.29	2.04
Student Incentives	68.08	0.72		4.34	20.00	6.55	9.97	14.71		11.00	0.58	0.21
Program Evaluation and Studies, and Dissemination	58.74				42.00	0.57		0.15	0.08	13.80	0.70	1.44
Other	8.99					0.34		1.54		4.90	2.22	
Undergraduate Total	480.77	13.50		176.20	21.00	56.87	25.00	8.72		146.30	32.38	0.80
Faculty Preparation/Enhancement	49.22					11.52	0.08	1.82		30.80	5.00	
Curriculum Development	97.71			38.90		3.22	0.16	1.03		52.90	1.50	
Comprehensive/Organizational Reform	90.44	13.50		6.80	6.00		22.52	0.43		28.80	12.39	
Student Incentives	190.05			100.50	15.00	25.05	2.24	5.33		28.80	12.33	0.80
Other, includes education technologies, program evaluation and dissemination	53.35			30.00		17.08		0.11		5.00	1.16	
Graduate Total	750.20	8.43	3.68	234.80		19.62	364.01	11.07	0.50	73.90	33.19	1.00
Predoctoral Fellowships	99.54		0.30	16.70		8.21	5.64	0.10	0.09	52.40	15.30	0.80
Predoctoral Traineeships	160.81	4.00		3.90		0.55	128.99	10.42		8.40	4.35	0.20
Postdoctoral Fellowships	98.70		3.38	10.50		6.43	51.23	0.55	0.41	13.10	13.10	
Postdoctoral Traineeships	155.62	4.43				0.50	150.69					
Other	235.53			203.70		3.93	27.46				0.44	
Public Science/Literacy Total	93.32				0.33	4.34	5.60	43.34	8.91	30.80		
Education Programs for Decision Makers	5.10					0.35		3.35		1.40		
Media Dissemination	22.09					1.13	1.21	3.25		16.50		
Public/Community-Linked Dissemination	59.50					1.34	3.23	33.12	8.91	12.90		
Public Information Campaigns	6.33				0.33	1.42	0.96	3.62				
Public Science Literacy Evaluation	0.30					0.10	0.20					

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

September 26, 1991

108- Elementary and
54 Math
54 Science

Secondary Math '92

MEMORANDUM FOR JEAN BUNTON
SPEECHWRITING

FROM LISA TOWER COLDWELL *FTC 6272*
DIRECTOR'S OFFICE

SUBJECT EXCELLENCE IN MATH AND SCIENCE TEACHING
ROSE GARDEN CEREMONY

Per our discussion today, I've gathered some information that I hope will be helpful.

I. POINTS OF CONTACT

Barbara Smith
Mary Lyn Ernstthal (703) 243-7100

You may wish to speak with Debbie Murray from the National Science Teachers Association at (301) 220-0870. Debbie is our point of contact for the teachers. Madeline Long is the program director at the National Science Foundation, and she can be reached at 357-9527.

II. PAST PRESIDENTIAL PARTICIPATION

1983: President Reagan met with awardees in the East Room.

1984: President Reagan met with awardees on the South Lawn (he did not speak -- he walked out of the White House, shook a few hands, and departed on Marine One). Awards ceremony was held at the National Academy of Sciences with George Keyworth and Erich Bloch present.

1985: President Reagan met with awardees on the South Lawn (he did not speak or shake hands -- he walked out of the White House to Marine One). Awards ceremony was held in the Herbert Hoover Auditorium of the Commerce Department building with George Keyworth and Erich Bloch present.

1986: Teachers met with then Vice President Bush in OEOB. Awards ceremony was held at the National Academy of Sciences with Dr. Graham, William Bennett, and Erich Bloch present.

- 1987:** President Reagan spoke to the teachers in the Old Executive Office Building. Awards ceremony was held at the National Academy of Sciences with Dr. Graham, William Bennett, and Erich Bloch present.
- 1988:** President Reagan and then Vice President Bush were not available. Awards ceremony was held in the OEOB with Graham and Bloch present.
- 1989:** President Bush and Vice President Quayle met with the teachers in the OEOB. Awards ceremony was held in the Renwick Gallery with Dr. Bromley and Erich Bloch present.
- 1990:** Elementary teachers: President and Mrs. Bush, Vice President Quayle met with teachers in the Rose Garden. Awards ceremony was held in OEOB with Bromley and Bernthal present.
- Secondary teachers: President Bush was not available. Awards ceremony was held in the OEOB with Bromley and Bernthal present.

III. ADDITIONAL INFORMATION

A. Schedule of Events

B. Presidential Awards Fact Sheets

Please let me know if there is anything else you need. I'll also let you know when our final preparation meeting is scheduled.

Acknowledgements...

In the Rose Garden, 10 a.m.

Number of Minority Awardees

1983	9
1984	11
1985	4
1986	9
1987	8
1988	6
1989	10 *
1990	12 (elementary), 8 (secondary)

* 2 of these were teachers from U.S. Territories chosen in 1988. Therefore, the number of minorities, 8-9, has been about the same since 1986.

PA's Married to PA's

Warren Van Camp (86 AK Sci) & Beverly Van Camp (89 AK math) [same school]

Jane Bray Nelson (88 FL sci) & James Nelson (85 PA sci)

Joreen Piotrowsli-Hendry (84 MA sci) & Edward Hendry (86 NH sci)

Gil Alexander (87 MT sci) & Marilyn Alexander (89 MY sci)

Guy Mauldin (86 Tn math) & Deanna Mauldin (88 TN math)

Joseph Stanislaus (86 Territories, American Samoa, sci) & Floramma Stanislaus (89 Terr., American Samoa, math) [same school]

Gail Burrill (85 WI math) & John Burrill (87 WI math) [same school]

Rebecca Dewey (87 VA sci) & George Dewey (90 VA sci)

Paul Hickman (88 NY sci) & Jenifer Bond Hickman (90 MA sci)

Wendy Rose / Rob't Rose *

1991 PRESIDENTIAL AWARDS FOR EXCELLENCE IN SCIENCE AND MATHEMATICS TEACHING

Schedule of Events
Secondary Awards Week: March 10-15, 1992

Tuesday, March 10

3:00-5:00 p.m. Registration (Lobby Area, Omni Shoreham Hotel)
5:30 p.m. Buses leave the Omni Shoreham Hotel for the U.S. State Department
6:00 p.m. Reception (Diplomatic Reception Rooms, State Department)
7:00 p.m. Welcome and Introductions (Benjamin Franklin Room, State Department)

Walter E. Massey, Director, National Science Foundation

Remarks

Luther S. Williams, Assistant Director,
Education and Human Resources, National Science Foundation

7:15 p.m. Dinner

8:15 p.m. Introduction of Speaker

David Kearns, Deputy Secretary, U.S. Department of Education

Keynote Address

**A CHANGING WORLD: THE NEED FOR NATIONAL STANDARDS IN
SCIENCE AND MATHEMATICS**

Governor Roy Romer (Colorado)

9:10 p.m. Buses leave the State Department for the Omni Shoreham Hotel

Wednesday, March 11

7:30-8:30 a.m. Breakfast (Empire Room, Omni Shoreham Hotel)

Welcome

Madeleine J. Long, PAESMT Program Director, DTPE,
National Science Foundation

Wednesday, March 11 (continued)

8:30 a.m. Congratulations

Lynn Glass, President, National Science Teachers Association

Iris Carl, President, National Council of Teachers of Mathematics

8:50 a.m. Remarks on Public Relations

Kathleen Holmay, PAESMT Media Consultant

9:00 a.m. Orientation

John M. Fowler, PAESMT Project Director,
National Science Teachers Association

9:30 a.m. Keynote Address

PRESIDENTIAL AWARDEES AS LEADERS

Madeleine J. Long, PAESMT Program Director, DTPE, NSF

10:15 a.m. Buses leave the Omni Shoreham Hotel for the
National Academy of Sciences

11:00 a.m.-12:15 p.m. Awards Ceremony (Auditorium, National Academy of Sciences)

Welcome

Frank Press, President, National Academy of Sciences

Remarks

Walter E. Massey, Director, National Science Foundation

Keynote Address

Admiral Richard H. Truly, Administrator,
National Aeronautics and Space Administration

Award Presentations

Walter E. Massey, Director, NSF

Admiral Richard H. Truly, Administrator, NASA

Luther Williams, Assistant Director, EHR, NSF

Madeleine J. Long, PAESMT Program Director, DTPE, NSF

Wednesday, March 11 (continued)

12:15-1:45 p.m. Lunch/Press Interviews (The Great Hall, National Academy of Sciences)

2:00 p.m. Buses leave the National Academy of Sciences for the
Omni Shoreham Hotel

2:30-4:00 p.m. THE NETWORKING SESSION (Diplomat Room, Omni Shoreham Hotel)

Kay Wagner, Triangle Coalition for Science
and Technology Education

5:15 p.m. Buses leave the Omni Shoreham Hotel for the
National Academy of Sciences

6:00 p.m. Group Photos (Auditorium, National Academy of Sciences)

7:00 p.m. Program (Auditorium, National Academy of Sciences)

Welcome

Robert McC. Adams, Secretary, Smithsonian Institution

Introduction of Speaker

Luther S. Williams, Assistant Director, EHR, NSF

Keynote Address

A CHANCE FOR AMATEURS TO DO SOME SERIOUS SCIENCE

Freeman J. Dyson, The Institute for Advanced Study,
Princeton University

8:00 p.m. Reception (Great Hall, National Academy of Sciences)

9:30 p.m. Buses leave the National Academy of Sciences for the
Omni Shoreham Hotel

Thursday, March 12

7:30 a.m. Breakfast (Blue Room, Omni Shoreham Hotel)

Remarks

Charles R. Puglia, Division Director,
Division of Teacher Preparation and Enhancement
National Science Foundation

Thursday, March 12 (continued)

8:30 a.m.	Introduction of Speaker Charles R. Puglia , Division Director, DTPE, NSF Address Congressman Ray Thornton (D-2nd AR)
9:15 a.m.	Introduction of Organization Representatives Madeleine J. Long , PAESMT Program Director, DTPE, NSF Remarks Wallace D. Rogelstad , President-Elect, Council of Presidential Awardees in Mathematics Robert E. Lewis , President-Elect, Association of Presidential Awardees in Science Teaching Linda Gojak , Representative, Society of Elementary Presidential Awardees
10:00-11:15 a.m.	Individual Photo Session
10:00 a.m.-12:30 p.m.	Optional Meetings with Congressional Representatives and Senators
Noon	On-your-own lunch
1:15 p.m.	Buses leave the Omni Shoreham Hotel for the White House
2:30-2:45 p.m.	Remarks (Rose Garden) President Bush
2:45-3:30 p.m.	Press Interviews (NW Lawn, The White House)
3:30 p.m.	Buses leave the White House for the Omni Shoreham Hotel
3:30-5:30 p.m.	Optional Meetings with Congressional Representatives and Senators
7:00 p.m.	Reception (Garden Court, Omni Shoreham Hotel)
8:00 p.m.	Dinner (Diplomat Room, Omni Shoreham Hotel)

Thursday, March 12 (continued)

9:00 p.m.

Introduction of Speaker

Luther S. Williams, Assistant Director, EHR, NSF

Keynote Address

THE RELATIONSHIPS OF APPLICATIONS OF MATHEMATICS TO
MATHEMATICS AND TO MATHEMATICS EDUCATION**Henry O. Pollak**, Visiting Professor of Mathematics,
Teachers College, Columbia UniversityFriday, March 13

7:00 a.m.

Buses leave the Omni Shoreham Hotel for the Key Bridge Marriott

7:30-9:00 a.m.

Discipline Breakfasts (Key Bridge Marriott)
Hosted by Cooperating Organizations

Biology (Room: Potomac D)

Hosts: Federation of American Societies for Experimental
Biology, National Association of Biology Teachers

Physics (Room: Potomac C)

Hosts: American Association of Physics Teachers American
Institute of Physics

Chemistry (Room: Potomac B)

Host: American Chemical Society

Earth Science/Geology (Room: Georgetown-Salon C)

Hosts: National Earth Science Teachers Association, American
Geological Institute, National Association of Geology Teachers,
American Geological Union, American Meteorological Society

Mathematics (Room: Francis Scott Key A&B)

Hosts: National Council of Teachers of Mathematics,
The Mathematical Association of America

9:15 a.m.-12:00 p.m.

Sharing of Favorite Lessons (Key Bridge Marriott)

Group A: Mathematics and Physics (Washington Room)

Facilitator: **Jack Hehn**, American Association of
Physics Teachers

Group B: Mathematics and Physics (Jefferson Room)

Facilitator: **Jim Hassel**, National Council of Teachers
of Mathematics

Friday, March 13 (continued)**Group C: Mathematics (Monroe Room)**

Facilitator: **Iris Carl**, National Council of Teachers of Mathematics

Group D: Mathematics (Lincoln Room)

Facilitator: **Debra Haimo**, The Mathematical Association of America

Group E: Mathematics (Adams Room)

Facilitator: **Marilyn Hala**, National Council of Teachers of Mathematics

Group F: Biology, Chemistry and Earth Science (Madison Room)

Facilitator: **Martha Turckes**, American Chemical Society

Group G: Biology, Chemistry and Earth Science (Jackson Room)

Facilitator: **Andy Verdon**, American Geological Institute

Group H: Biology, Chemistry and Earth Science (Georgetown-Salon C)

Facilitator: **Sue Ann Anderson**, Federation of American Societies for Experimental Biology

12:15-1:45 p.m.

Lunch (Potomac Salons A&B, Key Bridge Marriott)

Introduction of Speaker

Ethel L. Schultz, Section Head, Division of Teacher Preparation and Enhancement, National Science Foundation

Keynote Address

BUILDING ON A DECADE OF ACHIEVEMENTS: THE CURRENT AND FUTURE NSF MATH AND SCIENCE EDUCATION AGENDA

Luther S. Williams, Assistant Director,
Education and Human Resources, National Science Foundation

Friday, March 13 (continued)

2:00-3:45 p.m.

Issues and Practices Seminars (Key Bridge Marriott)

MATHEMATICS APPLICATIONS ALL AROUND US: HOW TO FIND THEM;
HOW TO USE THEM (Washington Room)Facilitator: **Henry O. Pollak**, Teachers College,
Columbia UniversityRecorder: **Peter G. Braunfeld**, Program Director, DTPE, NSFA CASE FOR INTERDISCIPLINARY MATHEMATICS AND SCIENCE AT THE
SECONDARY SCHOOL LEVEL (Jefferson Room)Facilitator: **Ethel Schultz**, Section Head, DTPE, NSFRecorder: **Joyce B. Evans**, Program Director, DTPE, NSFMATHEMATICS FOR ALL: MAKING REALITIES OUT OF VISIONS
(Monroe Room)Facilitators: **Miriam Leiva**, Program Director, DTPE, NSF and
Charles Puglia, Division Director, DTPE, NSFRecorder: **Mary A. Bahns**, Program Director, DTPE, NSFHOW TO MAKE A DIFFERENCE WHEN YOU RETURN TO YOUR SCHOOL
(Madison Room)Facilitator: **Larry G. Enochs**, Program Director, DTPE, NSFRecorder: **Herbert E. Wylen**, Program Director, DTPE, NSFCHALLENGING ISSUES, CHANGING ROLES AND NEW PERSPECTIVES
(Lincoln Room)Facilitators: **Madeleine J. Long**, PAESMT Program Director,
DTPE, NSF and **Marjorie Enneking**, Program Director, DTPE, NSFRecorder: **Kerri-Ann Jones**, Chief of Technology Development
and Enterprise Branch, Agency for International Development

3:55 p.m.

Buses leave the Key Bridge Marriott for the Omni Shoreham Hotel

5:20 p.m.

Buses leave the Omni Shoreham Hotel for The Mathematical Association
of American

Friday, March 13 (continued)

5:45-6:45 p.m. Reception, The Mathematical Association of America
(mathematics awardees and guests)

Evening Free Night or dinner with NSF Program Officers (list of restaurants and
local clubs included in registration packet)

Saturday, March 14

7:30 a.m. Buses leave the Omni Shoreham Hotel for the Willard Hotel

8:00-9:30 a.m. Breakfast/Private Sector Gift Raffle (Ballroom, Willard Hotel)

9:45 a.m.-12:30 p.m. APPROPRIATE USES OF GRANT MONIES

Charles R. Puglia, Division Director, DTPE, NSF

Andrea R. Kline, Grants and Contracts
Specialist, Division of Grants and Contracts,
National Science Foundation

RESPONSIBILITIES, UPDATES AND FUTURE ACTIVITIES

Ethel L. Schultz, Section Head, DTPE, NSF

Madeleine J. Long, PAESMT Program Director, DTPE, NSF

12:40 p.m. Buses leave the Willard Hotel for the Omni Shoreham Hotel

Afternoon Free Time

6:00 p.m. Buses leave the Omni Shoreham Hotel for the Spirit of Washington
Cruise Ship

6:30 p.m. Boarding Time (Spirit of Washington Cruise Ship)

7:00-10:00 p.m. Dinner (Spirit of Washington Cruise Ship)

10:00 p.m. Buses leave the Spirit of Washington Cruise Ship for the Omni Shoreham
Hotel

Sunday, March 15

Departures

ADDRESS LIST FOR PAESMT FUNCTIONS

The Omni Shoreham Hotel
2500 Calvert Street, NW

U.S. Department of State
2201 C Street, NW

National Academy of Sciences
2101 Constitution Avenue, NW

The White House (Rose Garden)
East Visitor's Gate
Pennsylvania Avenue, NW

Key Bridge Marriott
1401 Lee Highway
Arlington, VA

Willard Hotel
1401 Pennsylvania Avenue, NW

The Mathematical Association of America
1529 Eighteenth Street, NW

The Spirit of Washington Cruise Ship
Pier 4
6th & Water Street, SW

THE WHITE HOUSE
WASHINGTON

3/9

Michelle:

You may have this already,
but just in case -- it's an
angry letter from one of
the primary teacher awardees.

Her suggestion isn't really
workable, but I thought
you might want to review
the letter.

Lisa

"Document Control"

TYPE: INFORMATION
ORIGINATOR: 02

DOCUMENT NUMBER: 9200146
DIRECTORATE STATUS

STATUS C

FROM: KIMBALL, Kim: PRESIDENTIAL SCHEDULING

TO: DR. D.A. BROMLEY

DATE OF
CORRESPONDENCE: 01/09/92

SUBJECT: SHE IS FORWARDING A COPY OF A LETTER WHICH THEY
RECEIVED FROM BARBARA BANNISTER, A RECIPIENT OF THE
1991 PRESIDENTIAL AWARD FOR EXCELLENCE IN SCIENCE
AND MATH TEACHING.

DIRECTORATE
ASSIGNED: STAFF
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
Damar Hawkins

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

OSTP RECEIVED: 01/14/92 DEPT RECEIVED:
FILE: DAB-AWARDS

CENTRAL FILES:

0146 I

THE WHITE HOUSE
WASHINGTON

January 9, 1992

92

To: Office of Science
and Technology Policy

From: Kim Kimball
Presidential Scheduling.

Wanted to be sure you saw
a copy of a letter we have
received in our office.

RECEIVED

DEC 16 REC'D
RECEIVED
SCHEDULING
OFFICE

JAN 14 P 3:31

December 1, 1991

Dear Mr. Bush,

Your words in the Rose Garden told me that science and math are important to you and our nation.

Your actions told my students that they are not important to you.

You did not have time to shake my hand but you did have time for professional athletes. I know, because my students told me. They wanted an explanation for why our president did not shake my hand but had time for athletes who were already getting lots of money and rewards from their fans.

My brother recently retired after 15 years playing major league baseball. He can choose now whether or not he ever wants to work again. Every three days during most of his career, he made my entire salary for that year.

I have taught children for 15 years. I have about 30 years to go. I don't throw baseballs, I make a difference to the future.

The children of the year 2000, the ones you expect to be the best in the world, are in my classroom now. They don't understand why I did not shake your hand, why you did not have time for more than a speech. Mr. President, during my week in Washington, I heard more than thirty speeches, welcoming addresses, and messages of congratulations. I don't remember your words. I certainly would have remembered shaking your hand.

Imagine this, you give us a printed statement making the points you feel are important. Then set up a quick photo session instead. Take pictures of us two at a time and it would take about as long as your speech. (10 seconds per pair x 54 pairs = 540 seconds or 9 minutes. I know it could be done, my senators and representatives were able to get pictures taken just that fast.)

The Awardees would have a better sense that our work really means something to the nation and you get the credit for being the "education" president. 300,000 children nationwide, (108 awardees x 300 children in the average school) will know this year that science and math are important enough for you to recognize teachers and take time for a picture. Irregardless of my politics, I would certainly hang a picture of myself with the president.

Think about it before the high school awardees arrive in March. Make your support for science clear, not just to the teachers, but to their students as well.

Sincerely,

Barbara Bannister

1991 Presidential Award for Excellence in Science and Math Teaching
1991 Oregon Council for the American Electronics Assn. Science Teacher of the Year
1990 Oregon Science Teacher's Assn. Region 1 Science Teacher of the Year

Presidential Awards for Excellence

In Science and Mathematics Teaching

Preliminary Statistics on 1991 Recipients

Presidential Awards are given to one science and one mathematics teacher in each of the 50 states, the District of Columbia, Puerto Rico, Department of Defense Dependents schools, and a group of U.S. Territories. Preliminary data on the 1991 middle/junior high and senior high awardees is given below.

Of the 54 Science Teachers:

38 teach high school
16 teach junior high/middle school

27 are women
27 are men

High School Teachers

12 teach physics
10 teach chemistry
14 teach biology/life sciences
1 teaches earth science
1 teaches physical science

Junior/Middle School Teachers

1 teaches ecology
3 teach earth science
1 teach physical science
6 teach general science
5 teach biology/life sciences

Of the 54 Math Teachers

42 teach high school
2 teach junior high/middle school

43 are women
11 are men

Of the Total 108 Recipients

80 teach high school
28 teach junior high/middle school

70 are women
38 are men

13 were runners-up in previous yrs.
1 of the 13 was a 4-time runner-up.
1 of the 13 was a 3-time runner-up.
11 of the 13 were 2-time runners-up.

Years of Teaching Experience

15 have 5 to 9 years of teaching
19 have 10 to 14 years of teaching
30 have 15 to 19 years of teaching
33 have 20 to 24 years of teaching
12 have 25 to 29 years of teaching
2 have 30 to 34 years of teaching
2 have 35 or more years of teaching*

*longest teaching experience for one teacher is 49 years.

School Locations

47 teach in suburban schools
7 teach in urban/city schools
29 teach in small towns
8 teach in rural schools
12 teach in inner city schools
5 teach in "other" locations**

**other locations cited:

military base
island district
metropolitan school district

**1991 PRESIDENTIAL AWARDS FOR EXCELLENCE
IN SCIENCE AND MATHEMATICS TEACHING**

Eligibility and Guidelines for Nomination - Secondary

I. Eligibility

- A. Teachers who are assigned at least halftime during the school year to classroom teaching of science or mathematics in a public or private middle/junior or senior high school in a state or one of the eligible jurisdictions (Washington, D.C., Puerto Rico, the Department of Defense Dependents Schools, and the following U.S. Territories as a group--Guam, American Samoa, The Commonwealth of Northern Marianas, the Virgin Islands). Teachers on approved leave in 1990-1991 qualify if they fulfilled the requirements in 1989-1990. "Computer Science" classes count as mathematics courses if the school gives mathematics credit for them.
- B. At least five years teaching experience in science and mathematics.

I. Guidelines for Nomination

The teacher nominees should:

- o have subject matter competence;
- o engage students in direct hands-on science and mathematics inquiry activities, and significantly improve their understanding of science and mathematics;
- o foster curiosity and generate excitement in students, colleagues, and parents;
- o possess an experimental and innovative attitude in their approach to teaching;
- o hold the conviction that all students can and should learn science and mathematics;
- o be sensitive to students' cultural, linguistic, learning and social differences;
- o show evidence of continued interest and growth in their subject matter area and in the mechanics and artistry of teaching;
- o have an understanding of the relationships of science and/or mathematics to learning, and to the interconnectedness of all subject matter;
- o show evidence of involvement, at least at the local level, in the professional responsibilities of their discipline.

**1991 PRESIDENTIAL AWARDS FOR EXCELLENCE
IN SCIENCE AND MATHEMATICS TEACHING**

STATE-LEVEL NOMINATION AND SELECTION PROCEDURES

Teachers are nominated by colleagues, administrators parents and students, and nominations are sent to the appropriate state or jurisdiction chairperson/director. The nominees receive a nomination packet which they complete and return. State and jurisdiction responsibility is separate in science and mathematics.

Mathematics: Nomination and selection procedures at the state level are coordinated by the National Council of Teachers of Mathematics (NCTM). The NCTM identifies a director in each state and eligible jurisdiction to oversee the nomination procedures and to appoint and to chair the state selection committees. In most instances, the state director is the state mathematics supervisor.

Science: Nomination and selection procedures at the state level are coordinated by the Council of State Science Supervisors (CSSS). The CSSS identifies a chairperson in each state and eligible jurisdiction to oversee the nomination procedures and to appoint and to chair the state selection committees. In most instances, the state chairpersons are CSSS members. Since science teachers are represented by several professional organizations, CSSS is asked to make certain that the National Science Teachers Association and the cooperating science organizations (American Association for the Advancement of Science, American Association of Physics Teachers, American Chemical Society, American Geological Institute, American Institute of Physics, Council for Elementary Science International, Federation of American Societies for Experimental Biology, Mathematical Association of America, National Academy of Sciences, National Alliance of Black School Educators, National Association of Biology Teachers, National Association of Elementary School Principals, National Association of Geology Teachers, and National Earth Science Teachers Association) are invited to name representatives to state selection committees. The nominees for the Presidential Awards are judged by their peers, and the composition of the committees implements this capability.

Each State Selection Committee chooses three state awardees in mathematics, and three state awardees in science. The state director or chairperson provides the name and complete documentation for each candidate to the National Selection Committee.

The six elementary state level awardees receive a certificate from the program to commemorate their achievements and are honored in a variety of other ways in their state or jurisdiction. In many states, they receive gifts both from local organizations and from donors to the national program.

NATIONAL SELECTION PROCEDURES

A prestigious group of 24, 12 science educators and scientists and 12 mathematics educators and mathematicians, noted for their contributions to both education and research met for 2-1/2 days in Washington, D.C. in June of this year. This group recommends a final list of awardees to the National Science Foundation (NSF). Members of this National Selection Committee (NSC) are selected by the NSF from the names provided by the cooperating organizations.

The committee members rank the candidates on the basis of the following criteria:

Background and Experience: High ranking to teachers with strong subject matter and educational background, appropriate experience, and involvement in school-based activities.

Evidence of Classroom Success: Section A. High ranking to teachers whose science and mathematics unit design and corresponding activities reveal an understanding of how children learn science or math.

Evidence of Classroom Success: Section B. High ranking to teachers who demonstrate their value of hands-on science experiences or the value of inquiry experiences in mathematics for children and incorporate such activities into their teaching.

Evidence of Classroom Success: Section C. High ranking to teachers whose children's work provide evidence that they have achieved one or more goals of the teacher's program.

Essay: High ranking to teachers with creative and innovative solutions that reflect a working knowledge of national developments and recommends practices in science and mathematics education.

Letters of Support: High ranking for strong letters of support which address specific aspects of the teacher's effectiveness.

Presidential Awards for Excellence

In Science and Mathematics Teaching

National Science Foundation

FOR IMMEDIATE RELEASE
March 9, 1992

CONTACT:
Kathleen Holmay
301-588-6168
John M. Fowler
301-220-0870

PRIVATE SECTOR GENEROUSLY SUPPORTS PRESIDENTIAL AWARDS PROGRAM

(Washington, DC).....The 108 secondary teachers receiving Presidential Awards for Excellence in Science and Mathematics Teaching this week are being further honored by the generous support and impressive number of gifts given to them by businesses, publishers, and associations.

Over 5,173 gifts totaling about \$1,318 per teacher, or \$142,368 in all, have been donated by the private sector to the 1991 Presidential Awards program in a show of support for the importance of high quality science and mathematics teaching.

During the week of March 10-14 as the awardees are honored at official Washington events, they will be able to interact with representatives from the various companies and groups which have donated scientific calculators, software, books, subscriptions, films, memberships, classroom tools, gift certificates, and other items to the program. Additionally, many of the special activities during awards week, such as a reception at the National Academy of Sciences, are made possible by cash donations from many private sector donors.

Contractors: National Science Teachers Association, National Council of Teachers of Mathematics.

Cooperating Organizations: American Association for the Advancement of Science, American Association of Physics Teachers, American Chemical Society, American Geological Institute, American Institute of Physics, Council for Elementary Science International, Council of State Science Supervisors, Federation of American Societies for Experimental Biology, The Mathematical Association of America, National Alliance of Black School Educators, National Association of Biology Teachers, National Association of Elementary School Principals, National Association of Geology Teachers, National Earth Science Teachers Association.

With Support from the National Academy of Sciences.

Project Directors: John M. Fowler, Special Projects, 5112 Berwyn Road (3rd Floor), College Park, MD 20740 (301) 220-0870

Phyllis Marcuccio (Elementary), NSTA, 1742 Connecticut Avenue, N.W., Washington, DC 20009 (202) 328-5800

A complete listing of 1991 gifts to the secondary Presidential Awards program follows:

- * 3M
5 Door Prizes: 3M Model 910 Overhead Projectors.
- * Academic Success Press Inc.
54 SUCCESSFUL MATH STUDY SKILLS Kits (math awardees only).
5 Door Prizes: SUCCESSFUL MATH STUDY SKILLS Books.
- * Addison-Wesley Publishing Company
108 Books: MULTICULTURALISM IN MATH, SCIENCE AND TECHNOLOGY.
Cash Contribution.
- * Allegro Productions, Inc.
54 SCIENCE SCREEN REPORT Videotapes (science awardees only).
- * American Airlines
2 Door Prizes: Round-trip ticket on American Airlines to any American destination within the contiguous United States.
- * American Association for the Advancement of Science
108 Books: SCIENCE FOR ALL AMERICANS.
- * American Association of Physics Teachers
Co-hosting breakfast for physics teachers.
- * American Chemical Society
Hosting breakfast for chemistry teachers.
- * American Geological Institute
54 Copies of 2 Books: THE MAKING OF A CONTINENT; EARTH SCIENCE FOR THE 21ST CENTURY: A Planning Guide (science awardees only).
Co-hosting breakfast for geology/earth science teachers.
- * American Geophysical Union
54 One-year Subscriptions to EARTH IN SPACE (science awardees only).
Co-hosting breakfast for geology/earth science teachers.
- * American Institute of Physics
Co-hosting breakfast for physics teachers.
- * Arlington-Hews, Inc.
108 Books: EXPLORING THE STRUCTURE OF MOLECULES WITH GOOGOLPLEX.
- * Baltimore Gas and Electric Company
Cash Contribution.

-more-

- * Brooks/Cole Publishing Company
54 Copies of TEMATH: TOOLS FOR EXPLORING MATHEMATICS Software (math awardees only).
- * Cabisco Mathematics
54 Books: NOT STRICTLY BY THE NUMBERS (math awardees only).
- * Carolina Biological Supply Company
54 Books: DNA SCIENCE: A FIRST COURSE IN RECOMBINANT DNA TECHNOLOGY (science awardees only).
- * Connecticut Valley Biological Supply Company
54 \$25 Gift Certificates & Catalogs (science awardees only).
- * Consortium for Mathematics and Its Applications
54 Copies of 2 Publications: HIGH SCHOOL LESSONS IN MATHEMATICAL APPLICATIONS; HIMAP MODULE I - THE MATHEMATICAL THEORY OF ELECTIONS (math awardees only).
- * Crystal Productions
1 Door Prize: WATER filmstrip/cassette.
- * Dale Seymour Publications
108 Books: MATHEMATICAL INVESTIGATIONS.
Plus banquet tickets to NCTM Conference. (math awardees only).
- * Duracell Inc.
108 Duracell waist pouches.
- * Edison Electric Institute
Cash Contribution.
- * Editorial Projects in Education/Teacher Magazine
1 Door Prize: One-year subscription to TEACHER MAGAZINE.
- * Edmund Scientific Company
54 \$50 Gift Certificates for Merchandise (science awardees only).
1 Door Prize: Microscope
- * Federation of American Societies for Experimental Biology
Co-hosting breakfast for biology teachers.
- * Gamco Industries, Inc.
54 Gift Certificates & Catalog (math awardees only).
- * Grapevine Publications, Inc.
108 Books: PROBLEM SOLVING SITUATIONS: A TEACHER'S GUIDE.
- * Holt, Rinehart and Winston/Harcourt Brace Jovanovich, Inc.
Cash Contribution.
- * Houghton Mifflin Company
108 American Heritage Dictionaries.
Cash Contribution.

-more-

- * ips Publishing, Inc.
54 Packets of EXAM IN A CAN Software (math awardees only).
- * Intel Foundation
Cash Contribution.
- * J. Weston Walch, Publisher
108 Books: 54 Copies of SCIENCE AND SOCIAL ISSUES (science awardees only); 54 Copies of PROBLEM SOLVING STRATEGIES: RESOURCES FOR MATH TEACHERS (math awardees only).
- * Janson Publications, Inc.
54 Math Resource Books (math awardees only).
- * John and Janet Delmonte Foundation
Cash Contribution.
- * Junior Engineering Technical Society (JETS)
108 Certificates for One Complimentary Registration for A Team Competition.
- * Kaidy International, Inc.
108 NUMBERS CHALLENGE Math Games.
- * Kalmbach Publishing Company
108 Booklets: HOW TO BUY YOUR FIRST TELESCOPE.
108 Posters: THE BEST DEEP-SKY OBJECTS.
10 Door Prizes: One-year Subscription to ASTRONOMY.
- * Key Curriculum Press
54 Copies of 2 Video Tapes: PLATONIC SOLIDS; STELLA OCTANGULA (math awardees only).
- * Laserpoint Software
108 Copies of THE WORKS Software.
- * Learning Things, Inc.
108 Vernier Calipers & Catalogs.
- * Math Aids/Math Products Plus
108 Copies of THE MATHEMATICS CALENDAR 1991.
- * Mathematical Sciences Education Board
108 Copies of (2) publications--COUNTING ON YOU; and MOVING BEYOND MYTHS.
- * McDougal, Littell & Company
Cash Contribution.
- * Milton Roy Company
54 Absorption Spectroscopy Wall Charts (science awardees only).
- * Nalge Company
Cash Contribution.
- * National Association of Biology Teachers
Co-hosting breakfast for biology teachers.

- * National Association of Geology Teachers
Co-hosting breakfast for geology/earth science teachers.
- * National Council of Teachers of Mathematics
54 Copies of the 1991 Yearbook (math awardees only).
Co-hosting breakfast for mathematics teachers.
- * National Earth Science Teachers Association
Co-hosting breakfast for geology/earth science teachers.
- * National Geographic Society
108 Books: 54 Copies of INVENTORS AND DISCOVERERS: CHANGING OUR
WORLD (math awardees only); 54 Copies of REALMS OF THE SEA
(science awardees only).
- * National Science Teachers Association
54 Complimentary Memberships or membership extension (science
awardees only).
54 Copies of THE JASON MEDITERRANEAN PROJECT GRADES 4-6
CURRICULUM (science awardees only).
54 Copies of THE JASON GREAT LAKES PROJECT GRADES 4-12 CURRICULUM
(science awardees only).
54 Science Credits Posters (science awardees only).
54 Books: EDUCATION AND LEARNING TO THINK (science awardees
only).
- * OMNI Magazine
108 One-year Subscriptions to OMNI magazine.
- * PASCO Scientific
5 Door: Basic Electricity Kits.
- * Peter Li, Inc.
108 One-year Subscriptions to TECHNOLOGY & LEARNING.
- * Prentice Hall School Division
108 Books: I AM A TEACHER: A TRIBUTE TO AMERICAS TEACHERS.
- * Reliance Electric Company
Cash Contribution.
- * Scholastic, Inc.
108 One-year Subscriptions to magazine of awardees choice.
- * School Science and Mathematics Association
10 Door Prizes: One-year Membership to SSMA.
- * Science Inquiry Ent.
8 Door Prizes: Books--INVITATIONS TO SCIENCE INQUIRY, Second
Edition.
- * Science Service
108 One-year Subscriptions to SCIENCE NEWS
- * Selecto
3 Door Prizes: QUAD-RULES.

- * Silver Burdett & Ginn
54 Pins to the Association of Presidential Awardees in Science Teaching (APAST) (science awardees only).
Hosting breakfast banquets at the National Convention of the National Science Teachers Association (science awardees only) and the National Convention of the National Council of Teachers of Mathematics (math awardees only).
- * Smithsonian Institution Press
54 Books: SMITHSONIAN'S NEW ZOO (science awardees only).
54 Copies of 2 Posters: EVOLUTION; AND CROSSROADS OF CONTINENTS (science awardees only).
- * South-Western Publishing Company
Cash Contribution.
- * Sunburst Communications
1 Door Prize: \$1000 Gift Certificate for Software.
- * TOPS Learning Systems
1 Door Prize: A Set of TOPS Modules.
- * Teacher Video Production Corporation
6 Door Prizes: Science Laboratory Activity Booklets.
- * Tennelec/Nucleus Inc.
5 Door Prizes: Chart of Nuclides.
- * Tensegrity Systems Corporation
3 Door Prizes: Six Sticks Educational Construction Toys.
- * Texas Instruments
108 Calculators: TI-81s.
Cash Contribution.
- * The Acid Rain Foundation, Inc.
54 Copies of AIR AROUND US (science awardees only); 54 Copies of FOREST DECLINE (science awardees only); 54 Copies of AIR POLLUTANTS' EFFECTS ON FORESTS, Volume 2 (science awardees only).
- * The American Radio Relay League
54 Copies of NOW YOU'RE TALKING! DISCOVER THE WORLD OF AMATEUR RADIO (science awardees only).
- * The Cleveland-Cliffs Foundation
Cash Contribution.
- * The Mathematical Association of America
Co-hosting breakfast for mathematics teachers.
- * The Planetary Society
108 One-year memberships.
- * The Procter & Gamble Company
Cash Contribution.

- * The Science Man Press
108 Books: NUTS & BOLTS BUIDE: A MATTER OF FACT GUIDE TO SCIENCE FAIR PROJECTS.
- * Tom Snyder Productions
13 Door Prizes: 10 Copies of GREAT TEACHING IN THE ONE COMPUTER CLASSROOM; 3 Copies of THE WONDERFUL PROBLEMS OF FIZZ & MARTINA Video.
- * U.S. Bureau of the Census
108 Copies of the "1990 Census Data on CD-ROM."
- * Vernier Software
54 \$35 Coupons for Vernier Software (science awardees only).
- * W.H. Freeman & Company
1 Door Prize: Set of 5 Scientific American Library books.
- * Zephyr Press
108 Full-Color Teaching Posters.

Presidential Awards for Excellence

In Science and Mathematics Teaching

National Science Foundation

MEDIA ADVISORY
March 2, 1992

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SCIENCE & MATHEMATICS TEACHERS TO BE GIVEN PRESIDENTIAL AWARDS

(Washington, DC).....One hundred-and-eight secondary teachers will be in Washington, DC from March 10-15 to receive the prestigious 1991 Presidential Award for Excellence in Science and Mathematics Teaching. The White House announced these awardees and the names of elementary teachers receiving this award last fall. The elementary teachers were honored in the nation's capitol in October.

On Wednesday, March 11, official ceremonies honoring the 108 secondary teachers will commence with an awards ceremony at the National Academy of Sciences. On Thursday, March 12, the teachers will be congratulated by President Bush at the White House.

In addition to the award and trip to Washington, DC for themselves and a guest, the Presidential Award includes a National Science Foundation classroom grant of \$7,500 and many useful teaching tools and other gifts from business and industry, associations, and publishers.

-more-

Contractors: National Science Teachers Association, National Council of Teachers of Mathematics.
Cooperating Organizations: American Association for the Advancement of Science, American Association of Physics Teachers, American Chemical Society, American Geological Institute, American Institute of Physics, Council for Elementary Science International, Council of State Science Supervisors, Federation of American Societies for Experimental Biology, The Mathematical Association of America, National Alliance of Black School Educators, National Association of Biology Teachers, National Association of Elementary School Principals, National Association of Geology Teachers, National Earth Science Teachers Association.
With Support from the National Academy of Sciences.
Project Directors: John M. Fowler, Special Projects, 5112 Berwyn Road (3rd Floor), College Park, MD 20740 (301) 220-0870
Phyllis Marcuccio (Elementary), NSTA, 1742 Connecticut Avenue, N.W., Washington, DC 20009 (202) 328-5800

Supervisors and in mathematics by the National Council of Teachers of Mathematics. Other cooperating organizations are the American Association for the Advancement of Science, American Association of Physics Teachers, American Chemical Society, American Geological Institute, American Institute of Physics, Council for Elementary Science International, Federation of American Societies for Experimental Biology, The Mathematical Association of America, National Alliance of Black School Educators, National Association of Biology Teachers, National Association of Elementary School Principals, National Association of Geology Teachers, and the National Earth Science Teachers Association. The National Academy of Sciences also provides important assistance to the project.

A list of secondary awardees by state follows.

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A schedule of events for the March 10-15 awards week in Washington, DC, and biographies of each teacher are available upon request.

(Hinchliffe/Nix)
March 9, 1992 8 a.m.
AWARDS Draft One

**PRESIDENTIAL REMARKS: AWARDS FOR EXCELLENCE IN SCIENCE AND MATH
ROSE GARDEN
THURSDAY, MARCH 12, 1992 2:30 P.M.**

--ACK: Dr. Walter Massey, ADmiral Watkins, Sec. Martin and Alexander

--since 1983 -- nation's highest honor for teachers of math and science -- applauds efforts you've made to improve skills of this Nation's young people

--it's an honor to be with you today -- think of what the spirit of innovation has brought to this country -- of course, times have changed. Some say that if Edison had invented the light bulb today, we'd have studies ctitin the dangers of electricity. And the newspapers would headline the story "Candle Industry Threatened."

--I envy you -- you can share in the sheer joy of learning, of making something work, of understanding the world -- a rare delight scientists never lose -- Barbara McClintock (2/15/91, 175) once said of her work: "I did it because it was fun. I couldn't wait to get up in the morning. I never thought of it as science."

--you're a very select group -- 108 secondary recipients out of XXX, one sciencena nd one emath from 50 lus DC, PR, Depart of Defense Dependent Schools, and Terriotires

--selected first by committtees of their peers in each state, then National Selection Board

--chosen on basis of excellence of their performance, background, experience, and related acti iites

--during proess, asked to identify one critical problem to teaching science or math in their school and discuss ways this might be resolved

--need for national standards in math and science in a changing world

--focus nation's attention on math and science and need to be competitive in these areas

--the man or woman who will discover the cure for cancer, will use technology to wipe out hunger, etc., is a kid somewhere, right now -- what if not enocuraged?

--you are the heart of this -- you excite and stretch young minds, your example inspires, etc.

--Am. 2000 strategy

--ambitious set of educational goals to be met by turn of century, including first in world in math and science -- we've requested XX billion of Fed. dspending on math and science ducation for FY 93, which translates into a XX percent increase at the precollegel level since the start of this administration

--challengeing gogal worthy of great nation and its future ambitions, plays important role in Am. 2000 strategy

--working to set world-class standards for national assessment in math, science, etc.; asked for first phase of this Am. Achievement Test be ready for use by 1993-4 school year

--math teachers already developed world-class curriculum standards; last fall, Dept. of Ed. granted 1/2\$ m dollars to implement the same thing with science curriculum

--we must help our teachers -- so I've proposed to Congress that we establish in every state of the nation Governors academies for teachers of math and science, as well as other core subjects

--and third goal -- ensure that every adult American must have the skills, including technological skills, to compete in a global economy

--what we are doing is seeking to reinvent Am. education -- create a new generation of American schools -- we must break the mold and see what works -- you are showing us how to do that with ideas like ... -- you're here today because you're not afraid to reach for excellence, you're not afraid to ..

--we in gov. are partners with you in advancing cause of educational excellence -- but Fed. Gov. can only play limited role in making America's students the first in math and science - - dollars alone won't get the job done -- real excellence demands a commitment from all of us -- everyone's got to declare -- we will reinvent the American school, we will achieve our goals, school by school, town by town, neighborhood by neighborhood. Everyone must get involved to achieve these goals -- means teachers, administrators, businesses, individuals, and parents

--your real rewards aren't these certificates -- they're the kids like xxxxx (examples) -- Thomas More quote

--Anatole France: the art of teaching is "the art of awakening the natural curiosity of young minds for the purpose of satisfying it afterwards."

--a teacher affects eternity