National Aeronautics and
Space Administration

Washington, D.C.
20546

Office of the Administrator

February 27, 1992

TO: CEHR Members

FROM: CEHR Executive Secretary

SUBJECT: Congressional Testimony of Dr. Bromley, et. al., on "The President's Strategy for Improving Mathematics and Science Education"

Enclosed is a copy of the formal written statement being presented before the House Committee on Education and Labor and the House Committee on Science, Space and Technology. Should you require any additional information, please call me on 202/453-4451.

Angela M. Phillips

Enclosure

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

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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 federai 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 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

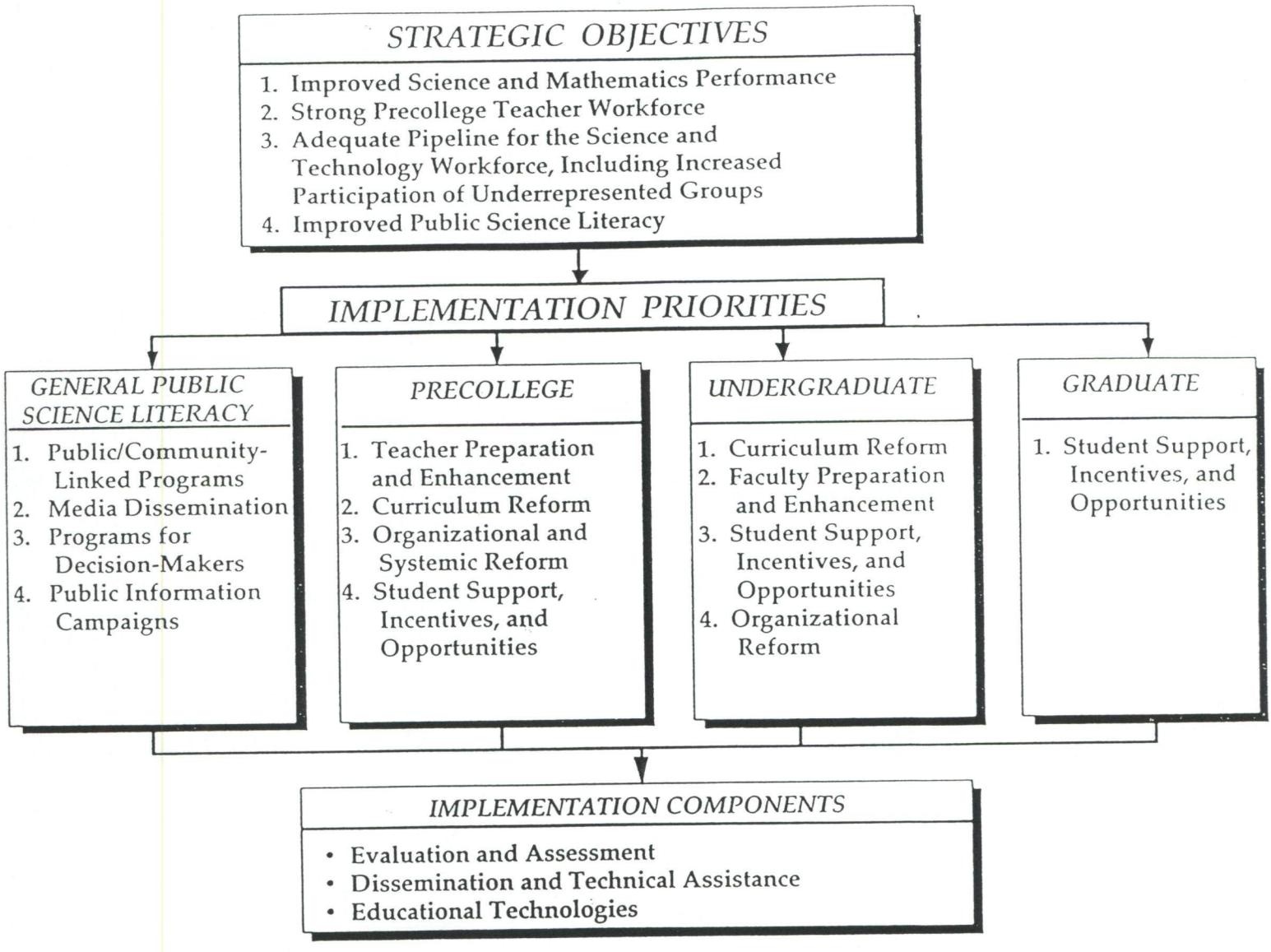


Figure 2: FY 1992-1993 Growth by Program Element (dollars in millions)

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%
Predoctoral Fellowships	99.77	99.54	-0.23	0%
Predoctoral 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				

FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

December 3, 1991

OFFICE OF THE SECRETARY

MEMO FOR: FCCSET CEHR MEMBERS
CEHR WORKING GROUP MEMBERS

FROM: PEGGY DUFOUR
FCCSET CEHR EXECUTIVE SECRETARY

SUBJECT: OMB PASSBACK

Attached is the OMB passback for the FCCSET Committee on Education and Human Resources. As you can see, with the exception of HHS, agencies were given their FY 1993 agency request. We will work with HHS in the event of an appeal.

I will be distributing a draft outline for the FY 1993 Committee report next week. The Committee will be producing only the "small" version of the report this year and we are planning to rely heavily on the FY 1993 Budget Options notebook. Please get in touch with Mr. Chris Hanus in my office at (202)586-7203 or fax (202)586-9988 with any comments or ideas that you may have regarding the report.

Attachment

4/073

FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

OFFICE OF THE SECRETARY

January 10, 1992

MEMORANDUM

TO: FCCSET CEHR MEMBERS
WORKING GROUP MEMBERS

FROM: PEGGY DUFOUR
CEHR EXECUTIVE SECRETARY

SUBJECT: NEXT CEHR MEETING

The next meeting of the FCCSET Committee on Education and Human Resources will take place on:

Friday, January 17
11:00 AM - Noon
Room 8E-089
Forrestal Building
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C.

This will be the final meeting prior to sending our FY 1993 budget report to the printer, and your participation would be appreciated. The agenda items for the meeting will include an update on the budget report and on new Presidential initiatives.

Please call Ms. Judy Campbell in my office at 202/586-7970 to confirm your attendance. Thank you.

4/3-72

FY 1993 Mathematics and Science Education Budget

BA ($ in millions)

	1991	1992	1993	Growth over FY1992	Growth over FY1992	Pre-college	Under-grad	Grad-uate	Science literacy
Agency Total	1716	1962	2097	135	7%	738	497	773	89
NSF	372	522	509	-13	-2%	240	169	84	26
DHHS	486	418	418	0	0%	20	20	368	5
DOD	416	416	416	-0	-0%	5	176	235	0
DED	235	294	426	132	45%	398	27	0	0
DOE	64	166	168	2	2%	24	51	29	4
DOI	41	83	85	2	2%	22	9	11	43
NASA	68	77	82	5	6%	17	32	33	0
USDA	20	19	23	4	21%	5	14	8	6
EPA	7	13	13	0	0%	8	4	1	0
Smithsonian	NA	10	13	3	30%	1	0	1	11
DOC	7	4	4	0	0%	0	0	4	0
Program Total	1716	1962	2097	135	7%				
Precollege	515	660	738	78	12%				
Undergrad	417	454	497	43	9%				
Graduate	784	762	773	11	1%				
Sci.Literacy	NA	86	89	3	4%				

ADDITIONAL GUIDANCE

The FY 1993 budget determinations provide $2,097 million for the Math and Science Education (MSE) initiative. The table shows your agency's contribution to the MSE. These amounts are to be protected (i.e., no tradeoffs may be made against these amounts) during the remainder of the FY 1993 budget formulation.

The FCCSET/CEHR agencies must complete an integrated management plan that outlines how the MSE goals and objectives will be accomplished, as well as provide the mechanism to evaluate the MSE's progress and performance. This plan must include specific milestones needed to achieve these goals and objectives. The plan must be completed by March 1, 1992 and be reflected in the FY 1994 MSE planning process.

The FCCSET/CEHR agencies will prepare a document summarizing the FY 1993 MSE and, if requested, make this document available for distribution shortly after the transmittal of the President's FY 1993 budget to the Congress.

Discussions are still underway on the exact programmatic strategy for the FY 1993 Math and Science Education initiative. These discussions should be finalized in the very near future. At that time, FCCSET/CEHR agencies may be asked to reallocate funding within the above totals.

- The FCCSET/CEHR agencies are directed to sponsor a workshop, including non-federal participants, to evaluate existing public and private sector systems that could ultimately be used to deliver science and math education materials and interactive lectures to and among all the nation's schools. The results of the workshop must be delivered to OMB no later than March 16, 1992. Further guidance on the workshop will be provided to the FCCSET/CEHR.

5/1/73

FCCSET

NINTH MEETING OF THE FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES

on

EDUCATIONAL TECHNOLOGIES/DISSEMINATION

Monday, November 25, 1991
1:00 PM - 3:00 PM
Lecture Room
National Academy of Sciences

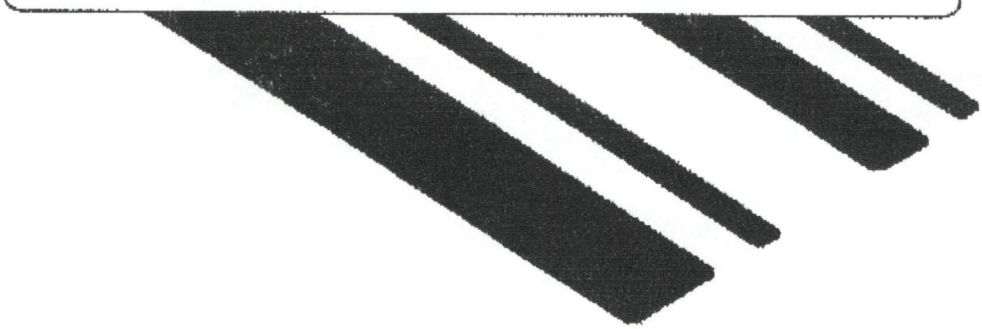
Dr. Luther Williams
CEHR Co-Vice Chairman, Presiding

AGENDA

Introduction	Peggy Dufour
Overview of Educational Technologies	Luther Williams
Eisenhower National Clearinghouse	Allan Schmeider *Director, Math/Science Programs, Fund for the Improvement and Reform of Schools and Teaching (FIRST), U.S. Department of Education*
Community Learning Network	Lieutenant General (Ret'd) Clarence McKnight *Last assigned as director of Joint Chiefs of Staff and DoD telecommunications and information systems* Jeff Joseph *Vice President for Domestic Policy of the U.S. Chamber of Commerce* Dr. Bill Pierce *Formerly the Executive Director of the Council of Chief State School Officers* Lieutenant Colonel James Cary *Detailed from Office of the Chief of Staff, Army, to support the Office of Secretary of Defense to the Working Group of CEHR*
Discussion and opportunity for individual demonstration	
Adjournment	

4/674

COMMUNITY LEARNING NETWORK



A National Learning Technology & Information Delivery System

Executive Summary

The 1990's are unequivocally the belt-tightening decade. Government budgets are being cut at a time when needed programs are at an all time high. We need to do more with less and be increasingly accountable for those results.

Concurrently, America faces an enormous threat to its social and economic health. Solving the crisis in education is essential to restoring America's productivity and maintaining its security. Yet where will the money come from to implement on a wide scale the goals and objectives set forth in America 2000?

The private sector has been involved in many efforts to contribute financially to the dilemma facing education. Piecemeal efforts have been successful in proving the efficacy of technologies to help solve educational problems, but they are not coherent enough to make the magnitude of difference required. A national effort is needed to synthesize the separate efforts.

The Community Learning Network, a national learning technology and information delivery system, is a proposed solution to these persistent challenges.

The Community Learning Network will

- **Bring integrated, interactive information technologies to federal, state and local governments; educational institutions; the military; and community organizations and businesses;**
- **Provide information services for community development that are available, accessible and affordable;**
- **Empower all educators through technology to overcome the constraints to individualized learning;**
- **Provide low-cost, high-quality information delivery systems through shared usage.**

The Community Learning Network is designed to meet needs based upon a shared usage concept. The costs for the system are distributed between the private and public sector in such a way that public education uses these advanced systems for little or no cost.

Presenters

Lieutenant General (Ret'd) Clarence McKnight, last assigned as the director of JCS and DoD telecommunications and information systems

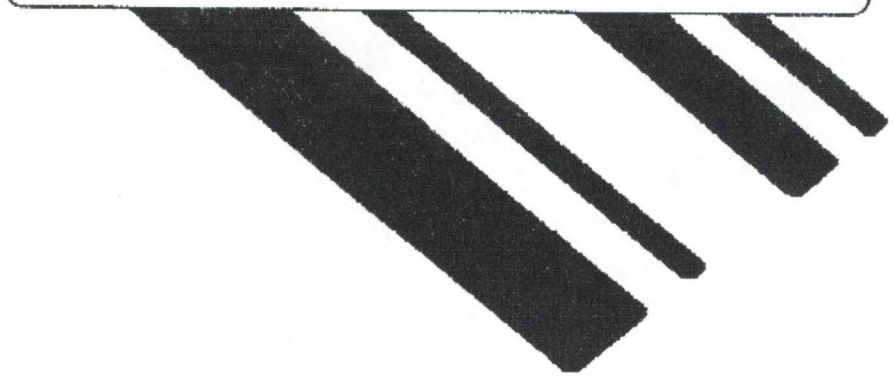
Mr. Jeff Joseph, Vice President for Domestic Policy of the U.S. Chamber of Commerce

Dr. Bill Pierce, formerly the Executive Director of the Council of Chief State School Officers

Lieutenant Colonel Jim Cary, on detail from the Office of the Chief of Staff, Army, to support the Office of Secretary of Defense to the Working Group of the CEHR committee.

5/674

COMMUNITY LEARNING NETWORK



A National Learning Technology & Information Delivery System

The purpose of this presentation is:

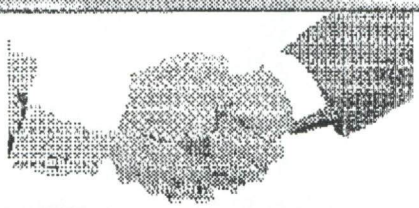
- **To offer the Committee on Education and Human Resources an opportunity to see how a Community Learning Network might work.**
- **Consider the benefits the network has for America**
- **Determine if the FCCSET Committee on Education and Human Resources finds this network supportive of its goals and those set forth in America 2000**
- **Request the formation of a 30 day FCCSET CEHR study group to examine this concept**

The Community Learning Network:

- **The Community Learning Network would be an advanced learning technology and information delivery system that brings information to the school, classroom and desks of students--whether child or adult learner.**
- **Information has become as vital to America as electricity, water, or natural gas but of greater strategic implications than any of the other utilities.**
- **The Community Learning Network will be a nonproprietory, open system -- simply a conduit, a national pipeline for information to flow into America's schools and communities.**
- **Such a large scale project can succeed because of a financing structure which defines information as a public "utility" and therefore spreads the cost across multiple users -- shared usage.**
- **Information in the form of software can teach students mathematics or physics in the classroom. The same technology can serve adult learners in government, military and business. The shared usage by all these groups makes the system highly accessible, available and affordable.**

6/674

A CONCEPT FOR A JOINT COMMUNITY AND EDUCATION INITIATIVE BETWEEN



Chambers of Commerce and the United States Government

- Across the country, Chambers of Commerce are establishing joint community and education initiatives between themselves and Government
- Businesses have been absorbing the costs of reeducating and retraining their workforce
- This expense has put business at a serious disadvantage in the global marketplace
- Local Chambers represent the interests of the private sector and the community
- Because of their extensive existing network, the U.S. Chamber is exploring the use of technology to develop an infrastructure to reach into America's communities with enhancements to the educational environment
- Within communities, local Chambers are in a position to involve everyone in utilizing The Community Learning Network delivery system, insuring its economic viability
- The U.S., state and local governments have it in their interests to join in a partnership with the Chambers of Commerce
- For example, government at all levels and the military have large number of personnel that could receive training on this system
- This concept needs the support and participation of the federal government to insure the success of this national learning technology and information delivery system

7/674

FCCSET 11/25

DEPARTMENT OF ENERGY
Washington, DC 20585

OFFICE OF THE SECRETARY

November 12, 1991

MEMO TO: FCCSET-CEHR MEMBERS
WORKING GROUP MEMBERS

FROM: PEGGY DUFOUR
CEHR EXECUTIVE SECRETARY

SUBJECT: CHANGE OF DATE FOR NEXT MEETING

NEXT MEETING: CHANGED TO MONDAY, NOVEMBER 25

The memorandum you received earlier today (dated November 9) needs to be amended. Our next meeting will be moved up one day to accommodate our presenters. Time and location will remain the same. (We will use the National Academy of Sciences' main building, 2101 Constitution Avenue.)

4/38Ø

FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

July 11, 1991 OFFICE OF THE SECRETARY

UPDATE!! UPDATE!! UPDATE!! UPDATE!! UPDATE!! UPDATE!! UPDATE!!

NOTE FOR: FCCSET-CEHR MEMBERS
WORKING GROUP MEMBERS
TASK FORCE CHAIRS AND MEMBERS

FROM: PEGGY DUFOUR
EXECUTIVE SECRETARY

SUBJECT: CALENDAR UPDATE -- (again)

As of this afternoon, this is the updated list of future meetings for our Committee and its Task Forces:

July 12	10:30-Noon	Precollege Task Force - NASA, 400 Maryland Ave., SW Rm. 6004
	1:00-3:00 PM	Graduate Task Force - USDA, 14th/Independence, SW South Bldg., Rm. 3109
July 17	1:30-3:00 PM	Public Education Task Force - NIH, Bldg. 31, Rm. 2A52
July 18	9:00-11:00 AM	Undergraduate Task Force - Pentagon
July 19	10:30-Noon	Precollege Task Force - NASA, 400 Maryland Ave., SW Room 6004
July 19	1:00-3:00 PM	Working Group meeting cancelled
July 22	5:00-6:30 PM	Committee Vice-Chairmen/Task Force Chairs - Department of Education, 400 Maryland Ave., SW (Room to be determined)
July 23	11:30-12:30 PM	Combined Committee/Working Group meeting: Task Force Reports - DOE, 1000 Independence Ave., SW, Rm 8E-089. (Please note time change due to Cabinet meeting. Please also call my office to confirm attendance (202) 586-7970.)

Everyone who contributed to the preparation of the Task Force reports is invited to the July 23 meeting. Thank you all for your hard work on the Task Forces this summer.

4/388

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FROM: PEGGY DUFOUR
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NOTE: The attached notice is also being sent to participants in all Task Forces.

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FROM: PEGGY DUFOUR
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3/230

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

National Institutes of Health
Bethesda, Maryland 20892

DATE: July 5, 1991

TO: FCCSET CEHR Working Group

FROM: Chair, Task Force of Public Science Literacy

SUBJECT: FCCSET CEHR Public Understanding of Science Strategic Plan

Attached is a draft of the FCCSET CEHR Public Understanding of Science Strategic Plan. The plan is divided into four sections: 1) An overview which contains an introduction describing the approach used by the task force, a statement of National Education Goal #5 and the newly developed Science Literacy Goal, a definition of science literacy, and a list of program planning principles; 2) A three page outline detailing the science literacy program elements and objectives; 3) A listing of Key Activities and Milestones for FY 1991-2000; and 4) An appendix listing each agency's science literacy programs by program element.

The Key Activities and Milestones listed in section three were developed by the Task Force as a result of our review of the agency submissions. They are general in nature and focus on ways in which the agencies can work together to improve public understanding of science. Please examine these recommended actions carefully. Ultimately, each agency will be asked to adopt those actions that are appropriate to its mission and contribute to the funding of the shared activities. Budget estimates are currently being developed by the Task Force and will be included in the final plan.

We will also need to include budget estimates for the programs listed in the appendix. Please review this section and add agencies programs as appropriate. A two or three sentence description of each program should also be included along with a FY 1992 budget estimate. If you provided program information to us before that did not include the description or the budget estimate, please include this information at this time.

Please return your comments and additions to my office by COB July 12. My FAX number is (301) 402-1759. If you have questions or would like more information, please call Bonnie Kalberer or Joy Boyer, (301) 496-0608.

Thank you for your participation in this effort.

Jay Moskowitz, Ph.D.

Attachment

4/230

07-05-91

FCCSET PUBLIC UNDERSTANDING OF SCIENCE - DRAFT STRATEGIC PLAN FY 1993-2000

PART I -- OVERVIEW

INTRODUCTION

Public understanding of science (or public science literacy) is being included as one of the implementation Priorities of the FCCSET Committee on Education and Human Resources for the first time in FY 1993. In response to this mandate the Task Force is drafting a strategic plan for carrying out the objectives and priorities identified in the Federal Science Literacy Program. This plan is based upon the President's National Education Goal #5 and the FCCSET National Science Literacy Goal. In addition, the CEHR is developing a matrix to collect budget and program information for all existing Federal agency science literacy programs. Although many agencies have programs capable of increasing public science literacy, traditionally these activities have been placed in "informal" education or public affairs categories, and have not been singled out for separate consideration. It is hoped that involvement in the strategic planning process will stimulate agencies to take a fresh look at their existing science literacy programs to: 1) determine how existing programs can be adapted to incorporate science education messages; 2) to expand existing science education efforts so that they reach a broader audience base including special population segments such as the underserved; 3) to identify gap areas where new efforts are needed; 4) to identify areas where cooperative ventures would be productive; and 5) to establish new programs as indicated.

Since public science literacy is a relatively new area of focus, the strategic plan concentrates initially on the development of definitions and identification of existing programs. The committee's initial effort also addresses research into and evaluation of current public perceptions and levels of literacy about science and on identifying effective educational strategies. The results of these assessment activities then will serve as the basis for a comprehensive Public Science Literacy plan to enhance existing Federal program efforts and develop new initiatives and cooperative efforts where needed.

NATIONAL EDUCATION 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.

NATIONAL SCIENCE LITERACY GOAL

By the year 2000, Americans will be scientifically literate and will possess the knowledge and skills necessary to make informed decisions.

- Citizens will be capable of understanding and making informed, responsible decisions about the environment, health, energy and other science and educational policy issues that affect everyone in our society.
- Citizens will have a sufficient understanding of science processes and concepts to work and live productively in a technological society.

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- Children and youth will be made aware and have a sense of excitement instilled about science and technology; efforts will be made to develop their understanding of the role science and technology plays in almost every aspect of every day life. Concerted efforts will be made to develop their problem solving skills. They will be encouraged to pursue courses, related out-of-school science activities, and careers in science, mathematics and technology.

SCIENCE LITERACY DEFINITION

Science literacy is a knowledge of the basic principles underlying scientific processes and concepts. It includes an awareness of scientific ways of thinking, an understanding of the relationship of science, mathematics, and technology to society, and the ability to use that knowledge to make informed decisions.

A scientifically literate citizen should be able to participate in discussions of contemporary scientific issues, apply scientific information in personal decision making, locate scientific information when needed, and distinguish valid information and sources from those that are not. To be scientifically literate, an individual should possess the skills necessary to understand and evaluate publicly disseminated information on science and technology and interpret graphic displays of scientific information.

Programs for General Public Science Education

General public science education programs are specifically targeted towards increasing the public's understanding and knowledge of science and its impact on society. These programs educate audiences of all ages about the principles underlying scientific methods and processes, the implications for those audiences, and the opportunities for making decisions.

> *Exclusionary Statement: If a program promotes changing behavior, i.e. through public information, consumer education, or health promotion and disease prevention programs, without offering specific detailed information on the science behind the changes, it should not be considered a science literacy program.*

PROGRAM PLANNING PRINCIPLES

In order to reflect the National Education Goal #5 or objectives #1, 2, and 3 under this goal as set forth in America 2000: An Education Strategy and to encourage the widespread adoption of science literacy as a high priority national goal, each agency science literacy programs and projects should incorporate the following principles:

- emphasize demystifying science, teach the public to understand science "as a way of knowing" and to appreciate the critical role of scientists and science to our nation's well-being
- be based upon a sound understanding of current public perceptions and literacy levels in science
- be based upon proven, valid and up-to-date knowledge of scientific principles
- be able to coordinate as appropriate with each State's official science and math learning objectives and with national standards where they exist
- be able to take advantage of each agency's unique resources, including the use of new and developing technologies and proven methods to reach target audiences

- ensure that all segments of the population, especially underrepresented groups, are appropriately addressed in science literacy efforts
- develop linkages between the public and private sector and utilize collaborative efforts whenever possible
- stimulate parents and others to become informed advocates for high quality, universal education in science, mathematics, and technology
- stimulate the formation/utilization of community networks (such as PTA's, churches, YMCA's, libraries, and recreational centers), to encourage and facilitate children and youth science and math endeavors in the home and other settings
- stimulate a variety of out-of-school scientific inquiry activities to ensure the development of each student's problem solving and analytical skills

The Committee believes that it is very important that baseline information be collected early in the planning process both so that progress towards attainment of the national science literacy goal can be measured and the areas of greatest need can be identified. This includes identifying and analyzing existing data on current programs as well as defining the current status of public understanding of basic science and engineering concepts, basic scientific reasoning, and science and engineering-related public policy issues.

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PART II -- PROGRAM ELEMENTS and OBJECTIVES

The Committee expects many science literacy programs will consist of collaborative efforts between two or more program elements.

1. **Education Programs for Decision-Makers** - Science literacy programs aimed at educating government, educational, corporate, and media decision-makers about scientific concepts, principles, and issues so that they will be able to make informed professional decisions and aggressively support and promote policies and programs that will help the Nation achieve the national science literacy goal.

Objective: *By the Year 2000 all government, educational, and major corporate and media decision makers will formally adopt the national science literacy goal and institute policies and programs to help accomplish the goal.*

A. Government - Includes government entities at all levels - national, state and local

Implementation Strategies

- establish concepts and initiatives
- develop programs
- allocate resources
- evaluate progress

B. Educational Policy Makers/Administrators - Includes national, state and local educational administrators, school board members, executive boards of national education organizations and professional societies

Implementation strategies

- help set/update national literacy standards
- help develop effective national educational strategies to accomplish goal, especially for underserved populations
- encourage adoption of science literacy as a top educational priority within educational systems
- encourage development of programs and strategies within educational institutions to attain goal
- develop policies and programs to ensure adequate teacher preparation
- establish/participate in joint efforts working towards goal
- use influence to encourage others to work towards goal
- allocate resources to accomplish goal
- help evaluate progress towards goal

C. Corporate - Includes all major companies (initially Fortune 500)

Implementation Strategies

- encourage and assist workers to acquire new knowledge and skills and to adapt to emerging new technologies and methods
- institute programs to assist employees and their families to become scientifically literate
- establish linkages between corporations and educational institutions
- develop initiatives in communities the corporation serves
- join efforts of others to attain goal

- use influence to encourage others to work towards goal
- provide support for national, regional and local science literacy programs
- evaluate progress towards goal

D. Media - Includes print, broadcast and film

Implementation Strategies

- aggressively encourage goal within organization
- encourage increased depth of coverage of important science issues
- encourage increased number of issues covered
- ensure accuracy of information
- encourage increased effort to explain underlying principles
- strive to heighten public awareness of important issues
- spearhead national/local efforts to work towards goal
- establish policies to make available the scientific and personnel resources of Federal laboratories to work with media
- help evaluate national progress towards goal

2. **Media Programming** - Mass media-based programs that provide scientific information for increased public awareness and knowledge and help change the public perception of science

Objective: By the year 2000, the number of media programs which educate the public about scientific concepts, principles, and issues will double.

Implementation Strategies

- ensure accuracy of information disseminated
- place more emphasis on explaining underlying principles of issues
- assume leadership role in community for striving towards goal
- use innovative ways to educate public
- make special efforts to reach underserved groups
- make special efforts to instill an interest in science in youngsters
- subtly include educational goals in entertainment programming
- assist public in increasing decision-making skills
- use new technology for interactive experiences
- encourage public to seek and use additional sources of information
- join partnerships working towards goal
- help keep everyone informed on progress towards goal

3. **Public and Community Linked Programs** - Public and community-based programs that incorporate science education into activities of daily life and promote better understanding of the importance of science and scientific research. These programs include museum and library exhibits, science and technology center programs, Federal laboratories, Veterans Administration and city hospitals, park nature programs, public lectures, and youth-group programs.

Objective: By the year 2000, the number of public and community-linked programs (libraries, museums, science centers, youth programs, national park programs, etc.) that formally adopt the national science literacy goal and institute policies and programs to support the goal will double.

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Implementation Strategies

- assume community leadership role
- initiate/join group ventures working towards goal
- make special efforts to reach underserved populations
- make special efforts to instill an interest in science in youngsters
- increase effort to teach underlying scientific principles
- help ensure accuracy of information disseminated in community
- aggressively utilize new technology to achieve goal
- make special effort to build decision-making skills; teach how to make informed judgements
- evaluate progress towards goal

4. **Public Information Campaigns--Science Education Components** - Specialized segments within larger public education campaigns that are specifically targeted towards increasing scientific knowledge and understanding of scientific principles.

Objective: By the year 2000, the number of public information campaigns that incorporate science education components will double.

Implementation Strategies

- make special efforts to reach underserved populations
- make special efforts to reach youngsters
- should consist of joint efforts of many organizations
- make special effort to enlist mass media help
- recruit valued role models to take leadership roles
- make messages meaningful and valuable to targeted audience; audience must see payoff for them
- ensure information is accurate
- use various strategies to reinforce message
- evaluate progress towards goal

5. **Clearinghouse, Hotlines, Individual Information Sources--Science Education Components** - Information sources that can be accessed by individuals to educate themselves on the science behind personal concerns and current issues.

Objective: By the Year 2000, the number of personal information sources that formally adopt the national scientific literacy goal and institute policies and programs to help accomplish goal will double.

Implementation Strategies

- assist clients to understand underlying principles
- help clients develop skills to make informed judgements
- help monitor accuracy of other information sources on topic
- make special efforts to reach underserved populations
- make special efforts to help youngsters understand information and underlying principles
- help clients find and use other information sources
- work with others to accomplish goal
- evaluate progress towards goal

10/230

PART III -- FY 1991 to 2000 MILESTONES and KEY ACTIVITIES

The following is a summary of key activities and milestones by year for FY 1991 through 2000 with agency or CEHR Committee responsibility for implementation indicated at the end of each activity. Brackets [] indicate lead agency or group; however, all Departments and Agencies are expected to contribute resources, including financial, to each activity and milestone.

Note: Costs associated with key activities and milestones are being developed by the Task Force and will be incorporated into the final draft.

FY 1991

- Develop goal, objectives, definitions of terms and outline of science literacy program elements as well as the overall outline for the strategic plan. [CEHR]
- Inventory existing Federal programs; continue existing science literacy efforts [All agencies]

FY 1992

- Refine definitions and inventory, identify gaps where new efforts are needed and areas where cooperative government-wide and government/private sector efforts can be productive. [CEHR]
- Hold public hearings to gather information on level of science literacy and effective educational strategies. [DOE]
- Develop and advertise Work Scopes for Research and Development Contracts to:
  a. Examine what is known about current levels of scientific literacy in the general public and specific population segments; review existing research and data and expand as required
  b. Identify effective public science literacy education strategies for various segments of the public with special emphasis on reaching underserved populations; explore role of new technology for these efforts
  c. Determine ways that science education can more effectively be incorporated into existing public information activities [ED]
- Begin efforts to educate and enlist decision makers
  a. Agency Secretaries or designees meet with the nation's governors to enlist their support [FCCSET]
  b. Agency Secretaries issue policy statements recommending the incorporation of science education components into all public information campaigns [All agencies]
  c. Identify key members of Executive and Legislative branches whose actions affect policy at the national, state and local level [ED &/or NSF]
  d. Agency Secretaries or their designees address national meetings of educational and university administrators [All agencies]

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FY 1993

- Award research and development contracts [ED]
- Continue efforts to reach decision makers

  a. Convene workshops/Task Forces of media and government representatives to discuss the role of media to increase public science literacy; explore use of non-traditional and new technology for science literacy efforts; develop plans and programs for media involvement. [CEHR]

  b. Agency Secretaries or their designees meet with top corporate leaders to enlist their support and explore options for industry participation both for upgrading science literacy skills of their workforce and contributing to public science literacy efforts. [All agencies]

- Inventory and examine all existing public information activities and materials (print and film), clearinghouse activities, exhibit materials, electronic bulletin boards, etc. to:

  - strengthen existing science components or incorporate new science education components;
  - reach a broader range of audiences especially underserved populations; and
  - develop a plan to make revisions. [All agencies]

- Identify and recruit regional science literacy spokespersons for community programs; develop speakers bureaus. [All agencies]
- Begin conducting evaluation of existing programs [All agencies]
- Begin development of new programs to fill gaps [All agencies]

FY 1994

- Review results of inventory and R & D contracts and develop comprehensive public science literacy action plan based on previously adopted goal, objectives, program elements and implementation strategies. [CEHR]
- Begin implementation of new programs and expand program development activities. [All agencies]

FY 1995 - 2000

- Aggressive implementation of comprehensive public science literacy strategic plan. [All agencies]

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APPENDIX A

EXISTING FEDERAL AGENCY PROGRAMS
Public Understanding of Science

1. **EDUCATION PROGRAMS FOR DECISION MAKERS.** Science literacy programs aimed at educating government, educational, media and corporate decision-makers about scientific concepts, principles, and issues so that they will make informed professional decisions and also aggressively support and promote the science literacy goal.

Agency Programs that contribute to the objective (list with brief description and FY 1992 budget estimate)

A. Government - includes government entities at all levels - national, state, local

USDA

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HHS

- **Congressional Information Luncheons**

  A series of luncheons featuring distinguished scientists from government, academia, and industry to familiarize members of Congress and their staffs with current biomedical research concepts and issues. Shared cost between HHS (FY 1992 estimate $) and private sector.

- **Non-animal Methods in Biomedical Research and Development--What They Do and Do Not Do."**

  This program is a joint effort by DHHS and the Partners in Discovery--a group of 15 private, research-based pharmaceutical companies and organizations--to develop a brochure that explains the limitations of non-animal tests in biomedical research and development. The brochure will offer accurate, understandable information for the general public. (FY 1992 estimate $)

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NSF
- o **"NSF Days"**

SMITHSONIAN
- o **National Biodiversity Conference**
- o **Oceans**
- o **Capital Hill Workshops**
- o **Forums for Media, Policymakers, and Scientists**
- o **Rainforest forum**
- o **EXXON Conference**
- o **National Academy**
- o **Computer World**

B. **Education** - includes national, state and local educational administrators, school board members, executive boards of national education organizations and professional societies

Agency Programs that contribute to this objective (list with brief description and FY 1992 budget estimate)

USDA

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SMITHSONIAN

C. **Corporate** - Includes all major companies (Fortune 500)

Agency Programs that contribute to this objective (list with brief description and FY 1992 budget estimate)

USDA

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D. **Media** - includes print, broadcast and film

Agency Programs that contribute to this objective (list with brief description and FY 1992 budget estimates)

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- **National Institutes for Science Writers and Publishers**
  These institutes will cover such issues as global climate changes (FY 1992 estimate $)

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- **Annual Briefings and Workshops for Science News Directors run by Scientists' Institute for Public Information Central Washington University Seminars and Resource.**

SMITHSONIAN

2. MEDIA Programming. Programs that utilize the mass media (broadcast, print and film) to provide scientific information for increased public awareness and knowledge.

Agency Programs that contribute to this objective (list with brief description and FY 1992 budget estimates)

USDA

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- **Futures**
  This PBS series, hosted by Jaime Escalante, shows students how mathematics principles are utilized in "real life" career settings. (FY 1992 estimate $)

HHS

- **The Future of Medicine PBS Series**
  This PBS series will be developed by WNET/THIRTEEN and AHCPR for national broadcast in 1992. The series will explore the sweeping changes taking place in medicine. The quality, appropriateness, and effectiveness will be addressed in the course of the broadcast. (AHCPR: FY 1991--$200,000, FY 1992--$200,000, NCHGR/NIH FY 1991--$200,000) No projected actions or costs for FY 1993 and beyond.

- **The Health Century**
  This PBS series, developed in conjunction with the Partners in Discovery, examines the scientific process and the progress made in medical discoveries, treatments, and technologies in the past century. A companion book, published by Doubleday & co., was a Book-of-the-Month Club selection, and a high school science curriculum has been developed around the four-part series. A precollege curriculum supplement was developed from this program and is currently being evaluated for wider distribution. No projected actions or costs for FY 1992 and beyond.

- Windows into the Brain
  This is a multimedia exhibit designed to provide information on specific biobehavioral research activities about the brain. Projects in this initiative dovetail with the Presidentially declared "Decade of the Brain" and offer opportunities to educate citizens about frontiers of research in the neurosciences. Alliances will be forced among universities and community colleges, foundations, local organizations, and industry, including television, museums, and professional organizations.

- Drugs and the Brain
  Funding has been allocated for the development of a prime-time TV special targeted to 8-12-year-olds and their parents which will be produced by the Children's Television Workshop. The program will depict scientific research and explore life science career options, using neuroscience research to illustrate the process. Additional materials will be developed, based on the program, for use in the classroom, and the National Science Foundation may cosponsor related community outreach projects.

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- IMAX Films (Youth and Adults). Examples: Tropical Rainforest, "Cosmic Voyage"--Concepts of space and time in the universe.

SMITHSONIAN
- Radio Smithsonian
- Air and Space magazine
- Smithsonian magazine
- Research Reports (newsletter)
- Television specials
- Smithsonian Minutes (television spots on natural sciences)
- Press conferences and news releases on science exhibitions and programs
- Smithsonian Press books (popular series)
- PawPrints (newsletter)
- Zoogoer magazine
- Smithsonian Newservice (distributes SI-based articles to newspapers nationwide)

3. **PUBLIC & COMMUNITY-LINKED DISSEMINATION.** Public and community-based programs that relate science education to activities of daily living and promote better understanding of the importance of science and scientific research. These programs include museums and library exhibits, science and technology center

programs, Federal laboratories, Veterans Administration and city hospitals, park nature programs, public lectures, and youth-group programs.

Agency Programs that contribute to the objective (list with brief description and FY 1992 budget estimate)

USDA

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HHS

- **Animal Research: The Search for Life Saving Answers**
  In an attempt to inform the public of the benefits derived from animal research and the critical need for this research to continue to find methods to prevent and treat diseases, ADAMHA has developed a wide variety of materials for the general public, including: presentation packages for scientists wishing to conduct workshops at conventions and professional meetings, information brochures for the general public, and classroom materials for teachers and students and the general public.

- **Ethical, Legal and social implications (ELSI) of Human Genome Research Program**
  Funding program which supports public education projects (e.g., for town meetings, public television, etc.), conferences, research grants, and curriculum development projects (secondary school level) on social implications of genome research. The goal of the NCHGR's program is to develop the safeguards that will be required as new genetic information is put to practical uses.

  <u>NIH-DOE Working Group on the Ethical, Legal and Social Implications of Human Genome Research</u>: Working group publishes public reports and hosts local community discussions of social implications of genome research.

- **Medicine for the Public**
  This series, now in its 15th year, features physician-scientists working at the frontiers of medical research at the National Institutes of Health. The series helps people understand the latest developments in medicine--new therapies, diagnostic procedures, and research. The emphasis is on current topics, with colorful graphic slides designed to complement each lecture and speakers who can relate to the lay public. This series also provides videotapes, booklets, and fact sheets on the topics covered in the lectures. Six lectures are held each year at an estimated total cost of $10,000. Approximately 500 people from the lay public attend each lecture. This lecture series may be shortened in FY 1993 and future years due to budget cutbacks.

- **National Museum of Health & Medicine**
  This museum has been called a "National Treasure" and "perhaps the greatest medical museum in the world." The Museum stood on the National Mall in Washington, D.C., from 1888 to 1968, where nearly one million visitors a year viewed its photographs, historic

artifacts, anatomic specimens, and the most comprehensive microscope collection in the world. The museum is currently being redesigned to increase its visibility and accessibility. Interactive exhibits will be emphasized with a focus on such topics as medical technology and social history, human diet and nutrition, substance abuse prevention and AIDS education. The NIH is currently considering, at the direction of Congress, assuming the administrative responsibility for the Museum. Meanwhile, negotiations are underway to locate the museum in the Hubert Humphrey Building.

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- Projects in Museums of Natural History and Nature Centers. Examples: "Exploring the Blue Planet" (Scripps Hall of Oceanography); "Our Weakening Web: The Study of Extinction" (Cincinnati Museum of Natural History); "Global Warming" (American Museum of Natural History); and "Darkened Water: Profile of an Oil Spill" (Homer Society of Natural History).

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- Permanent exhibitions in natural and physical sciences--National Museum of Natural History (NMNH), National Museum of American History (NMAH), National Zoo, National Air and Space Museum, and Smithsonian Tropical Research Institute.
- Nature Trails--Chesapeake Bay Center for Environmental Studies (CERC) and Smithsonian Tropical Research Institute (SIRI).
- Science demonstrations in all of the above museums and the Zoo.
- Temporary exhibitions.
- Specialized learning facilities at NMNH, NMAH, NZP, NASM--includes Planetarium, Naturalist Center, Zoolab, Langley Theater (IMAX), and more.
- Docent-led "Highlights Tours" of Mall museums.
- Free films, lectures, and related public activities.
- Lectures, seminars, courses, and other activities offered to members through Resident and National Associate programs.

4. PUBLIC INFORMATION CAMPAIGNS - SCIENCE EDUCATION COMPONENTS. Specialized programs within larger public education campaigns that are specifically designed to increase scientific knowledge.

Agency Programs that contribute to this objective (list with brief description and FY 1992 budget estimates)

USDA

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DOD

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DOE

HHS

- **Health Promotion/Disease Prevention Campaigns. These campaigns provide an invaluable service to the citizens of this country; however, they are not being fully utilized as vehicles for improving the science education of our citizens. In FY 1992 and 1993, HHS will examine these public information campaigns to determine ways that science education messages can be incorporated into existing materials and will also examine the development of new science education materials or curriculum supplements based on these information campaigns.**

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- **National Science and Technology Week (NSTW). Program Components include: Learning Packets; Graphics Materials; Media Dissemination; Teacher Training Workshops; Partnerships/Alliances.**

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5. CLEARINGHOUSES, HOT LINES, INDIVIDUAL INFORMATION SOURCES - SCIENCE EDUCATION COMPONENTS. Information sources that can be accessed by individuals to educate themselves on the science behind personal concerns and current issues.

Agency Programs that contribute to this objective (list with brief description and FY 1992 budget estimates)

USDA

DOC

DOD

ED

- ERIC - The ERIC Clearinghouse on Science, Mathematics and Environmental Education, located at Ohio State University, acquires and indexes curriculum and instructional materials, teaching materials, educational programs, research and evaluation studies, and media and computer applications. In 1990 this Clearinghouse responded to nearly 14,000 information requests from the public. The 16 ERIC Clearinghouses provide a variety of services and products to help educators and others stay up-to-date on a broad range of issues. ERIC publications include practitioner-oriented Digests, research summaries, literature reviews and bibliographies; the Clearinghouses also provide reference and referral services, user workshops, and computer searches.

- The Clearinghouse on Science, Mathematics and Environmental Education plans a publication on "The Development of Environmental Literacy," to explore the elements of environmental literacy as a necessary facet of citizenship education, in particular what citizens need to know in order to understand environment-related choices confronting individuals and society.

- The April 1991 issue of The ERIC Review addresses "Issues in Adult Literacy Education." While traditional definitions of literacy have focused on basic reading and writing skills, the report comments that more recently literacy has been defined in broader and more functional terms. In addition to reading and writing, functional literacy involves oral communication, computational, problem-solving, and decision making skills, reflecting ways in which individuals use literacy skills to perform tasks in the home, the community, and the workplace.

- The Science and Math Clearinghouse has recently published a Digest on "Meeting National Goals for 2000 and Beyond in Science Education," another useful document for educating decision makers on issues in science literacy and the state of science education nationally.

DOE

HHS

- As a part of its health promotion and disease prevention programs, HHS has a variety of clearinghouses, hotlines, and individual information sources. These sources of information offer a unique opportunity to enhance the science literacy of the general public. In FY 1992 and 1993, HHS will examine these mechanisms to determine ways that science education messages can be incorporated into existing materials.

HUD

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- Individuals in curatorial divisions who answer inquiries by mail and telephone about many different science subjects.

FCCSET

SEVENTH MEETING OF THE FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES

Tuesday, July 23, 1991
11:30 AM - 12:30 PM

Program Review Center
Forrestal Building
U.S. Department of Energy
Washington, D.C.

AGENDA

Admiral James D. Watkins	Introduction of Mr. David Kearns
Admiral James D. Watkins	Old Business Minutes of May 22, 1991
	New Business
Mr. David Kearns	Reports of the Task Forces ✓ **Precollege:** Dr. Robert Brown (NASA) ✓ **Undergraduate:** Dr. Ted Berlincourt ✓ Ms. Janet Johnston ✓ **Graduate:** Dr. Jane Coulter **Public Science Literacy:** Dr. Jay Moskowitz Ms. Bonnie Kalberer
Dr. Luther Williams	Working Group on FY 1993 Budget
	Discussion
	Adjournment

Statement of how criteria have been used.

Structured like a Gore w/ objectives etc.

GWS. re duplication 3,4 + criteria measurement other goals → coordinated fed. lang. policy

Bob Brown (NASA)

1. Budget guidelines for emphasis on '93 budget priorities. for use of 6% (Fed Share)
   - Student or teacher - teacher.
   - School based management, math reforms etc. under ongoing reform.
2. Priorities are very similar to last year's.

Johnston (Undergrad.)

1. Computers, language skills.
2. Undergrad. faculty awards + awards to teaching asst.
3. double the # of undergrad.
4. "brainstorming retreats" for RESET CENTR.
5. assessments + eval. of existing fac. programs.

Crutcher

1. pre/post doctoral
2. underrep. groups
3. ↑ quality of grad. ed. + faculty – 5.6% increase this yr. ∴ $803m. → $848m.

Maskewitz

1. newest of working groups
   public science literacy plan
   not establishing a new goal - a derivative : goal ← nomenclature

effort initiative

FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

July 11, 1991 OFFICE OF THE SECRETARY

NOTE FOR: FCCSET-CEHR MEMBERS
WORKING GROUP MEMBERS
TASK FORCE CHAIRS AND MEMBERS

FROM: PEGGY DUFOUR
EXECUTIVE SECRETARY

SUBJECT: CALENDAR UPDATE

As of this afternoon, this is the updated list of future meetings for our Committee and its Task Forces:

July 12	10:30-Noon	Precollege Task Force - NASA, 400 Maryland Ave., SW Rm. 6004
	1:00-3:00 PM	Graduate Task Force - USDA, 14th/Independence, SW South Bldg., Rm. 3109
July 17	1:30-3:00 PM	Public Education Task Force - NIH, Bldg. 31, Rm. 2A52
July 19	1:00-3:00 PM	Working Group meeting cancelled
July 22	5:00-6:30 PM	Committee Vice-Chairmen/Task Force Chairs - Department of Education, 400 Maryland Ave., SW (Room to be determined)
July 23	11:30-12:30 PM	Combined Committee/Working Group meeting: Task Force Reports - DOE, 1000 Independence Ave., SW, Rm 8E-089. (Please note time change due to Cabinet meeting. Please also call my office to confirm attendance (202) 586-7970.)

Everyone who contributed to the preparation of the Task Force reports is invited to the July 23 meeting.

Thank you all for your hard work on the Task Forces this summer.

4/381

Public Understanding of Science

Strategic Plan FY 1991-2000

National Education 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.

National Science Literacy Goal

By the Year 2000, Americans will be scientifically literate and will possess the knowledge and skills necessary to make informed decisions.

(continued)

National Science Literacy Goal

(continued)

- Americans will be capable of understanding and making informed decisions about current science and educational policy issues.
- Americans will have a sufficient understanding of science processes and concepts to work and live productively in a technological society.
- Children and youth will have a sense of excitement instilled about science and technology and the role it plays in every day life. Efforts will be made to develop their problem solving skills and they will be encouraged to pursue careers in science, mathematics and technology.

Science Literacy Definition

Science literacy is a knowledge of the basic principles underlying scientific processes and concepts.

- Awareness of scientific ways of thinking
- Understanding of the relationship of science, mathematics, and technology to society
- Ability to use that knowledge to make informed decisions

(continued)

Science Literacy Definition

(continued)

To be scientifically literate, an individual should possess the skills necessary to understand and evaluate publicly disseminated information on science and technology and interpret graphic displays of scientific information.

Program Elements

- Education Programs for Decision-Makers
- Media Programming
- Public and Community Linked Programs
- Public Science Education Campaigns

Program Elements and Objectives

Education Programs for Decision-Makers

Objective:

By the Year 2000 government, educational, and major corporate and media decision makers will formally adopt the national science literacy goal and institute policies and programs to help accomplish the goal.

Program Elements and Objectives

Media Programming

Objective:

By the Year 2000, the number of media programs which educate the public about scientific concepts, principles, and issues will double.

Program Elements and Objectives

Public and Community Linked Programs

Objective:

By the Year 2000, the number of public and community-linked programs that formally adopt the national science literacy goal and institute policies and programs to support the goal will double.

Program Elements and Objectives

Public Science Education Campaigns

Objective:

By the Year 2000, the number of public information campaigns and individual information sources that incorporate science education components will double.

Program Elements and Objectives

General Implementation Strategies

- Increase efforts to explain underlying principles
- Monitor the accuracy of information being disseminated
- Help the public develop skills to make informed judgements
- Make special efforts to instill an interest in science in youngsters
- Make special efforts to reach underserved populations
- Work with others to accomplish goal
- Evaluate progress towards goals

Strategic Plan Milestones and Key Activities

FY 1991

- Define terms
- Develop goals and objectives
- Outline strategic plan
- Inventory existing Federal programs
- Continue existing science literacy efforts

Strategic Plan Milestones and Key Activities

FY 1992

- Define terms further
- Improve inventory
- Identify gaps
- Hold public hearings
- Develop and advertise work scopes for research and development contracts
- Begin efforts to educate and enlist decision makers

Strategic Plan Milestones and Key Activities

FY 1993

- Award research and development contracts
- Continue efforts to reach decision makers
- Inventory existing public information activities/materials
- Recruit regional science literacy spokespersons
- Conduct evaluation of existing programs as needed
- Begin development of new programs to fill gaps

Strategic Planning Process Outcomes

- Determine how existing programs can be adapted to incorporate science education messages
- Expand existing science education efforts to reach a broader audience base including special population segments
- Identify gap areas where new efforts are needed
- Identify areas where cooperative ventures would be productive
- Establish new programs as indicated

5/30

FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

OFFICE OF THE SECRETARY

May 24, 1991

MEMORANDUM FOR: FCCSET-CEHR MEMBERS
FCCSET-CEHR WORKING GROUP MEMBERS

FROM: PEGGY DUFOUR
CEHR EXECUTIVE SECRETARY

SUBJECT: **TASK FORCE MEETINGS**

The Task Force on Public Education (science literacy) will hold its first meeting on:

Thursday May 30 9:00-10:30 AM National Institutes of Health
Building 31, Room 2A-52
(Bethesda, Maryland)

Contact: Bonnie Kalberer
(301) 496-0608

Please call Bonnie to confirm your attendance, and to obtain directions. This meeting conflicts with the one on undergraduate education, so please assign staff to each as appropriate for your agency.

If you did not receive yesterday's FAXes about the other task force meetings and directions to the Pentagon, please call me at (202) 586-7970, and I will send you another.

DOE F 1325.7
(10-88)
(Exception to SF 14, Approved by NARS, June 1976

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May 23, 1991

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FROM: PEGGY DUFOUR
EHR EXECUTIVE SECRETARY 202 586-9988 586-7970

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MICHAEL O'REILLY (EPA)	202 252-0130	382-4962
ED HANLEY (EPA)	202 252-0835	382-4600

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MICHAEL BAKER (EPA)	202 252-0130	382-4965
BONNIE KALBERER (HHS)	301 402-1759	496-0608
JAY MOSKOWITZ (HHS)	301 402-1759	496-3152
JOY BOYER (HHS)	301 402-1759	496-3471
MICHELE APPLEGATE (ADAMHA/HHS)	301 443-1587	443-4266
ROBERT KNISELY (DOT)	202 366-6031 ~~or 366-9654~~	366-9192
JOCELYN STEVENSON (DOT)	202 ~~366-6031 or~~ 366-9654	366-9193
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RONALD MORONY (HUD)	202 401-1246	708-0640
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JANICE HOWELL (OSTP)	202 395-3719	395-3662
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DOREEN TORGERSON (OPD)	202 456-7739	456-6585

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CHRIS HANUS, SP-1

4/19/91

FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

OFFICE OF THE SECRETARY

May 20, 1991

MEMORANDUM FOR: FCCSET-CEHR MEMBERS

FROM: PEGGY DUFOUR

SUBJECT: MAY 22, 1991 MEETING

This is to remind you that there will be a meeting of the full FCCSET-CEHR from 2:00 - 3:00 p.m. on Wednesday, May 22, 1991, in Room 8E-069 of the Forrestal Building.

In order to facilitate admittance to the Forrestal Building, please call my office (202-586-7970) to confirm your attendance by 3:00 p.m. Tuesday, May 21.

Attached is the draft agenda for the meeting.

91/781

DRAFT

SIXTH MEETING OF
FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES

Wednesday, May 22, 1991
2:00 PM - 3:00 PM

Program Review Center
Forrestal Building
U.S. Department of Energy
Washington, D.C.

Admiral Watkins	Welcome
Admiral Watkins	Old Business Minutes of April 15, 1991
	New Business
Admiral Watkins Mr. Christopher Cross	Information on D.C. School System Priorities for FY 1993 Budget Planning Process Terms of Reference for FY 1993
	Discussion
	Adjournment

5/7/81

5/22

DEPARTMENT OF ENERGY
Washington, DC 20585

May 2, 1991

OFFICE OF THE SECRETARY

2:00 on 5/22.
Job TRAINING
2000 WORKING GRP
Roosevelt RM

NOTE FOR: FCCSET CEHR MEMBERS
FCCSET CEHR WORKING GROUP MEMBERS

FROM: PEGGY DUFOUR
EXECUTIVE SECRETARY

SUBJECT: NEXT COMMITTEE MEETING

The next meeting of the Committee on Education and Human Resources has been scheduled for May 22, 1991 from 2:00 PM to 3:00 PM. It will be held at the U.S. Department of Energy, 1000 Independence Avenue, SW, in the Program Review Center (Room 8E089). A tentative agenda will be sent out next week and we welcome any suggestions for topics.

If you are planning to attend, please let my office know at (202)586-7970 by Monday, May 20 so that we can clear you into the building.

4/086

FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

OFFICE OF THE SECRETARY

May 28, 1991

NOTE- TIME CHANGE

MEMORANDUM FOR: FCCSET-CEHR MEMBERS
FCCSET-CEHR WORKING GROUP MEMBERS

FROM: PEGGY DUFOUR *for Deede for*
CEHR EXECUTIVE SECRETARY

SUBJECT: **TASK FORCE MEETINGS**

The Task Force on Public Education (science literacy) will hold its first meeting on:

Thursday May 30 3:00-4:30 National Institutes of Health
Building 1, Room 151
(Bethesda Maryland)

Cantact: Bonnie Kalberer
(301) 496-0608

Please call Bonnie to confirm your attendance, and to obtain directions.

KELLY SINCLAIR (EPA)	202 252-0835	382-4600
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MICHAEL BAKER (EPA)	202 252-0130	382-4965
BONNIE KALBERER (HHS)	301 402-1759	496-0608
JAY MOSKOWITZ (HHS)	301 402-1759	496-3152
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MICHELE APPLEGATE (ADAMHA/HHS)	301 443-1587	443-4266
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FCCSET-CEHR

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Sarah Regina Abrams (TIME) A.M. P.M.
(Signature of authorizing official)

8. DATE
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9. TO
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FROM: PEGGY DUFOUR
EHR EXECUTIVE SECRETARY 202 586-9988 586-7970

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Meeting of
FCCSET/EHRWG Panel on Undergraduate Programs

Date: May 30, 1991 (Thursday)

Time: ARRIVE AT 0845 (Meeting 0900 - 1100)

Place: Pentagon

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3. Assemble in the waiting area near the guard desk. You will be met and escorted through security.

4. Travel by personal auto is not recommended. Visitor parking is not easily found, and distances from visitor parking areas to the Pentagon METRO entrance are large. Taxis can deliver you to the METRO entrance.

5. If you have further questions please call my office (703) 614-0205/0206.

T. G. Berlincourt
Director, Research and
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PEGGY DUFOUR
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FCCSET-CEHR

7. OFFICIAL BUSINESS
Judith A. Campbell (TIME) ☐ A.M. ☐ P.M.
(Signature of authorizing official)

8. DATE 4-19-91

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EHR EXECUTIVE SECRETARY 202 586-9988 586-7970

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2/842

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

April 18, 1991

MEMORANDUM FOR FCCSET CEHR PRINCIPALS

FROM: J. THOMAS RATCHFORD

SUBJECT: INFORMATION COPY OF DRAFT CONGRESSIONAL TESTIMONY

As you recall, Admiral Watkins promised at this week's CEHR meeting that you would be sent an information copy of the draft testimony for the April 23 hearing on the FY 1992 mathematics and science education initiative. This draft written testimony has been sent to OMB for clearance. OMB may circulate the draft to your department or agency for a comment and approval.

Dr. Bromley plans to testify before the Senate Appropriations Subcommittee on Veterans Affairs, Housing and Urban Development, and Independent Agencies at 10:00 AM on Tuesday, April 23. He will be joined by Ted Sanders Deputy Secretary of Education and Walter Massey, Director of the National Science Foundation. They are submitting their testimony for clearance separately.

Dr. Bromley's testimony makes reference to the President's April 18 speech on education. I understand that Dr. Sanders plans to discuss the President's proposed new initiatives in some detail in his testimony.

The purpose of the hearing is to provide the Committee with an overview of the FY 1992 Budget initiative on mathematics and science education, with particular attention being paid to precollege education and undergraduate education. Dr. Sanders and Dr. Massey will also relate the programs of their department and agency to the overall thrust of the initiative.

If you have any questions, please contact me or Charles Dickens (395-5101; FAX 395-1575).

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

DRAFT

MATHEMATICS AND SCIENCE EDUCATION IN THE PRESIDENT'S FY 1992 BUDGET

TESTIMONY

OF

D. ALLAN BROMLEY

DIRECTOR

OFFICE OF SCIENCE AND TECHNOLOGY POLICY

BEFORE THE

APPROPRIATIONS SUBCOMMITTEE ON VETERANS AFFAIRS, HOUSING AND URBAN DEVELOPMENT, AND INDEPENDENT AGENCIES

U.S. SENATE

APRIL 23, 1991

Madam Chair and members of the Committee:

I am very happy to appear before this Subcommittee to present, together with my colleagues Walter Massey and Ted Sanders, the President's initiative on mathematics and science education. This hearing represents a milestone in this area for the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET). I know that you, too, are keenly aware of the importance of having the Department of Education, the National Science Foundation (NSF), and the science and technology mission agencies working together in a coordinated way to achieve the National Education Goals and implement the National Education Strategy.

DRAFT

4/842

DRAFT

The Crisis in American Education

In previous appearances before this Subcommittee, I have called attention to the urgent need for improvement in U.S. science and mathematics education. We are all familiar with the litany of problems:

- o American student performance has declined relative to performance in other countries.
- o Many American teachers are inadequately prepared and lack current scientific knowledge.
- o Science and engineering fields are attracting a declining number of students.
- o Women, most minorities, and persons with disabilities are underrepresented in science and engineering courses and careers.
- o There are low levels of scientific literacy among the American public.

National Education Goals

Following the 1989 Education Summit, President Bush and the Governors established six national goals for improving education in the United States. All these goals are critical to ensuring America's future international competitiveness. The goals have won strong support. Goal #4 captures the spirit of the challenge that faces us in its clear charge: "By the year 2000, U.S. students will be first in the world in science and mathematics achievement."

National Education Strategy

On April 18, President Bush announced the National Education Strategy. I am pleased to be able to tell you that the President's FY 1992 Budget initiative for mathematics and science education will be supportive of the National Education Strategy. I and my colleagues will call attention to ways that Federal efforts for mathematics and science education will contribute to the transformation of America's schools and colleges.

The Federal Role

The Federal government has a vitally important role to play in achieving the National Education Goals and in implementing the National Education Strategy. We should never forget, however, that education in this country is a partnership effort involving Federal, State, and local governments, educators and parents, business and industry, professional associations, and community-based organizations. Although Federal sources provide only 6 percent of the total U.S. spending for elementary and secondary

DRAFT

education, the Federal government can play a leadership role by highlighting national problems, mobilizing national support, and funding programs that offer unique national solutions. Indeed, the measure of the success of Federal programs is not the amount of money that we are spending.

Coordinating Federal Efforts: The FCCSET Process

Before I provide an overview of the President's FY 1992 mathematics and science education program, I would like to describe briefly the process through which we coordinated the interagency effort to develop that initiative. When I became Director of the Office of Science and Technology Policy (OSTP), one of my early actions was to restructure and revitalize the FCCSET. The level of membership was elevated to department secretaries or deputy secretaries and heads of independent agencies to ensure that when decisions were made, they would stay made. I established a new committee structure with seven standing committees. The FCCSET membership and the names of the seven umbrella committees are listed in Appendix A.

FCCSET Committee on Education and Human Resources

In the case of the Committee on Education and Human Resources (EHR), I was particularly pleased that Admiral James Watkins, Secretary of Energy, agreed to be chairman. He has been ably assisted in that role by the two Vice Chairmen, Ted Sanders of the Department of Education and Luther Williams of the National Science Foundation. Sixteen departments and agencies are members of the FCCSET EHR Committee; they are listed in Appendix B.

I charged the EHR Committee with tasks related explicitly to improving science, mathematics, engineering, and technology education. Among these tasks were the following:

- To improve interagency planning, coordination, and communication; and
- To develop and update long-range plans for the overall Federal effort, particularly plans for the Federal role in achieving National Education Goals 3, 4, and 5. (The National Education Goals are listed in Appendix C.)

The Committee's initial challenge was to develop a systematic, comprehensive, and accurate inventory of existing Federal programs and activities related to mathematics, science, and technical education. This task led to the production of the first comprehensive collection of information about the full range of Federal programs for mathematics and science education. In itself, this product is a major accomplishment.

The Committee then established strategic objectives and funding priorities for FY 1992, using the National Education Goals as policy guidance. While the National Education Goals are noble goals, the challenge we face is how to get there. But first, we had to know where we starting are from. As a baseline, the Committee used FY 1990 -- the year that began immediately after the September 1989 Education Summit -- and prepared coordinated budget recommendations for FY 1992.

Findings from Baseline Inventory

From the Committee's baseline inventory, we know that:

- There was significant program growth in several Federal agencies, particularly in the precollege area, immediately following the Education Summit (FY 1990) through Secretary- and Administrator-directed intra-agency reallocations.

- Many Federal agencies rely on scientists, engineers, mathematicians, and technicians to carry out their basic missions.

- All of these agencies conduct mathematics, science, and technology education activities to some degree and can contribute to achieving the National Education Goals.

- The baseline level of science education effort in these agencies was far greater than had been previously recognized.

- All of these agencies have expert personnel who can be used in an expanded educational capacity.

- There is also considerable work being done on a volunteer basis by scientists and engineers in Federal facilities to help improve mathematics and science education.

- Informational and programmatic linkages within and between agencies could be improved and expanded, resulting in greater dissemination of successful programs.

- The Federal government's unparalleled collection of unique scientific and technical facilities, located in every State, the District of Columbia, Puerto Rico, and the Territories, could be used more fully to serve mathematics and science education, resulting in increased benefit at low or no additional cost.

7/84?

Strategic Framework and Budget Planning Priorities

The Committee on Education and Human Resources established four strategic objectives for improving mathematics and science education in the near term, in concert with the National Education Goals. These objectives, in descending order of priority, are:

1. Improved science and mathematics performance,

2. Strong precollege teacher workforce,

3. Adequate pipeline for the science and technology workforce, including increased participation of underrepresented groups, and

4. Improved public science literacy.

Using these strategic objectives as guides, the Committee established the budget planning priorities reflected in the FY 1992 Budget. Before proceeding to discuss these priorities, I would like to make two points.

First, the FY 1992 Budget request that we are discussing at this hearing includes only those programs for which Congress appropriates funds expressly for science, mathematics, engineering, and technology education and those programs funded under other agency accounts that are expressly managed as science, mathematics, and engineering education activities, such as educational materials developed by specific programs on their specific program topics. These programs are those over which the CEHR member agencies have most immediate and direct control and which will be the focus of this morning's discussion.

It is important to recognize, however, that there are other programs that contribute to mathematics and science education although their primary objective is some other purpose. Programs funded under agency research accounts and managed as research programs may contribute to mathematics and science education, generally at the graduate level, for example through the support of graduate students as research assistants. The estimated number of students receiving such support is substantial. NSF alone estimates that in FY 1992 it will be supporting 21,000 graduate students in this way; the corresponding number for FY 1991 is 19,000, so that our budget request for NSF will allow an 11 percent increase in the support of graduate students.

In addition, there are broad, general education programs that provide a level of support for science, mathematics, engineering, and technology education. An example is the Department of Education's Chapter 1 formula grant program, which provides funds to local school districts that may be used for mathematics education, among other activities. The proportion of the spending devoted to mathematics and science, and how those funds are used is determined by States, local governments, and school districts.

8/94?

Second, the principal emphasis in my remarks and those of my colleagues today will be on precollege and undergraduate education. I want to emphasize, however, that graduate education remains a top priority for the Federal government. U.S. graduate education is a very real success story, and it should continue to be supported vigorously. The President's Budget does that. Our attention today is on those parts of the U.S. educational system, particularly at the precollege level, that urgently need added attention.

The FY 1992 budget planning priorities for precollege education are as follows:

1. Teacher enhancement and preparation

2. Curriculum; R&D in teaching and learning; materials; evaluation; dissemination; technical assistance

3. Comprehensive programs/organization and systemic reform

4. Student incentives and opportunities

The above priorities indicate those areas for which change should be implemented first to help achieve the National Education Goals by the year 2000. There is special emphasis on increasing the participation of groups currently underrepresented in mathematics, science, and engineering fields. This emphasis cuts across all the priorities and all education levels.

The strategic objectives and the budget planning priorities developed through the FCCSET process align very closely with the National Education Strategy. In mathematics and science education, the Federal programs in the FY 1992 initiative address the four groups of students that President Bush highlighted on April 18: Today's students who will be the first to benefit from teacher enhancement, new curricular materials, and student opportunities; tomorrow's students who will benefit from the full flowering of efforts now being started, particularly comprehensive programs for organization and system reform; all of us who will gain from improved science literacy; and our communities, which will be changed through the design of new schools and programs for the year 2000 and beyond. My colleague Ted Sanders will address this topic is greater depth in his testimony.

The Committee established a similar set of planning priorities for undergraduate education, again with an emphasis on underrepresented groups. My colleague Walter Massey will be discussing this aspect of the Committee's work in greater detail later this morning.

9/8/87.

Benefits of a Coordinated Federal Strategy

Our coordinated Federal strategy for improving mathematics and science education will produce many benefits, some of which benefits have already been realized.

- o Baseline information on Federal activities. The FCCSET process has produced a government-wide inventory that, for the first time, lists all Federal mathematics, science, and engineering education programs and activities across agencies and categorizes them according to degree of focus on mathematics and science education. The inventory includes previously unavailable information for policymakers about mathematics and science education activities at levels below the traditional agency budget line items, as well as volunteer and outreach activities. The inventory can serve as a valuable guide for teachers, parents, school administrators, and others who would like access to Federal expertise and resources.

- o An integrated Federal response. The problems addressed by the National Education Goals and the National Education Strategy cut across the missions of many Federal agencies, and so should the solutions. The programs in the President's FY 1992 Budget will enable member agencies and other policymakers to take a global view of the entire Federal response to mathematics and science achievement and to revise priorities or emphases to form a coordinated Federal strategy for meeting the National Goals.

- o Reductions in overlap and gaps. By learning more about missions and programs of different Federal agencies, the President and the Congress can take action to reduce overlaps and fill gaps.

- o Cost effectiveness. New knowledge about the range and purposes of Federal programs will result in more effective use of Federal resources. Since many programs in the inventory are cooperative ventures with other levels of government and the private sector, it will be possible to open new avenues for cost sharing and greater leveraging of public and private funds.

- o More emphasis on precollege education. The President has made precollege education the highest priority, focusing resources and attention on the crucial elementary and secondary years. In the America 2000: Excellence in Education Act, which will soon be sent to Congress, the President will propose a number of initiatives to improve and restructure precollege education, including defining new World Class Standards for schools, teachers, and students in five core subjects, including mathematics and science. In his testimony this morning, Ted Sanders will provide a more complete summary of the President's proposals for precollege education.

10/24/91

- o A stronger teaching force. Within precollege education, the FY 1992 Budget places first priority on enhancing the skills of teachers. Teachers will gain greater exposure to cutting-edge science, update their knowledge, and become better prepared to educate students.

- o Better educated students. The FY 1992 Budget provides for better use of Federal resources to motivate students to stay in the mathematics, science, and engineering pipeline. Student exposure to the latest scientific and technical developments will be increased through hands-on activities that link curricula with the real world of science and through contact with Federal experts and facilities. Targeted Federal programs will help students complete high school with competency in mathematics and science and encourage them to enter college to receive further education in these subjects.

- o A more scientifically literate public. The increased coordination achieved through the FCCSET process will better enable Federal agencies to provide science and technology information to the public and increase public understanding.

- o A more diverse scientific and technical workforce. The multiple programs reaching groups underrepresented in science and engineering, such as women, minorities, and the disabled, will improve career awareness and educational opportunities for these groups, which are integral to the nation's future workforce.

- o More educational facilities. Federal laboratories and other scientific facilities can become centers for student and teacher learning outside the classroom, offering hands-on opportunities and exposure not available in traditional school settings.

- o Replication of successful programs. Greater cooperation among Federal agencies, fostered through the FCCSET, will open new channels for disseminating information about exemplary programs and will expand opportunities for successful programs to be replicated.

- o Interagency network. Through the work of the Committee, there now exists a network of mathematics and science education professionals across all Federal agencies who can serve as valuable sources of information and coordination.

- o Better evaluation. The inventory of Federal programs developed by the Committee shows how Federal funds are currently being spent. This inventory will allow the Committee to evaluate individual agency programs and will provide a framework within which Federal funds can be refocused as needed to achieve programmatic objectives.

11/8/92

- Greater public support. The coordinated interagency budget and the program inventory are important public information documents about Federal programs, facilities, expertise, and resources for mathematics and science education. Greater public awareness and access to Federal resources can translate into increased public commitment and community action. These elements -- increased public commitment and community action -- are key elements in the National Education Strategy.

- Coordination with the States and public sector. By coordinating its own efforts in mathematics and science education, the Federal government can provide State and local governments and the private sector with easier and greater access to well-organized and effectively run Federal programs and other resources, such as personnel, educational materials, facilities, and equipment. By working together in this way, national progress toward achieving the National Education Goals by the year 2000 can be made most rapidly.

FY 1992 Budget Request

The President's FY 1992 budget request for mathematics and science education programs is $1.94 billion. The requested funding represents a $225 million or 13 percent increase over FY 1991. The following table summarizes the President's request by educational level.

Table 1. FY 1992 Budget Request for Mathematics and Science Education

(dollars in millions)

Level	FY 1991 Enacted	FY 1992 Request	Increase
Precollege	$514	$660	$146 (28.4%)
Undergraduate	$417	$477	$ 60 (14.3%)
Graduate	$784	$803	$ 19 (2.4%)
Total	$1,715	$1,940	$225 (13.1%)

In conformance with the policy guidance provided by the National Education Goals, the largest single increase in the FY 1992 budget request is in the precollege education area,

which received a $146 million or 28 percent increase to $660 million. The next largest increase – $60 million or 14 percent – went to undergraduate education, with graduate education, the single largest component, receiving a 2 percent increase to $803 million.

FY 1990 - FY 1992 Growth

The President's request for FY 1992 marks the second year of significant increases for Federal mathematics and science education programs. The FY 1992 request represents a 13 percent increase over FY 1991 and a 32 percent increase over FY 1990. (See Appendix D for detail.)

The most notable increase has been at the precollege level. The 92 percent growth in precollege funding between FY 1990 and FY 1992 is the direct result of heightened attention to elementary and secondary education brought about by the Education Summit in September 1989.

Departmental and Agency Roles

Several Federal departments and agencies make substantial investments in mathematics, science, and engineering education, and their roles vary by educational level. Among the departments and agencies over which this Subcommittee has jurisdiction, the following are participating in the President's initiative through the FCCSET process: National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), Environmental Protection Agency (EPA), Department of Housing and Urban Development (HUD), and Department of Veterans Affairs (VA).

At the precollege level, the Department of Education and the National Science Foundation are the principal agencies involved in mathematics and science education. Together, their programs represent 86 percent of the total FY 1992 budget request for precollege programs. The mission agencies – those with primary missions in science and research and development and with traditions of involvement in science and mathematics higher education – also have a modest precollege investment that they are proposing to expand in FY 1992.

At the undergraduate level, the Department of Defense (DOD) provides the highest level of funding for mathematics and science education, followed by the National Science Foundation and the Department of Health and Human Services.

At the graduate level, the Department of Health and Human Services (HHS) provides the greatest amount of support. HHS is followed by DOD and NSF in terms of their budget requests for FY 1992 for graduate science and mathematics education.

13/84/2

Details of the President's FY 1992 Request

I would now like to call on Ted Sanders, Deputy Secretary of Education, and then on Walter Massey, Director of the National Science Foundation, to provide more specifics of the President' FY 1992 budget request for mathematics and science education. Dr. Sanders will focus on precollege education, and Dr. Massey will cover undergraduate education. They will point out the ways that the recommendations developed through the FCCSET process, particularly as implemented in the programs of their department and agency, dovetail with and support the National Education Strategy.

Again, I want to express my appreciation to Senator Mikulski and her colleagues for holding this hearing.

14/82.

APPENDIX A

MEMBERSHIP OF FEDERAL COORDINATING COUNCIL FOR SCIENCE, ENGINEERING, AND TECHNOLOGY (FCCSET)

Office of Science and Technology Policy, Chair

Department of State
Department of Defense
Department of the Interior
Department of Agriculture
Department of Commerce
Department of Health and Human Services
Department of Housing and Urban Development
Department of Transportation
Department of Energy
Department of Education
Department of Veterans Affairs
Office of Management and Budget
National Security Council
National Aeronautics and Space Administration
Environmental Protection Agency
National Science Foundation

FCCSET STANDING COMMITTEES

Committee on Earth and Environmental Sciences
Committee on Education and Human Resources
Committee on Food, Agricultural, and Forestry Research
Committee on Industry and Technology
Committee on International Science, Engineering and Technology
Committee on Life Sciences and Health
Committee on Physical, Mathematical, and Engineering Sciences

15/847

APPENDIX B

MEMBERSHIP OF FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES

Department of Energy, Chair
Department of Education, Co-Vice Chair
National Science Foundation, Co-Vice Chair

Department of Defense
Department of Justice
Department of the Interior
Department of Agriculture
Department of Commerce
Department of Labor
Department of Health and Human Services
Department of Housing and Urban Development
Department of Transportation
Department of Veterans Affairs
National Aeronautics and Space Administration
Environmental Protection Agency
Office of Management and Budget
Office of Science and Technology Policy
Office of Policy Development
The Smithsonian Institution

APPENDIX C

NATIONAL EDUCATION GOALS

GOAL 1. By the year 2000, all children in America will start school ready to learn.

GOAL 2. By the year 2000, the high school graduation rate will increase to at least 90 percent.

GOAL 3. By the year 2000, American students will leave grades four, eight and twelve 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 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.

GOAL 6. By the year 2000, every school in America will be free of drugs and violence and will offer a disciplined environment conducive to learning.

DRAFT

APPENDIX D

FCCSET Committee on Education and Human Resources
Mathematics and Science Education
FY 1990 - FY 1992 Budget Comparison
(Dollars in Millions)

Education Level/ Major Program Areas	FY 1990	FY 1991	FY 1992 Request	Percent Increase for FY 90-92	Percent Increase for FY 91-92
Grand Total	$1466.09	$1715.70	$1940.79	32.4%	13.1%
Precollege	343.65	514.60	660.62	92.2%	28.4%
Teacher Preparation/ Enhancement	197.16	312.02	358.53	81.8%	14.9%
Curriculum Development*	68.28	107.69	137.27	101%	27.5%
Comprehensive Programs Organization Reform	38.89	39.51	57.57	48.0%	45.7%
Student Incentives and Opportunities	23.25	42.18	47.75	105%	13.2%
Other	16.07	13.24	59.50	273%	349.4%
Undergraduate	383.97	416.90	477.38	24.3%	14.5%
Faculty Preparation/ Enhancement	28.47	34.48	42.36	48.8%	22.9%
Curriculum Development*	92.07	108.58	123.69	34.3%	13.9%
Comprehensive Programs Organization Reform	32.28	37.46	47.65	47.6%	27.2%
Student Incentives and Opportunities	190.93	203.60	230.27	20.6%	13.1%
Other	40.23	32.79	33.44	-16.9%	2.0%
Graduate	738.46	784.15	802.79	8.7%	2.4%
Predoctoral Fellowships	79.59	85.34	100.53	26.3%	17.8%
Predoctoral Traineeships	120.96	144.06	153.85	27.2%	6.8%
Postdoctoral Fellowships	106.09	100.02	100.08	-5.6%	0.1%
Postdoctoral Traineeships	148.80	161.67	157.57	5.9%	-2.5%
Other*	283.03	293.06	290.75	2.7%	-0.8%

* includes program assessment and evaluation

dollars in millions

DRAFT 18/84

FCCSET

THE SECRETARY OF THE INTERIOR

WASHINGTON

May 14, 1991

Memorandum

To: Honorable Richard G. Darman, Director, Office of Management and Budget
Honorable D. Allan Bromley, Assistant to the President for Science and Technology

From: Manuel Lujan, Jr.

Subject: Draft FY 1993 Planning and Budget Process Terms of Reference (ToR) for Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) Cross-Cuts

Late last week, Department of the Interior members of FCCSET Committees conducting FY 1993 budget cross-cuts received the draft FY 1993 Planning and Budget Process ToR for these cross-cuts, with notification that a final version would be transmitted to the members of the full FCCSET within the next several days.

While the details of each draft ToR vary somewhat, each ToR contains the following provisions which the Department of the Interior finds objectionable:

1. Each FCCSET Committee member agency must submit to the relevant FCCSET Committee its initial FY 1993 budget options and supporting documentation, as reviewed by senior officials, by July 15, 1991;

2. OMB will not support any cross-cut budget requests from participating agencies that have not undergone the FCCSET Committee review and planning process; and

3. Funds allocated for cross-cut activities during the OMB passback and subsequent negotiating process may not be used as offsets for other agency programs.

Provision 1 is objectionable because it is totally out-of-phase with the Department's budgeting process. The Department of the Interior will submit its initial FY 1993 budget request to OMB in the first week of September, 1991. Consequently, the Department's FY 1993 budget request decisions will not be made by me until late August, 1991. No bureaus of the Department of the Interior may transmit any FY 1993 budget figures to FCCSET Committees prior to my final decisions.

Provision 2 is objectionable because, in conjunction with Provision 1, no Department of the Interior bureau will be able to participate in any of the FY 1993 cross-cuts if the draft ToR schedules are enforced, including the U.S. Geological Survey (USGS) in the U.S. Global Change Research Program (USGCRP). The USGS has been an important player in the USGCRP since the Program's inception.

Finally, Provision 3 is also objectionable because it limits my ability to carry out the stewardship agenda for the Department of the Interior. My responsibilities at the Department require careful balancing among many interests, including management, development, and preservation of the Nation's public lands and natural resources and carrying out trust responsibilities of the Federal Government with respect to Native Americans. "Fencing" of FCCSET cross-cut funds during the passback and subsequent negotiating process could severely hamper my ability to meet these responsibilities, as well as to address other Presidential initiatives, such as America the Beautiful and the War on Drugs. It also places the FCCSET process at a higher priority than other established policy processes such as are carried out by the National Security Council, and the Domestic and Economic Policy Councils. Science and technology policy and programs must freely compete with other policy and funding priorities and not be given a privileged status.

Many of the concerns I have raised in this memorandum were discussed in the last full FCCSET meeting. Most of the FCCSET membership at that meeting concurred that the cross-cut schedule as then proposed and as appears in the draft ToR was unacceptable. It is unfortunate that the views of the FCCSET membership have not been reflected in the draft ToR transmitted last week.

I believe there is ample time for FCCSET Committee review of the FY 1993 budgets of the Departments and agencies during the period of initial submission to OMB in September and the time of passback in December. The Department of the Interior welcomes FCCSET Committee review of its budget submission, after I have made my decisions as to the best allocation of funding to meet the Department's needs. FCCSET should not and can not be be allowed to interfere with the Department's budget process prior to that time.

I hope that my comments will be considered prior to the issuance of the final FY 1993 Planning and Process ToR for FCCSET cross-cuts. The Department has been supportive of the activities of FCCSET and FCCSET Committee to date and hopes to continue its support in the future.

cc: All FCCSET Members

FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

May 23, 1991

OFFICE OF THE SECRETARY

NOTE FOR: FCCSET CEHR MEMBERS
FCCSET CEHR WORKING GROUP MEMBERS

FROM: PEGGY DUFOUR
EXECUTIVE SECRETARY, FCCSET CEHR

SUBJECT: SCHEDULED TASK FORCE MEETINGS

The following FCCSET CEHR meetings have been scheduled for next week. **Please call the contacts listed to verify your participation.**

Thursday	5/30	9:00 - 11:00 a.m. N.B. Please arrive by 8:45 a.m. (See attached)	Undergraduate Task Force Pentagon Contact: Ted Berlincourt (703)614-0205
Thursday	5/30	1:00- 3:00 p.m.	Graduate Task Force Aerospace Building (by L'Enfant Plaza) 901 D Street, SW Room 338-A (3rd floor) Contact: Larry Miller (202)401-4753
Friday	5/31	10:30 - 12:00 p.m.	Precollege Task Force Room 6051 NASA Headquarters 400 Maryland Ave., SW Contact: Frank Owens (202)453-1110
Friday	5/31	12:00 - 1:00 p.m.	Task Force Chairs Meeting Room 3000 400 Maryland Ave., SW
Friday	5/31	1:00 - 3:00 p.m.	Working Group - Program Review Room 3000 400 Maryland Ave., SW

4/979

4-15
FCCSET

DEPARTMENT OF ENERGY
Washington, DC 20585

March 29, 1991

OFFICE OF THE SECRETARY

Schedule

MEMORANDUM FOR: MEMBERS OF FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES (CEHR)

FROM: PEGGY DUFOUR
EXECUTIVE SECRETARY, FCCSET CEHR

SUBJECT: FULL CEHR MEETING TO BE HELD APRIL 15, 1991

Admiral Watkins, as Chairman of FCCSET CEHR, has requested a meeting of the full Committee on Monday, April 15, 1991. The meeting will take place from 2:00-3:00 p.m. at the U.S. Department of Energy, 1000 Independence Avenue, SW in Room 8E-089. To facilitate clearance into the building, please notify my office at (202)586-7970 by COB Friday, April 12 if you plan to attend.

called 4/12

The purpose of the meeting is to discuss outcomes of the FY 1992 report, Congressional hearings on the FY 1992 budget, recent work by the National Education Goals Panel, and plans for the FY 1993 budget process. Suggestions for additional agenda items are welcome.

Members of the Committee's Working Groups are also invited to attend.

We hope that your schedules will allow you to participate and we look forward to seeing you on April 15.

4/15/91

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PEGGY DUFOUR
EXECUTIVE SECRETARY
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FROM: PEGGY DUFOUR
EHR EXECUTIVE SECRETARY 202 586-9988 586-7970

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ED HANLEY (EPA)	202 252-0835	382-4600

(continued)

BECKY DAISS (EPA)	202 352-0036	382-7891
MICHAEL BAKER (EPA)	202 252-0130	382-4965
BONNIE KALBERER (HHS)	301 402-1759	496-0608
JAY MOSKOWITZ (HHS)	301 402-1759	496-3152
JOY BOYER (HHS)	301 402-1759	496-3471
MICHELE APPLEGATE (ADAMHA/HHS)	301 443-1587	443-4266
ROBERT KNISELY (DOT)	202 366-6031 or 366-9654	366-9192
JOCELYN STEVENSON (DOT)	202 366-6031 or 366-9654	366-9193
JAMES STIMPSON (HUD)	202 401-1246	708-4230
RONALD MORONY (HUD)	202 401-1246	708-0640
DAVID LAPRADE (VA)	202 233-5584	233-2575
CHARLES DICKENS (OSTP)	202 395-1575	395-5101
JANICE HOWELL (OSTP)	202 395-3719	395-3662
JACK FELLOWS (OMB)	202 395-4817	395-3935
KATHY BURCHARD (OMB)	202 395-3910	395-5880
NORINE NOONAN (OMB)	202 395-4817	395-3534
RAE NELSON (OPD)	202 456-7739	456-7777
DOREEN TORGERSON (OPD)	202 456-7739	456-6585

FCCSET

FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES

Name	Telephone	FAX
Admiral James Watkins, DOE, Chairman	202-586-6210	202-586-9988
Dr. Ted Sanders, Education, Vice-Chairman	202-401-1000	202-401-3093
Dr. Luther Williams, NSF, Vice-Chairman	202-357-7557	202-357-9813
Mr. John Schrote, Interior	202-208-6182	202-208-5048
Dr. Charles E. Hess, USDA	202-447-5923	202-755-7842
Mr. Roberts T. Jones, Labor	202-523-6050	202-523-6827
Mr. John C. Weicher, HUD	202-708-1600	202-619-8000
Ms. Kate Moore, Transportation	202-366-9191	202-366-6031
Ms. Nancy Mason, Commerce	202-377-1091	202-377-4498
Mr. Erich W. Bretthauer, EPA	202-382-7676	202-475-9761
Ms. Ann I. Bay, Smithsonian	202-357-2425	202-357-2116
Mr. William G. Myers, III, Justice	202-514-3116	202-514-4699
Dr. Frederick K. Goodwin, HHS/ADAMHA	301-443-4797	301-443-0284
Mrs. Margaret Finarelli, NASA	202-453-8310	202-755-3741
Dr. Ted G. Berlincourt, DOD	703-697-3228	703-697-3762
Mr. D'Wayne Gray, Veterans Affairs	202-233-2455	202-233-5584
Mr. Charles E. M. Kolb, OPD	6515	2878
Mr. Joseph Hezir, OMB	3404	4817
Mr. Barry White, OMB	4532	3910
Ms. Peggy Dufour, DOE, Executive Secretary	202-586-7970	202-586-9988

called 8-21
no comments
letter looks fine
CJM

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

March 19, 1991

MEMORANDUM FOR ADDRESSEES

FROM: J. THOMAS RATCHFORD

SUBJECT: CLEARANCE OF DRAFT REPORT ON MATHEMATICS AND SCIENCE EDUCATION

OMB will soon be circulating for clearance the attached draft report on departmental and agency actions taken to strengthen the Federal role in mathematics and science education was prepared by the Office of Science and Technology Policy in response to provisions of Senate Report No. 101-474 to accompany H.R. 5158. This report was prepared with assistance from the members of the Committee on Education and Human Resources (CEHR). Senator Mikulski, the Subcommittee Chair, and Senator Garn, the Ranking Minority Member, will be sent the report.

This draft report addresses two topics:

(A) Mission agency education offices. The establishment and restructuring of offices of education in mission agencies to support science and mathematics education and to make the agencies fully responsive to the plan of the Federal Coordinating Council for Science, Engineering, and Technology Committee on Education and Human Resources; and

(B) Laboratory-education partnerships. OSTP activities, working with the National Science Foundation, the Department of Education, and Federal mission agencies, to coordinate agency efforts to improve mathematics, science, and engineering education, particularly in the area of developing laboratory education partnerships. It also reports on progress of Federal agencies with research and development activities to establish education offices at each particular Federal laboratory under its control.

OMB has been requested to send the report to all the departments and independent agencies represented on the FCCSET EHR Committee for review. I believe that it would be helpful for you to assist with the review at your department or agency.

We have requested OMB to conduct this review on a fast track and that departments and agencies be asked to complete their reviews and provide comments to your office by Friday, March 22. If you have any questions, please contact Charles Dickens (395-5101) or Janice Howell (395-3662).

I appreciate your cooperation in this matter.

Attachment

DRAFT

March 19, 1991

Dear Madam Chair:

I am pleased to send you this progress report describing efforts, developed under OSTP leadership, to accomplish the following: (A) The establishment and restructuring of offices of education in mission agencies to support science and mathematics education and to make the agencies fully responsive to the plan of the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) Committee on Education and Human Resources (CEHR); and (B) OSTP activities, working with the National Science Foundation, the Department of Education, and Federal mission agencies, to coordinate agency efforts to improve mathematics, science, and engineering education, particularly in the area of developing laboratory-education partnerships. I am also pleased to report on progress of Federal agencies with research and development activities toward establishment of education offices at each Federal laboratory under its control.

FCCSET COMMITTEE ON EDUCATION AND HUMAN RESOURCES

The White House Office of Science and Technology Policy (OSTP), through the Federal Coordinating Council for Science, Engineering, and Technology, established the Committee on Education and Human Resources in the spring of 1990. The Committee played a central role in preparing the Presidential Initiative on mathematics and science education included in The President's FY 1992 Budget.

The CEHR is chaired by Secretary of Energy James Watkins, with the Deputy Secretary of Education, Ted Sanders, and the Assistant Director for Education and Human Resources of the National Science Foundation (NSF), Luther Williams, serving as vice chairmen. The Committee includes sixteen departments and independent agencies, each represented by a senior policy-level official, generally at the Assistant Secretary level. The CEHR has representation from all Federal agencies with significant responsibilities in the area of science, mathematics, engineering, and technological education, including those with jurisdiction over the education of scientists, mathematicians, and engineers, as well as those with responsibilities for technician training and science literacy for the general public. The Committee also includes those agencies that are major users of scientific and engineering personnel.

SENATE REQUEST (A): MISSION AGENCY EDUCATION OFFICES

This progress report is submitted in response to the Senate Appropriation Committee's request, as set forth in its Report No. 101-474 to accompany H.R. 5158. The request appears on page 114 of the Committee Report:

> The Committee directs the OSTP to guide the mission agencies in establishing and restructuring their offices of education to support science and mathematics education and to make the agencies fully responsive to the FCCSET Education Committee's plan. Also, OSTP shall ensure that each agency's office of education has programs directed at student and teacher segments from K through graduate school.

Summary of Departmental and Agency Actions

Each of these departments and agencies has programs related to mathematics and science education. Descriptions of these programs are provided in the enclosed report, By the Year 2000, First in the World, which was prepared by the Committee on Education and Human Resources. The report includes a separate chapter for each of these departments and independent agency, beginning on page 67 and continuing through page 301. (Although it is not a member of the CEHR, the report includes information about programs of the Barry M. Goldwater Scholarship and Excellence in Education Foundation, which awards undergraduate scholarships for study in the fields of mathematics and the natural sciences.)

The names of the departmental and agency officials who are contacts for mathematics and science education programs are included with the descriptive materials for each agency. In a number of the departments and agencies, there are several offices that share in these responsibilities, and more than one contact is provided where appropriate to facilitate inquiries from educators and the public. Most agencies have programs that span the educational spectrum from kindergarten through graduate school.

SENATE REQUEST (B): LABORATORY-EDUCATION PARTNERSHIPS

This progress report is submitted in response to the Senate Appropriation Committee's request, as set forth in its Report No. 101-474 to accompany H.R. 5158. The request appears on page 115 of the Committee Report:

> The Committee strongly encourages efforts within the Federal Government to strengthen the educational activities of Federal research laboratories. Further, the Committee believes that the OSTP should require all Federal agencies with research and

development activities to establish education offices at each particular Federal laboratory under its control. The goal of such an effort is to improve internal Federal agency science, mathematics and engineering education programs, as well as foster education partnerships between various Federal labs and schools and academic institutions which are located near them. The Committee notes there is a need to coordinate and disseminate information on these programs among the various Federal mission agencies, as well as between the National Science Foundation [NSF] and the Department of Education. Therefore, the Committee directs OSTP to work with the NSF, the Department of Education, and Federal mission agencies to coordinate agency efforts to improve math, science, and engineering education, particularly in the area of developing laboratory education partnerships. The OSTP shall report the status of this effort and the agencies' funding needs for this activity to the Committee by March 15, 1991.

Summary of Departmental and Agency Actions

A number of these departments and agencies have research and development activities that are conducted through in-house and/or sponsored Federal laboratories. Many of the laboratories, particularly the larger ones, have established education offices or have designed certain staff to carry out this function. Furthermore, a number of partnerships between the departments and agencies and their laboratories have been established to bring their resources, especially the expertise of their scientists and engineers, to bear on efforts to improve mathematics, science, and engineering education. Funds to initiate or continue partnership activities are included in each department's and agency's FY 1992 budget request under the President's Initiative.

The CEHR report, By the Year 2000, First in the World, provides descriptions of a number of these partnerships. Mathematics and science education activities conducted by Federal laboratories, including examples of specific partnership agreements for some departments and agencies, are described in the respective chapters for the following departments and agencies:

Department of Agriculture (pages 75-79);

Department of Commerce/National Institute of Standards and Technology (pages 84-85) and National Oceanic and Atmospheric Administration (pages 88-92);

Department of Defense (pages 95-109);

Department of Energy (pages 132-146);

Department of Health and Human Services (pages 153-161);

Department of Housing and Urban Development (pages 161-169);

Department of the Interior (pages 175-181);

Department of Transportation (pages 222-230);

Environmental Protection Agency (pages 255-259);

National Aeronautics and Space Administration (pages 266-271); and

Smithsonian Institution (pages 292-297).

OSTP has worked with the Department of Education, the National Science Foundation, and the mission departments and agencies to further interagency cooperation with the goal of improving mathematics and science education. These activities are summarized in the chapters on the Department of Education (page 118) and the National Science Foundation (page 280).

Under the leadership of OSTP, and with the assistance of the FCCSET Committee on Education and Human Resources, departments and agencies will continue to strengthen their activities related to mathematics and science education. OSTP intends to continue to foster the advances being made in terms of partnerships and in tapping the resources of the Federal laboratories to help improve mathematics and science education. We much appreciate the support for these efforts provided by you and your colleagues and look forward to working with you as we work on this vitally important topic.

Sincerely,

D. Allan Bromley
Director

Enclosure

The Honorable Barbara A. Mikulski
Chair, Subcommittee on Veterans Affairs,
Housing and Urban Development, and
Independent Agencies
Committee on Appropriations
U.S. Senate
Washington, DC 20510