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ABSTRACT

This Sourcebook is a compilation of information selected from that reviewed by the Expert Panel that had been appointed to review and assess Federal programs in science, mathematics, engineering, and technology (SMET) education; it also contains information about the Expert Panel itself. The Sourcebook is organized in four sections. Section 1 contains an overview of federal agency budget and program data, together with a matrix of information on federal SMET programs and 16 federal agency mission statements. Section 2 contains an outline of evaluation and other program review activities of the same federal agencies, a matrix explaining the type of review conducted for each program, and 10 individual agency evaluation overviews. Section 3 concerns the organization of the Expert Panel. Section 4 contains a bibliography for those seeking information on SMET education in the United States. (PR)

The National Investment in Science, Mathematics, Engineering, and Technology Education: Where Now? What Next?

Report of the Expert Panel

Sourcebook

August 1993

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The Federal Investment in Science, Mathematics, Engineering, and Technology Education: *Where Now? What Next?*

SOURCEBOOK

Expert Panel for the Review of Federal Education Programs in Science, Mathematics, Engineering, and Technology

August 1993

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Abbreviations and Acronyms

CEHR	Committee on Education and Human Resources
DOD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
ED	Department of Education
EPA	Environmental Protection Agency
FCCSET	Federal Coordinating Council for Science, Engineering and Technology
HHS	Department of Health and Human Services
NASA	National Aeronautics and Space Administration
NSF	National Science Foundation
SI	Smithsonian Institution
SMET	Science, Mathematics, Engineering, and Technology
USDA	Department of Agriculture

Introduction

This Sourcebook accompanies the report *The Federal Investment in Science, Mathematics, Engineering, and Technology Education: Where Now? What Next?* The 1993 report contains the findings of the Expert Panel for the Review of Federal Education Programs in Science, Mathematics, Engineering, and Technology that was convened by the Federal Coordinating Council for Science, Engineering and Technology (FCCSET) Committee on Education and Human Resources (CEHR).

This Sourcebook is a compilation of information selected from that reviewed by the Expert Panel, as well as information about the Expert Panel itself. Section 1 contains an overview of Federal agency budget and program data, together with a matrix of information on Federal science, mathematics, engineering, and technology (SMET) education programs. Additionally, the matrix shows the number of persons served by each program. Section 1 also contains mission statements and other information about the various Federal agencies responsible for SMET education.

Section 2 contains an overview of evaluation and other program review activities of the same Federal agencies and a matrix explaining the type of review conducted for each program. Section 2 also contains individual evaluation overview statements from each Federal agency.

Section 3 concerns the organization of the Expert Panel. This section includes the charter of the Expert Panel and a list of Panel members.

Section 4 contains a bibliography for those seeking further information on SMET education in the United States. In addition to the general bibliography, there are also listings specific to FCCSET CEHR and to individual Federal agencies.

This Sourcebook contains materials gathered for the specific purposes of the Expert Panel. (For further discussion of Panel organization and activities, please see the appendix to *The Federal Investment in Science, Mathematics, Engineering, and Technology Education: Where Now? What Next?*) Information was gathered from a number of Federal agencies over an extended period of time. Every effort has been made to ensure its accuracy as of June 20, 1993.

Overview of Federal Science, Mathematics, Engineering, and Technology Education FY 1993 Budget and Programs

Introduction

The Federal Coordinating Council for Science, Engineering and Technology (FCCSET) Committee on Education and Human Resources (CEHR) is charged with developing a coordinated, ongoing Federal strategy for science, mathematics, engineering, and technology (SMET) education that addresses the challenges posed by the National Education Goals established by the President and the nation's governors in 1990. Data collected by CEHR in carrying out its charge show that the Federal Government will spend approximately $2.2 billion in fiscal year (FY) 1993 on education programs legislated by Congress for SMET education (core programs). In addition to these core programs, the Federal Government sponsors programs that contribute to SMET education although they are not constituted solely to support SMET. The best available estimate of the size of this contributing effort, based on data collected by the Expert Panel, is $22.2 billion. Table 1-1 shows Federal expenditures in FY 1993 for both core and contributing SMET programs.

Table 1-1
FY 1993 Estimate of Total Federal Expenditures on SMET Education

SMET Education Programs	FY 1993 (Billions of Dollars)
Core programs	2.2
Contributing programs	22.2
Total	24.4

As a point of comparison, the Department of Education estimates that all U.S. educational institutions (elementary and secondary, colleges and universities) expended approximately $425 billion on education in all disciplines and fields of study (SMET and otherwise) in 1991–92.[1] The Federal Government expenditure on core and contributing

[1] This figure, which represents the total expenditure for elementary and secondary institutions and colleges and universities for 1991–92 in all fields of study, is used only for comparative purposes. (However, there is no estimate of the total national expenditure on SMET education.) Total expenditures for public elementary and secondary school include current expenditures, interest on school debt, and capital outlay. Data for private elementary and secondary schools are estimated. Total expenditures for colleges and universities include current-fund expenditures and additions to plant value. Expenditures of noncollegiate postsecondary institutions have been excluded. SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1992*, p. 35 NCES 92–97 (Washington, D.C., 1992).

programs for SMET education represents 5.7 percent of this total. These figures provide an important context for understanding the size of the Federal Government's effort in SMET education. However, the size of the contributing programs in SMET education is difficult to determine because of the complexity in estimating the exact share of resources allocated to SMET education for these programs.

CEHR classifies Federal education programs in three categories that reflect their degree of focus on science, mathematics, engineering, and technology education:

- Category 1 programs are those legislated by Congress for science, mathematics, engineering, and technology education or expressly managed by Federal agencies as a SMET education activity. In fulfilling its charge to develop a coordinated, ongoing strategy for SMET education, CEHR focuses primarily on Category 1 or "core" programs, and only those programs were considered by the Expert Panel in its review of Federal efforts.[2]

- Category 2 programs are primarily SMET research programs, but they contain an education component, such as graduate assistantships supported under research grants or research centers. Category 2 programs are considered "contributing" programs.

- Category 3 programs are broad education or human resource programs having some component that contributes to SMET education. Category 3 programs are also considered "contributing" programs.

Although contributing programs are not expressly appropriated or managed as SMET education programs, they have substantial components that contribute to education in SMET areas. However, because the SMET education function is embedded within the larger purpose of these programs, the budget figures reflected in this Sourcebook for these programs represent a rough estimate of Federal activity contributing to SMET education. Some agencies were unable to estimate the proportion of program funding that contributes to SMET education. Certain agencies could provide only partial estimates, and others were unable to make any estimates.

The following sections of this Sourcebook provide more detailed information about both core and contributing programs, with the primary focus on core programs, providing information on core program budgets by education levels, functional areas, and agencies; the number of programs by agency; and the ages of core programs by agency.[3]

Core Programs

In keeping with its charge to develop a coordinated, ongoing Federal strategy for SMET education that addresses the challenges posed by the National Education Goals established by the President and the nation's governors in 1990, CEHR has developed four strategic objectives related to core programs in SMET education. Based on the National Education Goals, these objectives are as follows:

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[2] Budget figures for core programs in this Sourcebook were supplied by the FCCSET CEHR Budget Working Group. These figures may differ from the figures reported by the agencies in the Program Matrix found in Table 1-11 because they were compiled at different times for different purposes.

[3] For further information on FCCSET CEHR programs and budgets, see *By the Year 2000: First in the World: Report of the FCCSET Committee on Education and Human Resources* (Washington, D.C., 1992).

- Improved science and mathematics performance.
- A strong elementary and secondary teacher workforce.
- An adequate pipeline for the science and technology workforce, including greater participation of underrepresented groups.
- Improved public understanding of science.[4]

The President's FY 1993 budget invests $2.2 billion in "core" programs specifically targeted to science, mathematics, engineering, and technology education, an increase of $189 million (9.5 percent) over the FY 1992 actual levels for the programs.

As Table 1-2 shows, larger amounts of funding are allocated to graduate programs (42 percent) and elementary and secondary programs (35 percent); lesser amounts of funding are allocated to undergraduate programs (20 percent) and public understanding of science programs (3 percent).

Table 1-2
FY 1993 Core SMET Education Program Budget by Education Level

SMET Education Levels	FY 1993 (Millions of Dollars)	FY 1992–93 Percentage Increase (%)
Elementary, secondary	769.6	9.2
Undergraduate	428.4	6.2
Graduate	921.6	11.7
Public understanding	66.5	3.4
Total	2,186.1	9.5

Elementary and Secondary Level

The FY 1993 budget for elementary and secondary education programs is $769.6 million, a 9.2 percent increase over the FY 1992 funding level. In 1990 there were 41,224,000 students (the most recent figure) enrolled in U.S. elementary and secondary educational institutions.[5] When compared with this enrollment, the FCCSET CEHR elementary and secondary investment in core programs represents $18.67 per student.

The CEHR strategy at the elementary and secondary level is structured around five priorities: standards for curriculum, teaching, and assessment; materials reform (curriculum, course, and instructional); teacher enhancement; teacher preparation; and systemic reform. The budget for elementary and secondary education programs is shown in Table 1-3.

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[4] For further information on the FCCSET CEHR Strategic Plan, see *Pathways to Excellence: A Federal Strategy for Science, Mathematics, Engineering, and Technology Education—U.S. Science, Mathematics, Engineering, and Technology Education Strategic Plan, FY 1994—FY 1998* (Washington, D.C.: Federal Coordinating Council for Science, Engineering and Technology; Committee on Education and Human Resources), 1993.

[5] U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1992*, p. 51 NCES 92-97 (Washington, D.C., 1992).

Table 1-3
FY 1993 Core Program Elementary and Secondary Budget by Functional Area

Elementary and Secondary Functional Areas	FY 1993 (Millions of Dollars)
Teacher enhancement and preparation	395.3
Organization (systemic) reform and comprehensive	127.8
Student support	120.8
Curriculum improvement (including standards)	74.3
Other	28.2
Educational technologies	23.3
Total	769.7

The FY 1993 budget proposes to double to 43,000 the number of teachers receiving Federal assistance for training both in instructional techniques and content knowledge about SMET. FCCSET CEHR proposes to continue to increase this number dramatically in future years. In concert with this goal, 48 percent ($369.1 million) of the funding for elementary and secondary education is allocated for teacher enhancement programs. Curriculum improvement (including curriculum standards and assessment) programs receive just 10 percent of this funding.

Across functional areas, agency roles vary considerably. For example, 63 percent of the budget for teacher enhancement and preparation is provided by the Department of Education (ED), mainly through the Eisenhower State Mathematics and Science program. More than 60 percent of curriculum improvement is funded by the National Science Foundation (NSF). Mission agencies such as the Departments of Defense (DOD), the Interior (DOI), Health and Human Services (HHS), Energy (DOE), and Agriculture (USDA); the National Aeronautics and Space Administration (NASA); and the Environmental Protection Agency (EPA) finance about one-half (49 percent) of student support activities.

Undergraduate Level

The FY 1993 budget contains $428.4 million for undergraduate programs, a 6.2 percent increase over the FY 1992 funding level. In 1988 there were 692,238 science and engineering students enrolled in undergraduate institutions (the most recent figure available).[6] When compared with enrollment in science and engineering, the FCCSET CEHR investment in undergraduate education represents $619 per student enrolled.

The FCCSET CEHR Strategic Plan calls for revitalization of undergraduate education through reshaping curricula and by providing opportunities for faculty enhancement. The undergraduate budget is shown in Table 1-4.

[6] This estimate includes undergraduate enrollment in the physical sciences, mathematics, life sciences, and engineering. As an alternative measure, there were 11,862,910 undergraduates (in all majors) enrolled in U.S. institutions in 1990. If measured as a fraction of all undergraduates enrolled, the FCCSET CEHR undergraduate investment would equal $36.10 per enrollee. SOURCE: U.S. Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 1992*, pp. 177, 209 NCES 92-97 (Washington, D.C., 1992).

Table 1-4
FY 1993 Core Program Undergraduate Budget by Functional Area

Undergraduate Functional Areas	FY 1993 (Millions of Dollars)
Student support	106.7
Organization reform and comprehensive	97.9
Faculty enhancement	91.5
Other, including educational technologies	76.9
Curriculum improvement	55.4
Total	428.4

The largest share of undergraduate programs funding—25 percent of the FY 1993 budget—is for student-focused programs and support. Programs that are comprehensive in nature (those that exhibit multiple goals or serve multiple audiences) and programs that are meant to systemically reform undergraduate education constitute a considerable share (23 percent) of the funding at the undergraduate level. However, curriculum improvement and faculty enhancement programs—the two highest FCCSET CEHR priorities at the undergraduate level—together constitute just 36 percent of the FY 1993 budget.

The National Science Foundation and the Department of Defense are the largest players at the undergraduate level, accounting for two-thirds of budget expenditures (33 percent). The Department of Defense is the major contributor to student support programs through its Reserve Officer Training Corps. The National Science Foundation provides the majority of support for curriculum improvement and organization reform. Although overall Department of Agriculture funding is modest, a major proportion of its education resources is budgeted for undergraduate activities.

Programs directly targeted toward two-year colleges remained at roughly 6 percent of Federal expenditures for programs at the undergraduate level.

Graduate Level

The FY 1993 budget contains $921.6 million for graduate and postdoctoral programs, an 11.7-percent increase over the FY 1992 funding level. In 1990 there were 458,943 science and engineering students enrolled in institutions of higher education (the most recent figure available).[7] As a point of comparison, the FCCSET CEHR investment in graduate education represents $2,008 per student enrolled in SMET fields.

Various Federal programs (both core and contributing) provide a substantial share of the funding for graduate education in the United States. Virtually all of the funding for graduate education core programs supports students pursuing advanced studies through fellowships and traineeships. Fully $596.4 million is expended on graduate student support

[7] This estimate includes engineering, physical sciences, environmental sciences, mathematical sciences, computer sciences, agricultural sciences, biological sciences, psychology, social sciences, and health sciences enrollment in 1990. SOURCE: National Science Foundation, Division of Sciences Resources Studies, *Selected Data on Graduate Students and Postdoctorates in Science and Engineering: Fall 1990* NSF 91-320, p. 1 (Washington, D.C., 1991).

and postdoctoral support; an additional $325.2 million supports other programs at the graduate and postdoctoral levels, mostly DOD advanced training of military personnel.

The largest player at the graduate level is the Department of Health and Human Services, which, together with the Department of Defense, will supply 83 percent of Federal funding for graduate study in FY 1993. With the exception of the National Science Foundation (NSF), each agency concentrates its resources at the graduate level on providing graduate education opportunities in a set of specific disciplines that are directly related to its mission (e.g., the Environmental Protection Agency funds graduate education in environmental science–related fields). In the case of NSF, programs broadly address all fields of science, mathematics, and engineering as part of NSF's legislative mandate to maintain the vitality of the basic science and engineering enterprise.

Public Understanding of Science

Public understanding of science and lifelong learning are topics of importance in the National Education Goals as well as in the FCCSET CEHR Strategic Plan. The FY 1993 budget includes $66.5 million for these programs, a 3.4 percent increase over the FY 1992 funding level. The Strategic Plan includes a special goal of increasing the public's understanding of science through the establishment of standards for public science literacy. Federal funding for this category is displayed in Table 1-5.

Table 1-5
FY 1993 Core Program Budget for Public Understanding of Science by Functional Area

Public Understanding of Science Functional Areas	FY 1993 (Millions of Dollars)
Public and community-linked programs	43.3
Media resources	10.1
Public information campaigns	8.3
Education programs for decisionmakers	4.4
Other	0.3
Total	66.4

In FY 1993, 65 percent of the public understanding of science funding is directed toward public and community-linked programs. These programs make use of museums, science centers, zoos, aquariums, libraries, and visitor centers at the National Parks and other Federal installations. The Department of the Interior accounts for almost 66.5 percent of the funding appropriated for public understanding of science.

Federal Agency Roles

The National Science Foundation (24.6 percent), the Department of Defense (24.1 percent), the Department of Health and Human Services (21.2 percent), and the Department of Education (15.6 percent) account for 85.5 percent, or almost $1.9 billion of the $2.2 billion Federal investment in core programs for FY 1993.

Table 1-6 shows distribution of agency funding across education levels. The programmatic activities of the Department of Education, the Environmental Protection Agency, and the National Science Foundation are concentrated at the elementary and secondary levels. The largest shares of the budget for the Department of Agriculture and the Department of Energy are allocated to the undergraduate level. The Department of Commerce, the Department of Health and Human Services, and the Department of Defense contribute primarily to graduate level education. Increasing the public understanding of science is the focus of spending for the Smithsonian Institution (SI) and the Department of the Interior.

Table 1-6
FY 1993 Budget Totals for Core SMET Education Programs

Agency	Total (Millions of Dollars)	Elementary and Secondary (% of Agency Total)	Undergraduate (% of Agency Total)	Graduate (% of Agency Total)	Public Understanding of Science (% of Agency Total)
NSF	537.9	57.6	26.6	14.7	1.1
DOD	526.7	4.7	26.6	68.7	0.0
HHS	464.1	5.8	7.2	86.6	0.4
ED	340.9	96.3	3.7	0.0	0.0
DOE	102.1	26.8	51.0	17.2	5.0
DOI	86.0	26.8	9.2	12.6	51.4
NASA	79.8	25.7	31.1	43.2	0.0
USDA	24.4	5.0	56.0	39.0	0.0
SI	10.1	7.1	1.3	4.9	86.7
EPA	9.0	78.8	10.1	11.1	0.0
DOC	5.2	0.0	0.0	100.0	0.0
Total	2,186.2	35.2	19.6	42.2	3.0

Number of Programs

There are more than 290 Federal core SMET education programs. Table 1-7 shows the number of programs targeting each education level by the agency sponsor. The Departments of Energy and Health and Human Services together sponsor almost one-half of the Federal Government core SMET education programs. Forty percent of all programs target the elementary and/or secondary education levels, 26 percent are undergraduate programs, 21 percent are at the graduate level, and 9 percent seek to improve the public's understanding of science. Four percent of programs are targeted at multiple education levels or are designed to address no specific education level.

Table 1-7
Number of Core SMET Education Programs by Education Level

Agency	Total	Elementary and Secondary	Under-graduate	Graduate	Public Under-standing of Science	Multiple/ Nontargeted
DOE	69+	18+	24+	18	9	—
HHS	63+	23	16	21	3	—
NSF	35	11	12	7	—	5
DOD	30+	15+	8+	4	1	2
NASA	23+	13+	3+	5	—	2
DOI	22+	11+	6+	1	4	—
SI	18	10	1	1	6	—
ED	13	9	2	—	1	1
USDA	9	3	4	2	—	—
EPA	8	3	—	2	1	2
Total[a]	290+	116+	76+	61	25	12

+ Indicates that some programs contain multiple, independent programmatic activities that have been counted as one program. If all activities are counted as separate programs, it is estimated that there may be 300 or more Federal core SMET education programs in FY 1993.

[a] When the totals for programs do not agree across tables, it is either because Implementation (Dissemination, Evaluation, and Studies) programs are omitted—these are not directed at a particular education level—or because several start dates are assigned to programs with phased-in or regional starts. When programs serve more than one education level, they are counted as a separate program for each level they serve.

Age of Programs

Forty percent of SMET programs have been created in the last five years. About 28 percent are 10 years old or older, having been created prior to 1982.[8] Table 1-8 shows the breakdown of core SMET programs by year of program origin.

[8] For 26 percent of the programs, the year of origination could not be precisely determined or was unknown at the time of publication. Roughly 10 percent of the programs were formed between 1982 and 1986.

Table 1-8
Number of Core SMET Education Programs by Year of Program Origin

Agency	Total	Pre-1984	1984–88	Post-1988	Unknown[a]
DOE	69	20	7	42	—
DOD	30	13	6	3	8
HHS	63	19	5	28	11
NSF	35	2	14	16	3
DOI	22	6	2	3	11
NASA	23	3	5	4	11
SI	18	12	3	3	—
ED	13	3	2	8	—
EPA	8	1	1	6	—
USDA	9	3	2	4	—
Total	290	82	47	117	44

[a] Some program dates of origin were unavailable from agencies. Others were impossible to determine because multiple components within programs had different dates of origin.

Groups Underrepresented in SMET

In FY 1993, the Federal Government will spend $2.2 billion on core SMET education programs. Of this total, 11 percent (or $236 million) will support programs that specifically target women, ethnic or racial minorities who are underrepresented in SMET, persons with disabilities, or other populations underrepresented in SMET.[9] Of the $236 million, 58 percent of the funds are targeted toward racial or ethnic minorities, 22 percent are focused on programs that support women in SMET education, 7 percent are targeted toward other underrepresented populations, and less than 1 percent is focused on education programs that support persons with disabilities in SMET fields.[10]

The largest share of the funding for programs targeted at groups underrepresented in SMET supports undergraduate education (44 percent), followed by programs at the elementary and secondary levels (28 percent), as seen in Table 1-9.

[9] These are programs with the specific purpose of focusing on groups traditionally underrepresented in SMET fields, meaning that 50 percent or more of the program funds support these individuals. Almost all FCCSET CEHR core programs support participants of underrepresented groups (many of them make special efforts to overrepresent the participation of individuals from groups traditionally underrepresented in SMET). Because of the difficulty in estimating the proportion of funds from all programs that serve groups traditionally underrepresented in SMET, only those programs specifically targeting these groups are included in the $236 million estimate.

[10] At the time of publication, 19 percent of funding targeted at groups traditionally underrepresented in SMET could not be accurately attributed to the above-listed groups being served. Percents reported total more than 100 percent. Some programs target multiple underrepresented audiences.

Table 1-9
FY 1993 Estimated Expenditures by Education Level on Core SMET Education Programs Specifically Targeted at Groups Underrepresented in SMET

Education Levels	Total (Millions of Dollars)	% of Total
Elementary and secondary	65.2	28
Undergraduate	104.1	44
Graduate	57.6	24
Public understanding of science	3.9	2
Multiple, unknown	5.2	2
Total	236.0	100

Contributing Programs

It is estimated that the Federal Government will spend $22.2 billion on programs that contribute to SMET education but are not themselves constituted to explicitly address SMET education needs. FCCSET CEHR defines two types of contributing programs.[11] Category 2 programs are primarily SMET research programs that also contain an educational component (e.g., graduate research assistantships supported under research grants or research centers). Category 3 programs are broad education or human resource programs containing some component that contributes to education in SMET subject areas, such as the Department of Education's Chapter 1 of the Elementary and Secondary Education Act of 1965, which provides the largest program of Federal assistance to schools.

Table 1-10 shows estimated Federal expenditures on programs contributing to SMET education for FY 1993.

[11] The figures mentioned in this section represent each agency's best estimate of the share of funding of these programs that is attributable to SMET education. The Department of Health and Human Services (HHS), the Department of Housing and Urban Development (HUD), the Department of the Interior (DOI), the Department of Veterans' Affairs (VA), the Environmental Protection Agency (EPA), and the Smithsonian Institution (SI) were not able to make estimates at the time of publication. They are excluded from these totals.

Table 1-10
Estimate of FY 1993 Expenditures on Programs Contributing to SMET Education

Category	FY 1993 Expenditures (Billions of Dollars)
Category 2 SMET research programs with education component	1.7[a]
Category 3 General education programs with SMET component	20.5[b]
Total	22.2

[a] This figure represents an estimate that should be used with caution. The Department of Energy ($377.7 million) and NASA ($600.9 million) were able to report only total research grants expenditures ($377.7 million and $600.9 million, respectively). Some undetermined portion of these funds supports graduate assistants and is therefore applicable toward Category 2.

[b] This figure represents an estimate that should be used with caution. The Department of Labor estimate for the Category 3 total includes Job Training Partnership Act and Job Corps programs. Some undeterminable portion of these funds supports SMET basic skills education and training and is therefore applicable toward Category 3. The Department of Transportation and the Department of Agriculture were able to provide only partial estimates of their Category 3 expenditures.

Science, Mathematics, Engineering, and Technology Program Matrix

Table 1-11 contains a listing of core Federal science, mathematics, engineering, and technology education programs[12] and persons served at each educational level. Within each educational level, the programs are categorized by their functional purpose (e.g., teacher enhancement, curriculum improvement).

Expenditures listed in Table 1-11 may not match budget totals provided in the previous sections (the most recent official figures) because of marginally different classification systems and because of the different purposes for which they were collected: budget formulation and program review.

[12] These are programs defined by FCCSET CEHR as Category 1 or "core" programs in science, mathematics, engineering, and technology education. These are congressionally appropriated SMET education programs or are explicitly managed as such.

Table 1-11
Science, Mathematics, Engineering, and Technology Education Program Matrix

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Teacher Enhancement and Preparation				
DOD	U.S. Army Summer Associate Program for High School Science and Mathematics Faculty	1.00	1984	161 faculty (FY 1993 est.) at 12–15 Army labs
ED	Eisenhower State Mathematics and Science Program	246.00	1985	750,000 teachers (1991 est.); approximately 15,000 school districts receive funding services
	Bilingual Educational Personnel Training—Special Competition for Mathematics/Science	2.30	1993	500 teachers for 45 days of training (est.) for teaching of limited English-proficient students
DOE	Federal Coordinating Council for Science, Engineering, and Technology/Committee on Education and Human Resources Teacher Institutes	4.00	1993	800 teachers (FY 1993 est.)
	Teacher Research Associates Program	3.40	1989	355 math/science teachers (FY 1992)
	Local Programs for Teachers	2.00	1992	37,000 teachers (FY 1992 est.). Funding for many of the teachers trained under this program is provided by the National Science Foundation.
	Teachers Academy for Mathematics and Science in Chicago	1.50	1990	4,661 K–8 teachers (1991)
	Preservice Teacher Enhancement Program	0.40	1992	10 schools (FY 1992)
	Civilian Radioactive Waste Management[a] Teacher Workshops	0.10	1992	20,000 teachers per year (est.)
HHS	Minority High School Student Research Apprentice Program[a]—Teachers (Preservice and Inservice)	2.64	1991	57 teachers (1993 est.)
	Science Education Partnership Awards[a]—Teacher Enhancement	1.05	1991	Data not available until late 1993
	Intramural Laboratory Programs—Teachers	0.27	1980s	40 high school teachers (FY 1993 est.)

[a]Programmatic activity has been cross-listed in more than one level and/or program category.
[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.
[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

Continued on next page

Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Teacher Enhancement and Preparation (cont.)				
HHS (cont.)	Oakridge Association of Universities—Science Teachers Research Involvement for Vital Education	0.01	1990	Less than 5 teachers (1993 est.)
DOI	National Parks as Classrooms[a]	1.25	1916	1.5 million students (FY 1993 est.)[c]
	Water Education for Teachers	0.06	1990	
EPA	Environmental Education and Training Program	1.00	1992	200 teacher trainers trained during eight two-day workshops (FY 1992 est.). Teacher trainers are estimated to train 20–30 teachers each annually.
NASA	Aerospace Education Services Program[a]	4.90	1961	1.3 million students per year; 18,000 teachers
	NASA Educational Workshops for Math, Science, and Technology Teachers/NASA Educational Workshops for Elementary School Teachers	2.00	1984	215 teachers per year in 2-week workshops at NASA centers
	Challenger Center[a]	0.50	1987	1,648 teachers and 79,444 students per year
	Minority Programs[a]	0.25	Various	
NSF	Teacher Enhancement	98.83	1984	21,800 "leader" or "master" teachers (FY 1993 est.), who may in turn reach four to five times this number of teachers.
	Teacher Preparation	12.91	1986	2,000 teachers (FY 1993 est.). This program was revised in 1993 to focus on large-scale collaborative efforts among faculty from scientific and education disciplines.
	Research in Teaching and Learning[a]	7.20	1987	
	Presidential Awards for Excellence	4.15	1984	216 teachers (FY 1992 est.). Program covers one week of training activities, Presidential Awards winners association program funding, and an NSF grant to improve education at the home institution.

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[a]Programmatic activity has been cross-listed in more than one level and/or program category.
[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Continued on next page

Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Teacher Enhancement and Preparation (cont.)				
SI	National Air and Space Museum Workshops/ Teacher Resource Center	0.11	1979	11,500 teachers
	Smithsonian Astrophysical Observatory Science Education Program	0.11	1992	1,000 teachers (1992 est.)
	National Science Resources Center[a] Leadership Institutes	0.08	1989	70,000 teachers and 1,800,000 students (1992 est.). These figures represent the number of elementary school teachers and elementary school children (grades K–6) who are located in the 72 school districts that are being assisted by the Center through the Elementary Science Leadership Institutes and the *Science and Technology for Children* curriculum projects. Funding for many of the teachers trained under this program is provided by the National Science Foundation.
	National Museum of Natural History Teacher Training/Naturalist Center	0.02	1978	12,000 teachers
	National Zoological Park Teacher Workshops	0.01	1976	200 teachers
Elementary and Secondary—Curriculum Improvement				
USDA	Vocational Aquaculture Education	0.50	1990	250 teachers from 50 states (FY 1992 est.)
	Agriculture in the Classroom	0.21	1981	44,000 teachers, 142,000 students (FY 1992 est.). Federal funds cover overall coordination; actual education costs are borne by the states.
DOD	In-House Instructional Technology Development/ Delivery	0.25	—	519,000 students (FY 1993 est.)

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[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Curriculum Improvement (cont.)				
ED	Eisenhower National Mathematics and Science Program—Other Discretionary	7.42	1985	Approximately 60 awards (3-year period)
	Eisenhower National Mathematics and Science Program—Curriculum Frameworks	4.98	1992	Awards to 6 states and Washington, D.C., in FY 1992. Additional 6–10 awards expected in FY 1993.
	National Research and Development Centers	2.70	1960s	2 centers conduct basic research in SMET.
DOE	Curriculum and Instructional Materials Development	3.20	1986	11,000 students (FY 1992 est.)
HHS	Science Education Partnership Awards[a]—Curriculum Development	0.80	1991	Data not available until late 1993
	Ethical, Legal, Social Implications[a] Human Genome Research Program—Curriculum Supplement and Video	0.64	1990	Includes grants for videos and curriculum supplements; estimates of numbers served are in the thousands.
	Risk Reduction Program for High Schools	0.06	1990	
	Curriculum Materials—National Institute on Drug Abuse	0.05	1990	
	National Institutes of Health Mini-Textbooks	0.01	1984	Several thousand copies are distributed annually.
DOI	National Parks as Classrooms[a]	2.80	1916	1.5 million students (FY 1993 est.)[c]
	Education Materials	1.35	——	
	Excellence in Education	0.41	——	
	Joint Education Initiative	0.03	1990	4 workshops (FY 1993 est.)

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——, Not specified.

[f]Budget data provided for FY 1992.
[g]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Curriculum Improvement (cont.)				
NASA	Aerospace Education Services Program[a]	1.60	1961	1.6 million students per year
	Teacher Resource Centers/Central Operation of Resources for Educators	0.60	—	97,440 educators per year
	Challenger Center[a]	0.50	1987	1,648 teachers and 79,444 students per year
	Space Science Involvement Program	0.48	1980	97,440 students per year
	Minority Programs[a]	0.07	Various	
NSF	Instructional Materials Development	39.68	1988	16,000 districts (FY 1992 est.)
SI	National Science Resources Center[a]/Elementary Science Curriculum Development Project	0.09	1988	70,000 teachers and 1.8 million students
	National Zoological Park Curriculum Kits	0.05	1980	100 kits
	Smithsonian Astrophysical Observatory Project	0.03	1985	3,500 teachers—est. for last six years—and 350,000 students (the number of students is derived from an average number of 100 students participating per teacher)
Elementary and Secondary—Organization Reform/Comprehensive				
DOD	Presidential Stay In School Program	0.40	—	
	Naval Coastal Systems Center		1981	3,000 students
	Others		Various	
	US Air Force High School Apprenticeship Program	0.20	1986	125 students (FY 1993 est.)
	Army Uninitiated Introduction to Engineering	0.10	1980	686 students (FY 1993 est.)

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—, Not specified.
[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Organization Reform/Comprehensive (cont.)				
DOD (cont.)	US Air Force Stay in School Program	0.10	——	858 students (FY 1993 est.)
	Defense Mapping Agency Texas Pre-Freshman Engineering Program	0.07	1984	1,877 students (FY 1993 est.)
	Army Teaching Corps of Engineers PROSPECT Courses	0.05	——	500 students (FY 1993 est.)
	Service Adopt-A-School Programs Defense Nuclear Agency Others	0.01	—— 1989 Various	911 students (FY 1993 est.)
ED	Bilingual Education Discretionary Grants to Local Education Agencies	20.00	1993	Beginning 1993, 5-year project awards for special math/science competitions to provide instruction to 56,000 limited English-proficient students for 35 days.
	Eisenhower Regional Consortia	13.60	1992	New program; no data; 10 centers
	Eisenhower Clearinghouse	3.50	1992	New program; no data; 1 center
DOE	Laboratory Partnerships With Rural and Urban Schools	7.82	1990	12 school districts (1992)
	Environmental Management Precollege Outreach	2.20	1990	42,678 students (FY 1992 est.) 1,692 teachers (FY 1992 est.) 379 schools (FY 1992 est.)
	Mathematics Program	1.35	1990	550 teachers (FY 1992 est.)
	Bonneville Power Administration High School Science Alliance	0.10	1992	New program; no data available
	Fossil Energy Comprehensive Programs	0.10	1990	21 school districts (FY 1992)

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[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[d]Budget data provided for FY 1992.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Organization Reform/Comprehensive (cont.)				
HHS	Adopt-A-School Programs	0.14	Various	5–10 schools annually
	Science Alliance	0.01	1991	2 elementary schools in 1993
EPA	Environmental Education Grants	2.85	1992	300 awards (FY 1992) in amounts between $5,000 and $250,000
	Progression Education[a]	0.13[b]	1992	13 junior high students (FY 1992); estimated award amounts range from $5,000–$22,000[c]
NASA	National Space Grant and Fellowship Program[a] K-12 Outreach Program	2.00	1987	200 programs
	SHARP: Summer High School Apprenticeship Program	1.20	——	186 students
	National Scholars Program	0.50	1993	5,300 students and 6 school districts (FY 1991 est.)
	Minority Programs[a]	0.11	1991	
NSF	Statewide Systemic Initiatives	53.77	1991	25 states plus the Commonwealth of Puerto Rico (FY 1993)
	Career Access (major component is Comprehensive Regional Centers for Minorities)	16.93	1987	10,000 students (FY 1992 est.)
	Informal Science Education[a]	12.20	1986	
	Urban Initiative	5.00	1993	3 cities
	Educational System Reform—Science	1.39	1992	
	Educational System Reform—Mathematics	1.10	1992	

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[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.
[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Organization Reform/Comprehensive (cont.)				
SI	Smithsonian Tropical Research Institute Education Program	0.12	1972	5,000 students (1992 est.)
	National Science Resources Center[a]	0.08	1985	1.4 million teachers; 10 million students
	National Air and Space Museum Education Outreach	0.03	1985	5,000 students (1992 est.)
Elementary and Secondary—Student Support				
USDA	Research Apprenticeship Program	0.50	1980	200 minority and women students, 75 faculty (FY 1992)
DOD	Science and Engineering Apprenticeship Programs for High School Students	1.20	——	650 students (FY 1993 est.)
	Army Research Office		1979	
	Office of Naval Research		1979	
	Others		Various	
	Army Material Command Student Service Contracts	0.60	1985	150 students (FY 1993 est.)
	Air Force Outstanding Student Summer Hire Program	0.40	——	62 students (FY 1993 est.)
	Army Medical Research and Development Command Multiple Programs (precollege through postdoctoral)[a,c]	0.38[b]	——	
	Army Research and Engineering Apprenticeship Programs	0.20	1980	108 students (FY 1993 est.)
	National Security Agency Gifted and Talented Program	0.10	1990	10 students (FY 1993 est.)

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[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.
[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Student Support (cont.)				
DOD (cont.)	Secretary of the Navy Naval Science Awards Programs	0.10	——	2,700 students (FY 1993 est.)
ED	Upward Bound Mathematics/Science Initiative	14.20	1991	3,300 disadvantaged students (est.) for six-week intensive summer program
DOE	Prefreshman Enrichment Program	2.65	1973	2,652 students (FY 1991); 3,000 students (FY 1992 est.)
	Research/Learning Experiences for Students	2.32	1992	36,384 students (FY 1992 partial est.)
	High School Honors	1.58	1985	420 students (FY 1992)
	National Science Bowl	1.00	1991	12,000 students from 2,000 schools (FY 1992 est.)
	Minority Apprenticeship Program	0.50	1990	130 students per year
	Bonneville Power Administration Saturday Academy Apprenticeship	0.20	1990	200 students per year (est.)
	Energy Efficiency and Renewable Energy Student Programs	0.10	1990	1,842 students, 82 teachers, 61 schools (FY 1992 est.)
HHS	Minority High School Student Research Apprentice Program[a]—Students	6.59	1980	3,700 students (1993 est.)
	Health Careers Opportunity Program[a]—Precollege	1.50	1972	550 students (1993 est.)
	National Institutes of Health Summer Science Enrichment Program	0.95	1990	200–300 students (1993 est.)
	Science Education Partnership Awards[a]—Student Incentives	0.77	1991	Data not available until late 1993
	National Cancer Institute Student Research Training Program	0.53	——	100–200 students (1993 est.)

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[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Student Support (cont.)				
HHS (cont.)	National Institutes of Health High School Laboratory Employment/Fellows	0.21	Various	44 students (1993 est.)
	Intramural Research Training Award[a]/Summer—Precollege	0.05	1970s	25 students (1993 est.)
	Research Supplements for Minorities (High School)	0.05	1990	5 plus students (1993 est.)
	Biomedical Research Advancement—Saturday Scholars	0.03	1991	48 junior high school students in 1993
DOI	Bridging Activities	10.37	—	9.2 million visits (1987 est.)
	Youth Conservation Corps	2.40	1970	More than 1,000 youths (FY 1993 est.)
	Bridging to Universities	0.77	—	15,000 to 20,000 students per year (FY 1993 est.)
	Resource Apprenticeship	0.60	1987	40 students (FY 1993 est.)
	Women and Minorities Initiatives	0.25	—	
NASA	Minority Programs[a]	0.78	—	
	Federal Junior Fellowships	0.37	—	151 students
	Stay-in-School	0.17	—	700 students (1991 est.)
NSF	Informal Science Education[a]	17.42	1986	
	Young Scholars	10.95	1988	7,800 students (FY 1993 est.)
	Superquest	0.50	—	40 students per year and 10 teachers per year
	Minority High School Supplements	0.04	1992	

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[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.
[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Elementary and Secondary—Other				
DOI	Various Programs	1.50	Various	
HHS	Office of Minority Programs Memorandum of Understanding with National Science Foundation—Precollege Intervention	5.00	1993	New program; will support middle school and high school academic enrichment programs in biomedical sciences.
	Centers for Disease Control and Prevention Training Grant—Precollege	0.50	1970	
	National Institutes of Health Office of Science Education Policy—Precollege Programs	0.10	1993	Funds are for general precollege program activities; includes publications, instructional materials, conference exhibits, etc.
EPA	Presidential Environmental Youth Award	0.06	1991	10 awards made annually
NASA	Educational Technologies	4.60	1988	35,000 teachers (FY 1991)
	Educational Mailings	0.70	——	150,000–190,000 teachers (FY 1991 est.)
NSF	Applications of Advanced Technology	18.52	1988	

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[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Undergraduate—Curriculum Improvement				
USDA	Mississippi Valley Curriculum Program	0.50	1987	
DOE	Curriculum and Instructional Development	4.37	1991	15 teachers, 224 students (1991 partial est.). Several curriculum programs are in the development/pilot stages and do not yet have impact numbers available.
NSF	Undergraduate Course and Curriculum	27.02	1988	1,200 faculty, 300,000 students
	Instrumentation and Laboratory Improvement	22.91	1985	2,200 faculty, 113,000 students
Undergraduate—Faculty Enhancement				
DOD	Summer Faculty Research and Engineering Program	1.70	1983	141 high school faculty (FY 1993 est.)
DOE	Faculty Research Participation	2.40	1950s	251 faculty members (FY 1992 est.)
	Environmental Management Faculty Programs	0.78	1992	11 institutions, 12 faculty members (FY 1992 est.)
	Health Physics Faculty Research	0.52	1992	8 faculty, 5 students (FY 1992 est.)
HHS	National Heart, Lung, and Blood Institute Minority Faculty Development Award	1.29	1985	16 faculty (1993 est.)
DOI	Undergraduate Faculty Development	1.60	—	90 faculty (FY 1993 est.)
NASA	Summer Faculty Fellowship Program	3.90	1966	300 students (FY 1991 est.)
NSF	Research in Undergraduate Institutions	20.15	—	
	Undergraduate Faculty Enhancement	8.00	1989	4,000 faculty
	Research Opportunity Awards	3.01	—	74 faculty research grants (FY 1993 est.)

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—, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Undergraduate—Student Support				
DOD	Historically Black Colleges and Universities	22.80	——	2,520 students (FY 1993 est.)
	Minority Institution Outreach Programs			
	Office of Naval Research		1979	
	Others		Various	
	Army Material Command Short-Term Training for Scientists and Engineers	10.50	1958	$5.5 million expended for 4,388 students (est.)
	Science and Engineering Courses/Degree Programs (various agencies and services)	6.40	Various	2,071 students (FY 1993 est.)
	National Security Agency Mathematics and Science Program	3.80	1965	
	Army Material Command Long-Term Training for Scientists and Engineers	1.87	1972	
	National Security Agency	1.50	——	3,414 students (FY 1993 est.)
	After Hours College Programs		1965	
	Summer Programs		1958	
	National Security Agency Undergraduate Training Program	1.20	1987	50 students (FY 1993 est.)
	Cooperative Education Programs[a]	0.65[b]	——	94 students (FY 1993 est.)[c]
	National Security Agency		1954	
	Air Force Armstrong Laboratory		1990	
	Naval Air Development Center		1960	
	Naval Research Laboratory		1964	
	Army Medical Research and Development Command Multiple Programs (precollege through postdoctoral)[a,d]	0.38[b]	——	

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——, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
	Undergraduate—Student Support (cont.)			
ED	National Science Scholars	4.46	1991	2,557 new and continuing awards at $1,760 per award; 800–900 new awards per year
DOE	Laboratory Cooperative Undergraduate Program	6.75	1950s	700 students per year (est.)
	Energy Analysis and Diagnostic Centers	3.60	1976	26 universities (FY 1993), 180 students (FY 1993 est.)
	Science and Engineering Research Semester	3.60	1988	404 students (FY 1992)
	Environmental Management Scholarships/Fellowships	2.43	1991	281 students, 68 interns, 84 institutions, and 33 faculty (FY 1992 est.)
	Energy Efficiency and Renewable Undergraduate Programs	2.19	1988	4,800 students, 160 faculty, 141 colleges (FY 1992 est.)
	Environmental Management Community College Projects	1.47	1991	4,393 students, 2 faculty, and 39 institutions (FY 1992 est.)
	Minority Training for Energy Related Careers	1.00	1990	722 students per year
	Minority Honors Training and Industrial Assistance	0.40	1987	200 students (FY 1992 est.)
	Nuclear Energy Historically Black Colleges and Universities Program	0.40	1989	23 students, 9 schools (1989)
	Federal Junior Fellowship Program	0.26	1982	50 students per year (est.)
	Minority Access to Energy Related Careers	0.25	1990	39 students (FY 1993)
	Undergraduate Plasma Physics Fellowships	0.25	1992	25 students per year
	Bonneville Power Administration Co-op Program	0.15	1977	100 students per year (est.)

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[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Undergraduate—Student Support (cont.)				
HHS	Minority Access to Research Careers[a]—Honors Undergraduate Research Training	11.95	1972	600 plus students (1993 est.)
	Health Careers Opportunity Program[a]—Undergraduate 2-year and 4-year	7.6	1972	800 plus students from 2-year institutions (1993 est); 1,100 plus students from four-year institutions (1993 est.)
	National Institutes of Health Undergraduate Laboratory Employment/Fellowships	1.59	Various	413 students (1993 est.)
	Short-Term Training for Minority Students	1.24	1991	Awards are made to institutions; each institution supports up to 4 students.
	Research Supplements—Minorities	1.10	1990	115 students (1993 est.)
	National Institute of General Medical Science Supplements for Undergraduate Research Experiences	0.54	1993	150–200 students (1993 est.)
	Intramural Research Training Award[a] Summer—Undergraduate	0.49	Various	150–175 students (1993 est.)
	Centers for Disease Control and Prevention Training Grants[a]—Undergraduate	0.30	1970	130 students (1993 est.)
	Minority Access to Research Careers[a]—Summer Research Training	0.26	1972	75–100 students (1993 est.)
	Introduction to Biomedical Research	0.23	1990	85 students (1993 est.)
	Research Supplements—Disabled Individuals	0.02	1990	1 student (1993 est.)

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[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Undergraduate—Student Support (cont.)				
DOI	Historically Black Colleges and Universities Intern/Summer Employment	1.57	1966	950 students (FY 1993 est.)
	Cooperative Education Program	1.46	—	643 students (FY 1993 est.)
	Minority Participant Earth Science	1.20	1971	1,500 students (FY 1993 est.)
	Historically Black Colleges and Universities/ Student Appointments	0.88	—	
EPA	National Network for Environmental Management Studies[a]	0.03[b]	1987	200 students from 150 universities (since 1987); 42 undergraduate students (FY 1992 est.); stipends range from $5,000–7,000 per term[c]
NASA	Co-op[a]	7.00	—	
	Minority Programs[a]	6.75	—	
	National Space Grant College and Fellowship Program[a]—Undergraduate Program	4.54	1987	19,320 students
	Advanced Design Program	1.50	—	1,000 students, 41 institutions
NSF	Research Experiences for Undergraduates	21.67	1987	11,000 students (FY 1987–1989)
SI	National Museum of Natural History Natural History Intern Program	0.13	1981	

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[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.

[d]Budget data provided for FY 1992.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Undergraduate—Organization Reform/Comprehensive				
USDA	1890 Institution Capacity Building Grants	10.25	1990	17 institutions
	Challenge Grants	1.50	1990	27 institutions, 1,000 faculty (FY 1992 est.)
	Educational Telecommunications	1.22	1992	24 projects to 30 U.S. institutions (FY 1992)
ED	Minority Science Improvement	5.90	1972	230 institutions (cumulative since 1972)
DOE	Office of Environmental Restoration and Waste Management Academic Partnerships	9.00	1990	3,902 students, 25 institutions (FY 1992 est.)
	Fossil Energy University Coal Research Support	5.00	1992	25 faculty and 30 students (FY 1992 est.)
	Laboratory/Minority Institution Alliances	4.00	1981	940 precollege students, 1,120 undergraduate students, 25 graduate students, 351 faculty (1992 est.)
	Fossil Energy University Geoscience Support	1.10	1989	10 faculty/student teams (FY 1992 est.)
	Fossil Energy Historically Black Colleges and Universities Education and Training	1.00	1991	15 students and 10 faculty (FY 1992 est.)
HHS	Bridges to the Future[a]—2-year and 4-year	5.00	1992	15–20 institutions (1993 est.)
	Minority Biomedical Research Support—Undergraduate Colleges	1.25	1972	12 institutions (1993 est.)
	Minority Access to Research Careers[a]—Ancillary Grants	0.30	1972	89 students (1993 est.)
	National Institute of Neurological Disorders and Stroke—Traineeships in Biotechnology	0.05	1990	54 teachers (1993 est.)
DOI	Historically Black Colleges and Universities Program	0.43	1984	11 historically black colleges and universities (FY 1993 est.)

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[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.
[d]Budget data provided for FY 1992.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Undergraduate—Organization Reform/Comprehensive (cont.)				
EPA	Progression Education[a]	0.13[b]	1992	13 undergraduate students (FY 1992 est.); award amounts range from $5,000–$22,000[c]
NASA	Community College Programs	1.00	——	45 institutions (FY 1991 est.)[c]
	Minority Programs[a]	0.10	——	
NSF	Alliances for Minority Participation	12.77	1991	31,280 students who are members of underrepresented groups (1993 est.)
	Engineering Education Coalitions	12.10	1990	33 engineering schools
	Research Careers for Minority Scholars	6.24	1989	900 students receiving year round research scholarships (FY 1993 est.)
	Minority Undergraduate Program	3.24	1991	365 students (FY 1993 est.)
	Students and Faculty with Disabilities	0.25	1992	
Undergraduate—Other				
DOE	Fossil Energy Faculty/Student Team Research	8.50	1979	50 faculty, 200 students (FY 1992 est.)
	Community College Partnership for Environmental Technology Education	0.35	1990	2,200 students (1992 est.)
NSF	National Research and Education Network	1.00	1986	25 institutions (FY 1993 est.)

[a]Programmatic activity has been cross-listed in more than one level and/or program category.
[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Graduate—Student Support (Predoctoral Fellowships)				
USDA	National Needs Graduate Fellowships	3.50	1984	189 students, 19 institutions; 63 new awards are made each year, with awards given for 3 years (FY 1992).
DOD	Army Medical Research and Development Command Multiple Programs (precollege through postdoctoral)[a,c]	0.37[b]	—	
DOE	Health Physics and Industrial Hygiene Fellowships	1.87	1989	40 students (FY 1992)
	Energy Research Fusion Energy Graduate Support	1.31	1980	35 predoctoral students per year (est.)
	Energy Research Basic Energy Science Graduate Support	1.00	1977	35 predoctoral students per year (est.)
	Civilian Radioactive Waste Management[a] Graduate Fellowship Program	0.54	1983	20 students per year (est.)
	Western Area Power Administration Engineering Fellowship	0.01	1980	40 students per year
HHS	National Research Service Awards[a]—Predoctoral Fellowships	5.56	1976	370 students (1993 est.)
	Health Services Dissertation Research Grants	0.46	1990	21 fellows (1993 est.)
DOI	Cooperative Research Units	7.70	1935	2,170 students (FY 1993 est.)
EPA	Minority Academic Institutions Graduate Assistance	1.00	1992	35 master-level students (FY 1992 est.)
	Minority Institutions Assistance Program	0.40	1981	345 fellows (est. since 1983)
NASA	Graduate Student Researcher Program	8.20	1990	572 students per year
	Earth Observation System	3.70	—	

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[a]Programmatic activity has been cross-listed in more than one level and/or program category.
[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Graduate—Student Support (Predoctoral Fellowships) (cont.)				
NASA (cont.)	Minority Program[a] (Graduate Student Researcher Program/Underrepresented Minorities Focus)	3.40	1990	100 students, 45 institutions
NSF	Graduate Fellowships	42.32	1952	740 fellows and 120 minority fellows are new awardees; a total of 2,400 will receive funding (FY 1993 est.).
	Minority Graduate Fellowships	7.47	1978	
	Research Training Groups	4.29	1992	224 students (FY 1993 est.)
	Graduate Engineering Education	4.00	1992	105 students (FY 1993 est.)
	Women in Engineering	2.40	1993	
SI	Smithsonian Institution-Wide Fellowship Program[a]	0.25[b]	1965	350 students
Graduate—Student Support (Predoctoral Traineeships)				
DOE	Health Physics Faculty Research Grants	0.75	1992	8 grants
HHS	National Research Service Awards[a]—Predoctoral Traineeships	131.37	1976	6,500 students (1993 est.)
	Centers for Disease Control and Prevention Training Grants[a]—Graduate	10.20	1972	1,300 students (1993 est.)
	National Library of Medicine Training in Medical Informatics	3.88	1976	106 students (1993 est.)
	National Research Service Awards[a]—Health Services Research Traineeships	0.30	1976	5 institutions (1993 est.)
NSF	Graduate Research Traineeships	27.80	1993	Awards will begin in FY 1994.

[a]Programmatic activity has been cross-listed in more than one level and/or program category.
[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
		Graduate—Student Support (Postdoctoral Fellowships)		
DOD	Army Medical Research and Development Command Multiple Programs (precollege through postdoctoral)[a,e]	0.37[b]	——	
DOE	Energy Research Basic Energy Research Graduate Support	4.00	1977	52 postdoctoral students per year (est.)
	Energy Research Postdoctoral Fellowship	2.00	1993	10 students (FY 1993 est.)
	High Energy Physics Graduate Support	2.00	1980	25 postdoctoral students per year (est.)
	Energy Research Basic Energy Science Graduate Support	0.80	1977	14 postdoctoral students per year (est.)
	Alexander Hollaender Distinguished Postdoctoral Fellowship Program	0.59	1986	10 awards
	Fusion Energy Graduate Support	0.40	1986	6 postdoctoral researchers per year (est.)
	Fossil Energy Postdoctoral Fellowships	0.22	1980	22 students per year (est.)
	Civilian Radioactive Waste Management[a] Historically Black Colleges and Universities Postdoctoral Fellowships	0.20	1983	3 faculty per year (est.)
HHS	National Research Service Awards[a]—Postdoctoral Fellowships	50.03	1976	1,600 students (1993 est.)
NASA	Resident Research Associate	13.10	——	220 postdoctoral students per year
NSF	Postdoctoral Fellowships	13.66	Various	
SI	Smithsonian Institution-Wide Fellowship Program[a]	0.25[b]	1965	

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[a]Programmatic activity has been cross-listed in more than one level and/or program category.
[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Graduate—Student Support (Postdoctoral Traineeships)				
USDA	Postdoctoral Research Associates	4.43	1983	350 students, 75 federal labs annually
HHS	National Research Service Awards[a]—Postdoctoral Traineeships	148.14	1976	4,100 students (1993 est.)
Graduate—Other				
DOD	Naval Postgraduate School and Air Force Institute of Technology	39.40	1909 1946	2,800 students (FY 1993 est.)
	Palace Knight/Acquire	10.20	1989 1986	983 students (FY 1993 est.)
	National Research Council Resident Research Associateships Army Air Force	2.50	—— 1988 1972	44 students (FY 1993 est.)
	Advanced Study Programs (various agencies and services)	2.00	Various	505 students (FY 1993 est.)
	Cooperative Education Programs[a] National Security Agency Air Force Armstrong Laboratory	0.65[b]	—— 1954 1990	93 students (FY 1993 est.)[c]
DOE	Experimental Program to Stimulate Competitive Research	5.00	1992	150 traineeships awarded (FY 1993 est.), 35 institutions, 12 states
	Environmental Management Academic Partnerships	2.50	1990	90 graduate students, 25 institutions (FY 1992 est.)
	Energy Research Laboratory Co-op Graduate Program	1.74	1977	279 students (FY 1992)

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[a]Programmatic activity has been cross-listed in more than one level and/or program catagory.
[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[e]Budget data provided for FY 1992.
[f]Includes Student Summer Associate Program and NRC Fellowships.
[g]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
		Graduate—Other (cont.)		
DOE (cont.)	Energy Efficiency and Renewable Energy Graduate Programs	1.67	1977	48 students, 12 faculty, 12 universities (FY 1992 est.)
	Environmental Management Scholarships/ Fellowships (predoctoral and postdoctoral)	0.69	1991	129 graduate students, 12 faculty, and 33 institutions (FY 1992 est.)
HHS	Intramural Research Training Awards[a]	10.75	1986 (post-doctoral) 1989 (pre-doctoral)	480 predoctoral and postdoctoral trainees (1993 est.)
	Cancer Education Program (Cancer Epidemiology and Biostatistics Training, Cancer Epidemiology Program, and Cancer Prevention Fellowship Program)	8.54	Various	3,200 students (1993 est.)
	Bridges to the Future[a]—M.S./Ph.D.	5.00	1992	15–20 institutions (1993 est.)
	Biomedical Research Technology—National Cancer Institute	2.52	1990	350 students (1993 est.)
	National Research Council/National Institutes of Health Biotechnology and Neuroscience Research Associates	1.80	——	40 students (1993 est.)
	Biotechnology Training	1.40	1980s	43 students (1993 est.)
	Research Training Support National Institute of Diabetes and Digestive Kidney Disorders	1.09	——	Administrative support for research training
	National Heart, Lung, and Blood Institute Academic Teacher Awards	0.68	1971	5 institutions (1993 est.)

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[b]Arbitrary distributions, actual percentage allocated to each activity unknown.
[c]Arbitrary distributions, actual breakdown of participants unknown
——, Not specified.

[e]Budget data provided for FY 1992.
[f]Includes Student Summer Associate Program and NRC Fellowships.
[g]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Graduate—Other (cont.)				
HHS (cont.)	National Heart, Lung, and Blood Institute Minority Institute Research Training Program	0.68	1985	6 institutions (1993 est.)
	Oak Ridge Associated Universities Postgraduate Research—Food and Drug Administration	0.44	1985	8–16 trainees (1993 est.)
	National Institutes of Health Graduate Lab Employment	0.29	Various	48 students (1993 est.)
	Veteran's Affairs Postgraduate Program—Food and Drug Administration	0.23	1979	6 individuals (1993 est.)
	Ethical, Legal, and Social Issues Program[a]—Graduate Program and Lecture Series	0.21	1990	
EPA	Progression Education[a]	0.14[b]	1992	13 graduate students (FY 1992 est.); award amounts range from $5,000–$22,000[c].
	National Network for Environmental Management Studies[a]	0.03[b]	1987	200 students from 150 universities (since 1987); 42 graduate students (FY 1992 est.)[c]
NASA	National Space Grant College and Fellowship Program[a]—Graduate Program	5.00	1987	700 fellows
	National Space Grant College and Fellowship Program[a]—Research Capability Enhancement	1.90	1989	359 affiliate institutions
	Graduate Co-op[a]	0.50	——	67 students

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[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Public Understanding of Science—Education Programs for Decision Makers				
DOE	Civilian Radioactive Waste Management[a] Science Engineering and Education Center	0.25	1993	New program, no data yet
DOI	Public Science Literacy	1.94	—	17 states (FY 1993 est.)
NSF	Research in Teaching and Learning[a]	0.80	1987	
Public Understanding of Science—Media Resources				
DOE	New Explorers	0.95	1991	880 teachers, 41,000 students, approx. 6 million viewers (FY 1992 est.)
	Futures	0.15	1990	15 million viewers
DOI	Media Programs	3.25	—	
NSF	Informal Science Education[a]	4.88	1986	
Public Understanding of Science—Public and Community-Linked Dissemination				
DOE	Energy Efficiency and Renewable Energy Public Science Literacy	3.66	1977	50,000 inquiries per year (est.)
	Civilian Radioactive Waste Management[a] Radioactive Waste Public Science Literacy	2.00	1990	11,000 per year (est.)
	Museum Science Education Program	0.95	1991	8 million people (est.)

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[a]Programmatic activity has been cross-listed in more than one level and/or program category.
[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Public Understanding of Science—Public and Community-Linked Dissemination (cont.)				
DOE (cont.)	Civilian Radioactive Waste Management[a] Education and Information Center	0.50	1991	20,000 teachers nationwide (est.) 3.5 million students nationwide (est.)
	Civilian Radioactive Waste Management[a] National Exhibits Program	0.35	1984	250,000 people per year (est.)
	Civilian Radioactive Waste Management[a] Utility Education and Information	0.10	1992	500,000 per year (est.)
HHS	National Institutes of Health Science Education Partnership Awards[a]—Public Understanding of Science Grants	1.16	1991	Data not available until late 1993
	National Institute of Mental Health Science Education Partnership Awards[a]—Public Understanding of Science	0.36	1992	New grant program; no data available
	Ethical, Legal, and Social Issues Program[a]—Public Science Education	0.08	1990	
DOI	Public Education and Interpretive	23.55	1916	252 million visitors (FY 1993 est.)
NSF	Informal Science Education[a]	0.35	1986	
SI	National Museum of Natural History Exhibit Hall Restoration	4.01	1911	6.8 million people
	National Air and Space Museum Long-Range Exhibition Program	2.33	1989	9 million visitors (1992 est.)

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[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Public Understanding of Science—Public and Community-Linked Dissemination (cont.)				
SI (cont.)	National Zoological Park Education Programs and Exhibits	0.92	1889	2.5 million people
	National Museum of Natural History Education Programs	0.75	1964	2.5 million people
	National Air and Space Museum Education Programs	0.68	1976	11,000 students (1992 est.)
	Smithsonian Astrophysical Observatory Educational Activities	0.02	1957	250 teachers (1992 est.)
Public Understanding of Science—Science Education Resources				
DOD	National Security Agency National Physical Science Consortium	0.20	1988	17 students (FY 1993 est.)
ED	Educational Resources Information Center on Science, Mathematics	0.33	1966	14,000 responses to inquiries (1992 est.)
DOI	National Water Information Clearinghouse	2.74	1992	80,000 requests (FY 1993 est.)
EPA	Environmental Education Resource Library (National Environmental Education Clearinghouse)	0.15	1992	50 states. Project initiated but not completed; no informational requests can be processed yet (FY 1992 est.).

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[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
——, Not specified.

[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
		Public Understanding of Science—Other		
HHS	National Institutes of Health/National Science Foundation—Survey of Public Knowledge and Understanding of Science	0.30	1992	This is a study, not a program.

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[b]Arbitrary distributions; actual percentage allocated to each activity unknown
[c]Arbitrary distributions; actual breakdown of participants unknown.
——. Not specified.
[d]Budget data provided for FY 1992.
[e]Includes Student Summer Associate Program and NRC Fellowships.
[f]Most FCCSET/CEHR agencies do not explicitly budget for evaluation and dissemination. Budgets for these activities are embedded in program budgets and have not been estimated or included here.

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Table 1-11—Continued

Agency	Program Title	FY 1993 Budget (Millions of Dollars)	Program Origin (Year)	Program Coverage
Evaluation, Studies, Dissemination[f]—Studies				
ED	National Assessment of Educational Progress—Mathematics, Science Portion	14.00	1969	Assessment of math/science knowledge and skills of elementary and secondary students through nationally representative samples every two to three years.
	Third International Mathematics and Science Study	0.95	1991	No data—study under way
NSF	Studies	6.79	1984	
Evaluation, Studies, Dissemination—Dissemination				
NSF	Dissemination	0.99	1992	
Evaluation, Studies, Dissemination—Evaluation				
NSF	Evaluation	5.97	1991	

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[b]Arbitrary distributions; actual percentage allocated to each activity unknown.
[c]Arbitrary distributions; actual breakdown of participants unknown.
—, Not specified.

[d]Budget data provided for FY 1992.
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Agency Mission Statements

Department of Agriculture

Mission

The Department of Agriculture (USDA) was established in 1862 to provide the leadership, oversight, and management necessary to ensure that the nation is provided with adequate supplies of high-quality food and fiber. Accordingly, USDA was designated the lead Federal agency for teaching, research, and extension in the food and agricultural sciences. This mission is carried out by a number of departmental research and education agencies: Agricultural Research Service, Cooperative State Research Service, National Agricultural Library, Economic Research Service, Forest Service, Extension Service, and others with somewhat more limited research and education roles, such as the Office of International Cooperation and Development, Soil Conservation Service, Agricultural Marketing Service, Office of Transportation, Agricultural Cooperative Service, National Agricultural Statistics Service, and Human Nutrition Information Service.

USDA works with all university and college programs in the food and agricultural sciences but has a special relationship with the land-grant system. There are land-grant institutions in each state, the District of Columbia, and some territories. These institutions include Tuskegee University and 16 other institutions authorized in 1890 to serve Black Americans. There are more than 600 teaching, research, and service programs in the food and agricultural sciences at the baccalaureate or higher levels. The USDA estimated budget authority for FY 1993 is $68.0 billion.

Components

As the lead Federal agency for higher education in the food and agricultural sciences, USDA works closely with the universities to ensure excellence in U.S. higher education—curricula revitalization, faculty development, undergraduate research expansion, emerging technologies usage, etc. The Department also works closely with colleges and universities to ensure that the Nation has an adequate supply of scientists and professionals with requisite expertise in the food and agricultural sciences. It provides graduate fellowships/traineeships and postdoctoral assignments in Federal laboratories as mechanisms to train personnel for critical positions with Government, academia, and the private sector.

A principal linkage between universities and USDA is through programs of the Cooperative State Research Service (CSRS), which has responsibility for extramural research and higher education. Hatch Act funds serve as the base upon which other Federal funds (including those for the National Research Initiative and Special Research Grants), state and private support build.

Within CSRS, the McIntire-Stennis Cooperative Forestry program funds forestry research at designated institutions. The Evans-Allen program allocates funds for agricultural research at the 1890 land-grant institutions and Tuskegee University. The land-grant universities further relate to USDA through Extension Service programs that involve continuing education and technology transfer, funded largely by authority of the Smith-Lever Act. It is important

to note that Hatch and Smith-Lever funds leverage more than twice the Federal investment from state and private sources. USDA's Agricultural Research Service and Forest Service conduct intramural research with extensive co-location on university campuses and with cooperative and coordinated research programs.

This state-Federal partnership promulgates a unique system, not duplicated by any other Federal relationship, that is unparalleled in its impact on a major sector of the U.S. economy. The functional partnership between the states and USDA assures a close coupling with the users of the products of science and education. In particular, USDA has access to a continuing education network located in each county in every state. This unique system offers an opportunity for transfer of knowledge and technology aimed not just at production of food and fiber but targeted to improve the quality of life of all citizens, enabling the United States to be competitive in the global market.

Department of Commerce

Mission

The Department of Commerce encourages, serves, and promotes the nation's international trade, economic growth, and technological advancement. It offers assistance and information to increase America's competitiveness in the world economy; administers programs to prevent unfair foreign trade competition; provides social and economic statistics and analyses for business and government planners; provides research and support for the increased use of scientific, engineering, and technological development; works to improve our understanding of the benefits of the earth's physical environment and oceanic resources; grants patents and registers trademarks; develops policies and conducts research on telecommunications; provides assistance to promote domestic economic development; promotes travel to the United States by residents of foreign countries; and assists in the growth of minority businesses.

Enabling the Department of Commerce to promote the nation's competitive edge in these arenas, the estimated budget authority as of January 6, 1993, for FY 1993 is $3.0 billion.

Components

A principal agency of the Commerce Department's Technology Administration, the National Institute of Standards and Technology (NIST) has the following missions: to aid U.S. industry through research and services, to contribute to public health and safety, and to support the U.S. scientific and engineering research communities. To achieve these goals, NIST conducts basic and applied research in the physical sciences and in engineering, developing measurement techniques, test methods, standards, and related services. The Institute does generic research and development work on new advanced technologies.

The Institute provides a limited number of fellowships to support outstanding graduate students who have been associated with laboratory programs. It participates in the activities of several national consortia providing fellowship support for minorities and women and has carried out intensive collaboration and recruiting activities with a number of the historically Black colleges and universities (HBCUs). On a volunteer basis, the Institute staff has actively supported precollege education for many years. Typically, the Institute staff provides lectures, visits, workshops, and tours for precollege students and teachers near the laboratory sites. In addition, NIST volunteers maintain a number of special programs to excite the interest of all students in science, mathematics, and engineering.

Created in 1970 within the Department of Commerce, the National Oceanic and Atmospheric Administration (NOAA) conducts research and gathers data about the global oceans, atmosphere, space, and sun, and applies this knowledge to science and service. In addition to weather forecasting, NOAA warns of dangerous weather, charts the seas and skies, guides the use and protection of ocean and coastal resources, and conducts fundamental environmental research.

NOAA's basic mission is to analyze and predict changes in the earth's environment by using scientific and technical expertise. In addition, the agency has national responsibility for conserving marine living resources and protected species; providing associated services to the fishing industry; overseeing atmospheric and hydrological resources; assessing, managing, and monitoring the marine environment and resources, including resource restoration; producing comprehensive environmental science data; and providing leadership in research and education in the earth sciences.

Department of Defense

Mission

The Department of Defense makes a major investment in education and training. The Department has a vital interest in out nation's ability to produce highly trained scientists and engineers. During the past 50 years, the military services and defense agencies have developed a wide range of programs that support science and engineering (S&E) education. The programs evolved independently as each DOD component sought to increase the numbers and to improve the quality of scientists and engineers available to meet their needs.

In traditional educational settings, the Department of Defense provides education for grades K–12 for 200,000 dependents in overseas locations through the Department of Defense Dependents School System (DODDS) and in U.S. locations where the local civilian schools cannot meet the needs of the dependent population. The service academies, with a total enrollment of 14,000, graduated about 3,300 officers in 1990. The Reserve Officer Training Corps (ROTC) programs enroll about 87,000 students with 21,740 on scholarships. More than 750,000 enlistees are participating in the Montgomery GI Bill Plan, which provides subsidies to assist them in completing their college educations. These activities are representative of DOD education and training activities for military personnel, but they are concerned only in part with science and engineering education.

The DOD (Military) FY 1993 budget authority is estimated to be $269.0 billion.

Components

In 1991, the DOD Authorization Act directed the Secretary of Defense to designate an individual within the Office of the Secretary of Defense to advise on science, mathematics, and engineering education. The act also authorized DOD laboratories to enter into partnerships with schools to which surplus equipment can be donated, allow DOD personnel to teach and advise students, and allow students to work in DOD facilities. These facilities employ scientists and engineers from a wealth of disciplines and provide a multidimensional educational resource.

Science and engineering education activities in DOD include undergraduate ROTC scholarships, graduate fellowships, research conducted by graduate students in support of national defense, and programs designed to enhance recruitment and retention of civilian employees in science and engineering career fields.

Among the most effective recruiting programs are the career intern programs that recruit from campuses for an accelerated promotion track and also provide advanced education. The Co-op program provides early exposure to the work environment and builds understanding of Federal job opportunities among students and college personnel. At the advanced degree level, the postdoctoral research associateships provide a continuing supply of well-qualified graduate scientists and engineers for conducting research in DOD laboratories or through university grants and contracts.

The research office sponsors university research, providing opportunities for graduate students to work with faculty members in exploring topics of interest to DOD. Fellowship opportunities are also provided through DOD laboratories, which often provide further employment opportunities for the student upon degree completion.

DOD's investment in science and engineering research and related education programs at HBCUs rose to approximately $30 million in FY 1989. Moreover, efforts are being made to meet the requirements of Section 1207 of Public Law 99-661, the 1987 National Defense Authorization Act, which directed DOD to reach a goal of 5 percent for contract awards to small disadvantaged businesses, HBCUs, and MIs. Until recently, DOD's relationships with a large number of these institutions were circumscribed because DOD's support of science and engineering education at the university level was derived from authority to conduct research and because fewer than a third of the 106 HBCUs have graduate programs in science and engineering fields, and only 10 offer the Ph.D. degree. Recently passed legislation provides authority that will enable broader DOD activity in educational programs at HBCUs and MIs.

Precollege programs range from short exposure tours, seminars, and science fairs to more intense tutoring and summer experience programs. The most effective are those that influence career decision for science and engineering, provide the necessary career guidance, and provide a glimpse of the excitement and adventure in a science and engineering career. The High School Apprenticeship Programs provide these elements.

DOD brings large numbers of high school, undergraduate and graduate students, postdoctoral scholars, and faculty researchers into its laboratories for research experiences during the summer.

Department of Education

Mission

The general mission of ED is to ensure equal access to education and to promote educational excellence throughout the nation. To achieve its mission, the Department of Education—

- Establishes policies on Federal funding for education, distributes funds, and monitors their use.
- Supports research on education and disseminates information to educators and the general public.
- Focuses national attention on major issues in education.
- Enforces Federal statutes prohibiting discrimination in programs and activities that receive Federal funds.

ED expenditures account for only a small fraction of the total spending on education in this nation. However, ED plays an influential role in improving opportunities for underserved populations and in stimulating educational reform.

Of its total FY 1993 budget of $31.08 billion, the Department of Education specifically earmarks $341 million for programs that directly support education in science, mathematics, engineering, and technology. About 96 percent of ED's direct science, mathematics, engineering, and technology education budget for FY 1993 goes to levels K–12. For K–12,variety of programs that directly support science, mathematics, engineering, and technology education, such as the National Assessment of Educational Progress (NAEP) to test knowledge and skills in mathematics and science through a nationally representative sample of students; the National Science Scholars Program to provide scholarships for postsecondary students; the Minority Science Improvement Program to strengthen the capacity of minority institutions in science education; and a special competition within Bilingual Education to provide mathematics and science instruction for limited-English-proficient children.

In addition, ED provides significant funding through a multitude of programs, that include science, mathematics, engineering, and technology education as one component of their more general mission. The largest K–12 program is the Education of Disadvantaged Children Formula Grant Program (Chapter 1), which provides supplemental educational opportunities to educationally deprived children in low-income areas. With a budget of $6.1 billion in FY 1993, ED's Chapter 1 offers instruction in reading and mathematics, primarily to elementary school students. Although it is difficult to isolate the mathematics component, an ED study found that more than 90 percent of school districts offered reading instruction for Chapter 1 elementary school students, and 66 percent of districts offered mathematics during the 1990–91 school year.

At the postsecondary level, an ED study found that undergraduate and graduate students majoring in science, mathematics, engineering, or technology received an estimated $3.5 billion in grants and loans under the Higher Education Act, Title IV.

Department of Energy

Mission

The Department of Energy (DOE) has the responsibility for ensuring that the United States has sufficient energy to meet its future demands, for estimating and analyzing demands, and for implementing programs to help the public understand energy management and the broad context under which the study of energy can help to develop useful products and processes in laser technology, robotics, biotechnology, waste management, and other areas. DOE plans, produces, transports, controls, maintains, reprocesses, and disposes of the nuclear weapons and fuels that are an integral part of both the defense and civilian nuclear power production of this country. DOE also supports basic and applied research in the physical and life sciences, engineering, mathematics, and computational sciences. The responsibilities of DOE are widely divergent, from high-energy physics to the development of energy-efficient homes.

The President's FY 1992 budget request for DOE was $18.9 billion, $74.43 million of which was earmarked for science, mathematics, and engineering education programs. The appropriation for DOE in FY 1993 is $18.1 billion. In FY 1993, $102.1 million is expected to be used in support of DOE's science, mathematics, engineering, and technology education programs.

Components

The majority of DOE's research and development programs are administered by seven offices: Energy Research, Civilian Radioactive Waste Management, Environmental Restoration and Waste Management, Fossil Energy, New Production Reactors, Nuclear Energy, Conservation and Renewable Energy, and Defense Programs. Three additional offices also have programmatic responsibilities in science and technology: Environment, Safety and Health; International Affairs and Energy Emergencies; and Minority Economic Impact. The remaining offices provide department-wide support functions, such as policy analysis, financial and legal management, personnel administration, and public affairs.

In addition to its headquarters components, DOE has an extensive field structure of laboratories, research facilities, regional operations and support offices, and regional power administrations. These facilities are dispersed widely across urban and rural areas of the country.

Of particular relevance to science, mathematics, engineering, and technology education are the 9 national laboratories and 30 additional specialized research facilities, through which DOE provides most of its support for education. Each conducts its own education programs and makes its resources available to precollege and university faculty and students. Each center plans and administers a range of education programs, which vary according to laboratory specializations and local needs, and which place special emphasis on providing students and their teachers with hands-on experiences in cutting-edge science and technology. During 1992, programs at DOE facilities reached more than 200,000 teachers and students. Each center is also involved in one or more DOE national initiatives in science education.

The largest concentration of DOE education funds is within the Office of Science Education and Technical Information. This office has the responsibility for overseeing the national laboratories in which most of the education initiatives are taking place. The Office of Environmental Restoration and Waste Management, where the primary educational focus is at the undergraduate level, also plays an important role in DOE education efforts.

Department of Health and Human Services

Mission

The Department of Health and Human Services (HHS) is the Federal Government's principal agency for promoting the health of Americans, providing essential human services, carrying out clinical and basic biomedical and behavioral research, and providing support for predoctoral and postdoctoral research training in the life sciences. Created in 1980 from the Department of Health, Education, and Welfare, HHS oversees more than 250 programs and employs approximately 114,000 full-time workers.

The total HHS budget is the largest of all Federal agency budgets, accounting for about 37 percent of all Federal spending. In FY 1993, 40 percent of the total Federal budget authority is directed to HHS. This figure is reduced to 19.8 percent or $298.2 billion if Social Security is not included. For FY 1992, HHS has earmarked approximately $0.5 billion for science and education programs.

Components

The work of HHS is carried out by the Office of the Secretary and four operating divisions—the Social Security Administration, the Health Care Financing Administration, the Administration for Children and Families, and the Public Health Service. The Social Security Administration administers the national Social Security program, under which monthly benefits are paid to retired workers, disabled workers under age 65, and survivors of deceased workers. The Health Care Financing Administration, created in 1977, consolidates Federal management of Medicare, Medicaid, and related programs. The Administration for Children and Families builds and maintains community-based service networks for children, families, senior citizens, Native Americans, runaways, the disabled, and others who need help with major life problems; it also develops and oversees programs to strengthen the American family, especially low-income families.

The Public Health Service is the HHS component through which programs aimed at life sciences education and public understanding of science are administered. The Public Health Service is the Federal Government's principal health agency and the world's largest public health program. It conducts and supports biomedical and behavioral research, helps prevent and control disease, monitors the adequacy of health facilities and staffing, helps deliver health care services to medically underserved populations, ensures the safety and effectiveness of drugs and medical devices, administers state block grants for preventive health and health services, and addresses global health issues with other nations and international agencies.

Most of the Public Health Service's science education programs are funded through fellowships to individuals and grants to universities and other research institutions. Two issues—ensuring a pool of well-trained biomedical professionals and enhancing public understanding of science—form the basis of the HHS science education program portfolio.

Department of Housing and Urban Development

Mission

The U.S. Congress has mandated the Department of Housing and Urban Development to create conditions for every family to have decent and affordable housing, ensure equal housing opportunity for all, and strengthen and enrich our nation's communities.

Congress provided HUD with a total of $23.7 billion in budget authority for FY 1991, as compared with $14.9 billion in FY 1990. The largest spending categories are for subsidies that go directly to help individuals.

Components

The Department of Housing and Urban Development (HUD) came into existence on November 8, 1965. The first Secretary, Robert C. Weaver, had been the director of the preceding agency, the Housing and Home Finance Agency, that had loosely organized the work of five previously independent agencies concerned with housing and community development. These included the well-known Federal Housing Administration along with the Public Housing Administration, the Federal National Mortgage Administration, the Urban Renewal Administration, and the Community Facilities Administration. The Federal Housing Administration was authorized by the National Housing Act of 1934 and had already insured mortgages for $8.1 million families by 1965. That total has now risen to more than 20 million mortgages valued at more than $500 billion. The Federal Housing Administration has been

central to the increase in the rate of home ownership—from 46 percent when the Federal Housing Administration was formed to about 63 percent today. Similar accomplishments have been achieved in the other major constituent HUD programs.

The Department of Housing and Urban Development has a variety of policies and programs to support the National Education Goals of the President and the governors. These programs and activities focus on the special populations served by HUD, particularly low-income families receiving housing assistance, families in public housing, and minorities.

HUD is particularly proud of its new efforts, through Operation Bootstrap, to help low-income families acquire the education and job skills needed to move from dependency to employment and self-sufficiency. HUD also has launched an aggressive attack on drug use in public housing and is working with housing authorities and public housing residents across the nation to provide innovative child care programs and to form public-private partnerships to help residents develop literacy and job skills.

Department of the Interior

Mission

The Department of the Interior (DOI) has responsibility for most of our nationally owned public lands and natural resources. DOI is charged with fostering the wisest use of land and water resources, protecting fish and wildlife, preserving the environmental and cultural values of national parks and historical places, and providing enjoyment through outdoor recreation. The Interior Department also assesses mineral resources and ensures that their development is in the best interest of all the people. Resource responsibilities include managing offshore resources and collecting and accounting for revenues from mineral leases on Federal and Indian lands. Through its scientific research, DOI provides the information critical to the wise management of our global environment. The Interior Department has a major responsibility for American Indian reservation communities and for island territories administered by or affiliated with the United States.

Estimates released as of January 6, 1993, report the budget authority for DOI to be $6.8 billion.

Components

The natural resource stewardship responsibilities of DOI are carried out by its bureaus: National Park Service, Fish and Wildlife Service, Bureau of Indian Affairs, Bureau of Land Management, Minerals Management Service, Office of Surface Mining Reclamation and Enforcement, U.S. Geological Survey, Bureau of Reclamation, and Bureau of Mines. Assistant Secretaries for Fish and Wildlife and Parks; Indian Affairs; Land and Minerals Management; Territorial and International Affairs; Water and Science; and Policy, Management and Budget oversee the Department's various missions.

Fostering effective stewardship of the nation's public lands and natural and cultural resources is DOI's top priority. In addition to this broad goal, the Interior Department is committed to four special initiatives: volunteerism; excellence in education; the war on drugs; and enhanced professional opportunities for women, minorities, and persons with disabilities.

DOI has a long history of programs targeted to special groups. Technical support and professional development programs with HBCUs have effectively promoted the natural and physical sciences at these institutions and have provided career opportunities for minorities.

An effective Equal Opportunity Office, participation in the Job Corps, and special outreach to small and disadvantaged businesses have all aided DOI's overall efforts to provide good stewardship. As a result of the President's National Education Goals and the Department's commitment to enhancing science and technology education, many Department of the Interior bureaus are developing science, mathematics, engineering, and technology education initiatives. The most intense initiatives focus on precollege education, an area identified by many national groups as the most important emphasis for science and technology education.

The Interior Department has several mathematics and science education initiatives that contribute to the Committee on Education and Human Resources effort. DOI provides almost $75 million for mathematics and science programs in Bureau of Indian Affairs schools. Most of these funds support mathematics and science instruction at Bureau of Indian Affairs' 182 precollege schools.

Another contributory area of emphasis is graduate research, accomplished through the Water Resources Research Institutes Program administered by the U.S. Geologic Survey, the U.S. Geologic Survey Earthquake Research Program, and the Minerals Institutes Program of the Bureau of Mines. These programs provide water resources, minerals, and other earth science data that can be used to make informed land-use planning and engineering design decisions, fund basic and applied research, and assist in the development of effective emergency preparedness policy and plans.

Department of Justice

Mission

The Department of Justice (DOJ) was established in 1870 to provide legal advice to the President, represent the executive branch in Federal courts, investigate Federal crimes, enforce Federal laws, operate Federal prisons, and provide law enforcement assistance to state and local communities. DOJ employs more than 80,000 individuals in the United States and around the world.

The budget authority for DOJ is $10.3 billion, 0.07 percent of the total Federal budget authority.

Components

Compared with the Federal science, mathematics, engineering, and technology mission agencies, DOJ lacks a significant focus on science, mathematics, engineering, and technology-related occupations. However, these fields can play an important role in certain aspects of the DOJ mission, particularly the laboratory operations of the Federal Bureau of Investigation and the Drug Enforcement Administration, and in programs of the National Institute of Justice.

The Justice Department's Office of Juvenile Justice and Delinquency Prevention has supported the Cities in Schools program since 1984. This is a major public-private partnership that works to reduce school violence and prevent students from dropping out of school. The office also oversees the Alternative School Program, a school drop-out prevention program that identifies the needs of youths who are likely to drop out of school, and coordinates community resources to help these high-risk youths and their families. The Alternative School program was developed by the Office of Juvenile Justice and Delinquency Prevention in 1988. It currently serves 10 communities nationwide. Six other communities were in the selection process and were to be chosen in 1991 for participation in the program.

Department of Labor

Mission

The primary role of the Department of Labor (DOL) today is to protect and promote the interests of the American worker.

Federal funding for DOL is approximately 2.8 percent of the total Federal budget authority for FY 1993, or $43.9 billion.

Components

Over the past several years, much attention has focused on current and future demands for a skilled labor force and the impact of labor force skill levels on our national ability to compete. To confront this problem, DOL has embarked on an agenda to narrow the skills gap, improve the preparedness of the work force, and increase opportunities for high school juniors and seniors seeking long-term structured employment.

The Commission on Achieving Necessary Skills, which is composed of businesses, education, and labor leaders, recommended national competency guidelines on the basic skills needed by high school students for entry into the world of work.

DOL youth apprenticeship and school-to-work initiatives are designed to combine school and work-site experiences that will motivate youth to acquire high-level work place skills that can lead to rewarding employment and future learning opportunities. These initiatives involve partnerships among educators, businesses and labor, community members, parents, and students.

A series of pilot and demonstration projects known as "Job Corps II" has been implemented to build on the past success of the Job Corps program. To provide graduates with the skills, knowledge, and attitudes needed for employment and career advancement, the curricula now include Trainee Achievement Records, a list of tasks students need to accomplish to be employed in the occupation, and Student Activity Guides, which provide information, steps, and evaluation criteria for performance of tasks. Industry Advisory Groups consisting of employers and instructors are being utilized to confirm the tasks and select training materials to ensure that the training provided is appropriate to industry needs and standards.

A Training Resources Catalogue of Job Corps vocational and academic curricula, along with administrative and support materials, was published and distributed to persons and agencies that might be able to use these materials in their own programs. Annotations of the materials were included, along with ordering information. Work groups have been formed and convened to revise and develop curricula in the following areas: parenting, intergroup relations, social skills training, drug education, GED, reading, writing, mathematics, world of work, computer-assisted instruction, and an automated education tracking (records) system.

Department of Transportation

Mission

Since 1967, the Department of Transportation (DOT) has been helping to maintain and improve the nation's system of transportation. DOT is responsible for ensuring the safety and reliability of all forms of transportation, protecting the interests of consumers.

conducting planning and research on future transportation needs, and assisting cities and states to meet local transportation goals.

The federally funded DOT budget outlays will amount to $35.9 billion for FY 1993.

Components

DOT accomplishes its responsibilities in three ways. First, DOT directly operates some key elements of the transportation system. In particular, the Federal Aviation Administration operates the nation's airport/airways system, and the U.S. Coast Guard patrols and provides other activities and services to the maritime community.

Second, DOT regulates a variety of elements of the transportation system to assure its safety and effectiveness. Especially notable among these are the safety standards of the National Highway Traffic Safety Administration and the environmental regulations administered throughout the department's operating administrations.

Third, DOT administers formula or discretionary grant programs to help state and local governments provide necessary transportation facilities and services to their citizens. Especially notable are the assistance programs of the Federal Highway Administration, the Urban Mass Transportation Administration, and the Federal Aviation Administration.

Science, mathematics, engineering, and technology education or similar training is also treated as a support activity for ongoing transportation programs outside the Department of Transportation; this includes a large number of science, mathematics, engineering, and technology education programs. Because of the discretion that state and local governments and the private sector have in the use of their funds to provide transportation services, it is difficult to establish the total funding being applied in any of the support areas.

Department of Veterans' Affairs

Mission

The mission of the Department of Veterans Affairs (VA) is to serve America's veterans and their families with dignity and compassion, acting as their principal advocate to ensure that they receive the care, support, and recognition earned in service to this nation. The 27.3 million living veterans and the estimated 47.1 million dependents and survivors of veterans total 74.4 million potential beneficiaries of VA benefits and services.

VA is the second largest Federal department and has nearly 246,000 employees. About 1 of every 10 Federal employees works for VA. Among the many different science and technology-related professions represented in the vast VA work force are physicians, nurses, statisticians, architects, and computer specialists.

Government funding of VA amounts to the estimated budget authority of $35.2 billion. This equates to approximately 2.3 percent of the total Federal budget.

Components

Two of VA's three administrations are involved in educational activities: the Veterans Health Services and Research Administration and the Veterans Benefits Administration.

Veterans Health Services and Research Administration

This administration provides necessary services for complete medical and hospital care for our nation's veterans, performs medical research, and trains and educates for health service personnel by working in cooperation with schools. Through affiliations with

educational institutions and other organizations, the administration conducts individual medical and health care delivery research projects and a multi-hospital research program. The administration conducts the nation's largest coordinated education and training program for the health professions. The purpose of the program is twofold:

- To assist in recruiting and retaining sufficient numbers of all categories of professional health service and administrative personnel to meet the needs of a high-quality VA health care system and contribute to the nation's health work force. Each year, approximately 100,000 students receive some or all of their clinical training in VA facilities through affiliation with more than 1,000 educational institutions.

- To provide continuing education for administration employees to maintain and learn new skills and knowledge at VA health care facilities or at the administration's 19 continuing education field units.

Veterans Benefits Administration

This administration is the organization primarily responsible for administering the VA's nonmedical programs that provide financial and other forms of assistance to veterans, their dependents, and survivors. Veterans' compensation, veterans' pension, survivors' benefits, burial benefits, rehabilitation assistance, education benefits, home loan benefits, and insurance coverage are the major benefits.

Within the benefits administration, the Vocational Rehabilitation Service provides educational benefits to disabled veterans. Eligible veterans are assisted in developing and achieving individualized goals of employment. The Education Service administers the GI bill programs as well as educational assistance for eligible spouses and children.

VA also administers the Veterans Assistance Service. Directed toward health care and benefits, this service is responsible for providing information, advice, and assistance to veterans, their dependents, and beneficiaries. Cooperating with the Department of Labor and other Federal, state, and local agencies, the Veterans Assistance Service also develops employment opportunities for veterans, including on-the-job and apprenticeship training programs.

Environmental Protection Agency

Mission

The Environmental Protection Agency's (EPA's) mission is to protect the public from environmental hazards, enhance the quality of our natural environment, and expand our knowledge of the environment. The agency believes that an environmentally educated public is the best means to bring about voluntary changes in personal behaviors that affect the environment.

For the last 10 years, more than one-third of EPA's employees have been scientists and engineers. Their expertise ranges from disciplines in biology, chemistry, and earth sciences to environmental engineering. Approximately 80 percent of the agency's research supports programmatic and regulatory activities, with the remaining research efforts focusing on core or basic environmental areas.

For FY 1993, the President requested an estimated $6.7 billion for EPA.

Components

On June 15, 1990, the agency's commitment to science, engineering, and technology education was underscored by the announcement of the creation within EPA of an Office of Environmental Education. Its mission is to provide leadership in fostering environmental education. The Environmental Education program will emphasize two cross-cutting themes: human impact on the environment; and pollution prevention through wise use of resources and environmentally sensitive decisionmaking. Among the resources available to implement educational programs are the agency's 10 regional offices and the widely dispersed laboratories and research facilities.

By working through existing institutions—media, elementary and secondary schools, museums, libraries, parks and recreation areas, and environmental groups and professional organizations—this office will stimulate, facilitate, and enhance environmental education of all segments of our society.

The office will oversee a new precollege program and several existing programs within the agency as well as coordinate these programs with similar activities in other Federal agencies, state and local governments, and the private sector.

The Environmental Education program, authorized by the National Environmental Education Act, will focus on education and public awareness. Education includes both formal training in scientific and technical disciplines in grades K–12 and college, and educational activities such as experiential learning in informal settings. The program's approach will emphasize improving our youth's literacy in environmental sciences, developing a greater understanding of human impact on the environment, and increasing the number of environmental professionals. The public awareness part of the program will target the general public, with initiatives to promote a more informed and environmentally responsible citizenry. Central to this effort will be an effective media strategy that communicates the program's themes and a sound coordination strategy that enlists the help of public, nonprofit, and private sector organizations in reaching and actively involving the public. The intent is to stimulate strong grassroots interest in the environment and understanding of how individuals can contribute to maintaining a healthy environment.

National Aeronautics and Space Administration

Mission

As the agency responsible for the nation's civilian aerospace program, National Aeronautics and Space Administration (NASA) has a major role in fostering American technological and scientific advances in the 21st century. To do this work, the agency not only fosters but critically depends on a skilled and educated corps of scientists, engineers, and technicians. Virtually every science and engineering discipline is represented in the NASA work force. At present, the agency employs approximately 24,200 people, 56 percent of whom are scientists or engineers, and 70 percent of whom have college degrees. Another 48,500 people work as support service contractors on NASA projects.

In FY 1992, NASA spent a total of $14.3 billion on the civilian aerospace program. Approximately $77.5 million was expended on aerospace education programs and projects. In addition, approximately $663 million went to institutions of higher education for procuring research under more than 4,700 grants, contracts, cooperative agreements, and Space Act Agreements. It is estimated that numerous undergraduate and graduate students were supported under these NASA procurement agreements in FY 1992, although NASA does not

currently require contractors and grantees to report the number of students supported through most procurement actions.

NASA uses its inspiring mission, unique facilities, and specialized work force to conduct and facilitate science, mathematics, engineering, and technology education programs and activities. These efforts are directed toward ensuring a sufficient talent pool to preserve NASA and U.S. leadership in aeronautics, space and earth science, and technology and to help meet the National Education Goals. NASA's education efforts are implemented through two broad objectives:

- Elementary and Secondary Level: To use NASA's mission to enhance the content knowledge, skills, and experience of teachers, to capture the interest of students, and to channel that interest into related career paths through the demonstration of integrated applications of science, mathematics, technology, and related subject matter.

- Higher Education Level: To provide undergraduate and graduate student incentives and opportunities and to support faculty preparation and enhancement through programs featuring active participation in NASA research.

Components

NASA's Education Vision is to promote excellence in America's education system through enhancing and expanding scientific and technological competence. To realize this Vision, NASA has developed a plan, *NASA's Strategic Plan for Education—A Strategy for Change: 1993–1998*, which defines three specific goals to promote excellence in education.

- Goal 1: To maintain that segment of NASA's current education program—referred to as the base or core program—that is judged to be effective, based on internal and external customer measures of success. Such maintenance involves individual program revision, expansion, or elimination.

- Goal 2: To implement new education reform initiatives that specifically address NASA mission requirements, national education reform, and the strategic objectives of the Federal Coordinating Council for Science, Engineering and Technology; Committee on Education and Human Resources.

- Goal 3: To significantly expand the impact of the NASA education program by developing partnerships with external constituencies.

The plan also delineates three "enabling systems" that support all of NASA's education programs and contribute to the achievement of the goals.

1. Evaluation—Provides agency direction and plans to ensure documentation of program outcomes (both short term and long term).
2. Educational Technology—Outlines objectives to ensure that we maximize our limited resources and expand the delivery of programs and materials to the broadest possible audience through the appropriate use of educational technologies.
3. Dissemination—Provides a three-component systems approach to ensure that information and materials are known by and available to the broadest segment of the educational community.

National Science Foundation

Mission

The National Science Foundation (NSF) is an independent Federal agency, established in 1950 to promote and advance scientific progress in the United States. NSF has a legislative mandate to initiate and support basic science, mathematics, and engineering research and to strengthen science, mathematics, engineering, and technology education at all levels (elementary, secondary, undergraduate, graduate, and postgraduate). Policy-making authority within NSF is vested in the National Science Board, which is composed of scientists and educators who collectively represent the views of science and engineering leaders in all areas of the nation. Its 25 members, which include the NSF director, are appointed by the President, with the consent of Congress.

Specifically, the education goals of NSF are to stimulate and provide direction for nationwide efforts that will—

- In grades K–12, develop innovative and rigorous programs of instruction in science, mathematics, engineering, and technology to ensure that every child can acquire the knowledge and skills required for effective participation in today's technologically oriented society.
- Improve the quality of education in science and engineering for all students.
- Enhance the scientific, mathematical, and technological literacy of the population.
- Encourage and support the development of the nation's scientific and technological human resources—so that there is a full and steady stream of highly educated scientists, mathematicians, and engineers to participate in the nation's research and production activities.

NSF is mandated to initiate and support education programs in virtually all fields of science and engineering, at all education levels. Its budget authority for FY 1993 is $2.7 billion.

Components

The National Science Foundation has seven directorates, each of which has education activities related to its disciplinary mandate. The foremost of these is the Directorate for Education and Human Resources. Other directorates support programs in the areas of computer and information sciences and engineering; engineering; biological sciences; geosciences; mathematical and physical sciences; and social, behavioral, and economic sciences.

NSF has programs in elementary, secondary, and informal science education that are designed to improve the educational experiences of all students in all school settings (pre-K–12) and to increase and improve opportunities for all individuals to explore science, mathematics, and technology beyond the school setting. This is accomplished through programs that are meant to enhance the abilities of teachers to transmit knowledge, through the development of curriculum and materials, through the use of advanced learning technologies, and through informal learning experiences at museums, science and technology centers, zoos, libraries, and other community-based institutions.

At the undergraduate level, NSF seeks to provide leadership in the educational enterprise by providing support for such activities as curriculum development, elementary and secondary teacher preparation, undergraduate faculty enhancement, and student research experiences.

NSF promotes the early career development of scientists and engineers through fellowships and traineeships at the graduate and postdoctorate levels, as well as opportunities for thousands of individuals to assist researchers on NSF-supported research projects.

Throughout all educational levels, NSF develops the resources of the scientific and technological education community through programs that reform entire educational systems; through programs that support the advancement of groups traditionally underrepresented in scientific and technological fields; and through research on teaching, learning, and key problems in education.

Smithsonian Institution

Mission

The Smithsonian Institution, founded in 1846, is a trust of the Federal Government, established "for the increase and diffusion of knowledge." Although it receives support for its operation from the Federal Government, it has no Government or regulatory functions and serves, in effect, as an independent agency.

Federal funding of the Smithsonian Institution, as reported in the *Budget of the United States Government Fiscal Year 1993*, amounts to an estimated budget authority of $399 million. In addition to federally funded programs, the Smithsonian Institution has many activities in science education that are privately funded.

Components

The Office of Elementary and Secondary Education serves as the focal point in formulating pan-institutional policies and goals for precollege education. In addition, the office develops and disseminates programming that applies resources from across the Smithsonian to the needs of elementary and secondary schools, both locally and nationally. Publications, professional training for teachers, and internships for students are among the programs offered in a range of disciplinary areas, including the natural and the physical sciences. In recent years, the Institution has begun to focus increasing effort on assisting school systems in addressing the national crisis in science, mathematics, engineering, and technology education. Three areas receiving particular attention both in the museums and in other Smithsonian bureaus have been professional education for teachers, curriculum materials for schools, and programs to effect attitudinal changes about science.

The National Science Resources Center is a joint undertaking of the Smithsonian Institution and the National Academy of Sciences to improve the quality of science, mathematics, engineering, and technology teaching in the nation's schools. The center identifies, develops, and disseminates science, mathematics, engineering, and technology teaching materials and organizes leadership development institutes for science teachers and other school personnel.

The Smithsonian Astrophysical Observatory conducts research in astronomy and astrophysics and communicates this information through publications, teaching, and public

presentations. The observatory developed classroom materials to improve the teaching of science, mathematics, engineering, and technology at the high school level.

The Smithsonian Tropical Research Institute is the nation's premier center for basic research on the ecology, behavior, and evolution of tropical organisms. One of its major efforts centers on the development of young scientists. In 1990, approximately 62 students from 12 nations participated in academic programs at the Tropical Research Institute.

The Smithsonian Environmental Research Center on the tidal river system in Edgewater, Maryland, performs basic scientific research on coastal land/water systems and provides a broad range of educational activities, including teacher-led field trips, self-guided nature trails, and guided tours.

The primary mission of the National Zoological Park has been "the advancement of science and the instruction and recreation of the people." At the precollege level, the zoo's education department offers programs, tours, materials, and laboratory sessions. Teacher workshops and curriculum units are also available.

The National Museum of Natural History houses the world's largest repository of natural history specimens and human artifacts. Through its many exhibits, educational programs, and scholarly and popular publications, the Natural History Museum disseminates knowledge about the natural and cultural diversity of the world.

The National Air and Space Museum houses artifacts and documentation related to the development of aviation, space flight, and space science. Through its exhibitions, research, collections management, and education programs, the museum serves a wide public and scholarly community interested in the history and technological achievements of aviation and space flight.

Overview of Federal Evaluation Activities in Science, Mathematics, Engineering, and Technology Education Programs

The Federal Coordinating Council for Science, Engineering and Technology (FCCSET) Committee on Education and Human Resources (CEHR) categorizes Federal science, mathematics, engineering, and technology (SMET) education programs at four levels of the education system: elementary and secondary, undergraduate, graduate, and public understanding of science. This overview summarizes program review data collected for a FCCSET CEHR Expert Panel whose report *The Federal Investment in Science, Mathematics, Engineering, and Technology Education: Where Now? What Next?* accompanies this Sourcebook.

Types of Program Reviews

Evaluation is an essential feature of sound program management. Program evaluation can generate verifiable findings on cost-effectiveness, on the relative worth of a program, and on opportunities for program improvement. Even if no formal evaluation has been conducted on a program, other less systematic, informal monitoring activities can provide useful information about the program. There are four types of program reviews that can be used to categorize information gathered on Federal agency programs.[1]

Two of these types of program reviews (Types A and B) make judgments of program merit and can be called "program evaluation"; the other two types (Types C and D) collect and review descriptive statistics about programs and are referred to as "program monitoring."

Evaluation

Type A The systematic determination of merit or intrinsic worth, which includes data collection, is usually conducted by an external evaluator, and examines expected and unexpected programmatic outcomes.

Type B A judgment of merit, based on existing or easily obtainable evidence, is usually conducted by an external team with a focus on expected programmatic outcomes.

Monitoring

Type C Monitoring through the collection of indicator data is usually conducted internally on a continuous basis to provide formative information about expected programmatic outcomes.

[1] To see the distribution of these different types of reviews across agency programs and at each education level, refer to the Program Review Matrix (Table 2-4) in this section of the Sourcebook.

Type D Determination of the extent to which goals/management objectives have been met is generally conducted internally through the use of existing data.

Table 2-1 shows the number of Federal programs serving each level of the education system and the proportion of programs that has been evaluated (Type A or B).

Table 2-1
Percent of Programs Evaluated by Education Level and Number of Programs

Education Level of Program	Number of Programs	Number Evaluated (Type A or B)	Percent of Programs Evaluated
Elementary and secondary	116	30	26
Undergraduate	76	9	12
Graduate	61	11	18
Public understanding	25	5	20
Multiple/ nontargeted	12	2	17
Total	290	57	20

Although approximately 52 percent of core SMET programs have received some form of program review in the last five years, only one in five has been evaluated. At the elementary and secondary level, about one in four programs has been evaluated. About one in eight Federal undergraduate programs has been evaluated. One in five of the programs sponsored at the graduate level has undergone an evaluation review. In many cases, however, agencies give priority attention to evaluating their largest programs in terms of budget expenditures.

Table 2-2 shows the number of programs reviewed by each agency and the number of programs receiving each type of review. The Department of Health and Human Services has reviewed a higher proportion of its programs than any other agency. The National Science Foundation has evaluated more of its programs than any other agency.

Another way to measure program review activity in the Federal Government is to examine the total number of program reviews that have been performed. In some instances, programs have been reviewed in multiple ways or on multiple occasions. As Table 2-3 shows, about 31 percent of the 231 reviews performed on Federal SMET core programs were evaluation reviews (Types A and B). The Department of Health and Human Services performed the largest number of program reviews in the last five years (81), followed by the National Science Foundation (42) and the Department of Energy (35). The Smithsonian Institution and the Department of Agriculture are the only agencies that performed more evaluation reviews than monitoring reviews. All of the program reviews performed by the Department of the Interior were monitoring reviews. The Department of Defense was unable to report on its program review activities.

Table 2-2
Numbers of Programs Reviewed by Agency and Type of Review

Agency	Number of Programs	Total Number of Reviewed Programs	Evaluated[a]	Monitored
DOE	69	14	8	6
HHS	63	54	19	35
NSF	35	21	13	8
DOD	30	—	—	—
NASA	23	18	3	15
DOI	22	18	—	18
SI	18	13	7	6
ED	13	8	4	4
USDA	9	3	2	1
EPA	8	2	1	1
Total by type	290	151	57	94

[a] If program was both evaluated and monitored, it was counted as having been evaluated.

Managing Evaluation in the Agencies

Agencies take different approaches to managing evaluation; much of the evaluation policy is established within individual programs. Many agencies' programs *require* that individually funded projects be evaluated. Relatively little direct evaluation is done by Federal agency staffs; most evaluation activity is contracted through competitive requests for proposals. Federal agencies select the most competitive evaluation proposal submitted from a variety of professional evaluation contractors. Prospective contractors must include a complete description of the social science research methodology to be employed in their study of the program. These methods often include surveys of a selected sample of program participants, interviews with former program participants, observation of program activities, and statistical analysis of selected program outcome measures such as test scores or employment records.

The evaluation strategy of each participating Federal agency is briefly described below. Agency evaluation overviews containing additional information follow the Program Review Matrix (Table 2-4).

- **Department of Agriculture (USDA):** The Secretariat of Science and Education has a congressionally funded administrative account for evaluations—the only USDA source of support other than program administration—that is often inadequate for conducting an evaluation. These funds are allocated to the agencies of USDA on a competitive basis yearly. Universities conduct these reviews for USDA by means of cooperative agreements.

Table 2-3
Number of Program Reviews Performed by Agency and Review Type

Agency	Total Number of Reviews	Evaluation Reviews[a]	Monitoring Reviews
HHS	81	30	51
NSF	42	14	28
DOE	35	7	28
NASA	24	5	19
DOI	18	—	18
SI	13	7	6
ED	13	5	8
USDA	3	2	1
EPA	2	1	1
Totals	231	71	160

[a] If program was both evaluated and monitored, it was counted as having been evaluated.

- **Department of Defense (DOD):** A Science and Engineering Education Panel was formed in 1991 to assess DOD programs in SMET education. The panel is beginning to perform program evaluation and review in accordance with the DOD Management Plan for Science and Engineering Education. The panel will assess the effectiveness of DOD's programs and activities in meeting overall program objectives through annual reviews, the first of which was submitted in January 1993.

- **Department of Education (ED):** Program offices routinely gather data to monitor operations, primarily through reports from grantees and site visits by ED staff. In addition to routine monitoring, ED conducts program evaluations. A centralized unit, the Planning and Evaluation Service, administers contracts to evaluate ED's programs. Typically, evaluations have been summative, emphasizing experimental and quasi-experimental designs. However, a broader set of approaches including case studies is now common. Although Congress often mandates that specific programs be evaluated, ED has some flexibility in selecting additional programs to be evaluated.

- **Department of Energy (DOE):** The coordination responsibility for DOE's university and science education activities and their evaluation lies with the Office of Science Education and Technical Information. The office supports external and internal evaluation of these programs. Other DOE units also sponsor education programs; the individual units determine how these programs will be evaluated. External evaluation for elementary and secondary programs is provided by a four-year grant to the National Center for Improving Science Education. DOE's evaluations are funded from within individual program budgets.

- **Department of Health and Human Services (HHS):** Within the last several years, the Public Health Service, which supports intramural and extramural programs in life sciences education, has adopted a policy that all new programs will have an evaluation component. Each Public Health Service agency has a central planning and evaluation division that is the focal point for program evaluation and has trained evaluators on staff. Contractors are also used for evaluations. The Public Health Service Act permits the Secretary of HHS to allocate up to one percent of the budget for program evaluation studies. Evaluations of individual science education projects are usually supported under each grant awarded by HHS.

- **Department of the Interior (DOI):** There is no central DOI office that evaluates education projects; each agency is responsible for evaluating its own programs. The Bureau of Indian Affairs (which operates 183 schools) has an education evaluation unit; other bureaus have evaluation units that are not specifically geared to education. The Bureau of Indian Affairs uses agency employees and external experts to evaluate its programs.

- **Environmental Protection Agency (EPA):** In the past, EPA has performed a limited number of program reviews. Currently, however, newly created EPA programs are required to include plans for program monitoring and/or evaluation. EPA has no centralized evaluation unit but plans to set aside funds for a limited number of programs to be evaluated in-house and by external groups.

- **National Aeronautics and Space Administration (NASA):** A Technology and Evaluation Branch in the Education Division was established in November 1991. The branch has agency-wide management and evaluation responsibility for education programs. NASA is developing a computer database to store and generate reports on evaluations conducted on agency-wide programs. Evaluations are conducted internally and externally; new programs are required to include an evaluation plan before they can be approved. NASA has contracted with the National Research Council for the development of statistical indicators for evaluation.

- **National Science Foundation (NSF):** The Division of Research, Evaluation, and Dissemination has been evaluating education programs since 1991. A staff of three plans evaluations, constructs requests for proposals for these services, oversees contractors, and provides evaluation services internally to all education and human resources programs. A formal plan to evaluate all NSF SMET programs calls for each program to be evaluated on a five-year cyclical basis and requires that each new grant include an evaluation component.

- **Smithsonian Institution (SI):** The Office of Special Assistant for Institutional Studies established in 1987 guides and assists SI units in evaluating their programs. Informal assessments and small-scale studies conducted by the individuals in charge of the programs—rather than more formal and independent reviews—characterize the evaluation of educational programs at the Smithsonian Institution.

Program Review Matrix

The program review matrix in Table 2-4 shows the types of program reviews conducted by each agency. Programs are reviewed according to specific evaluation types:

Type A: The systematic determination of merit or intrinsic worth, which includes data collection, is usually conducted by an external evaluator and examines expected and unexpected outcomes.

Type B: Merit based on existing or easily obtainable evidence is usually judged by an external team with a focus on expected outcomes.

Type C: The collection of indicator data is usually monitored internally on a continuous basis to provide formative information about expected outcomes.

Type D: The extent to which goals/management objectives have been met is generally determined internally through the use of existing data.

Table 2-4
Program Review Matrix

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Teacher Enhancement/Preparation					
ED	Eisenhower State Mathematics and Science Program	1985 1985 1985 1989	Annual Triennial Triennial 1991	D D D A	Annual reports from grantees Applications from grantees Monitoring by ED—on-site visits National evaluation by external evaluator
DOE	Federal Coordinating Council for Science, Engineering and Technology Teacher Institutes	1993	1993	B	
	Teacher Research Associates Program	1989	1995	C/D	Argonne National Laboratory/Oak Ridge Institute for Science and Education evaluation study
		1992	1996	A/B/D	Precollege formative and summative evaluations and capacity building, National Center for Improving Science Education
	Local Programs for Teachers	1992	1996	A/B/D	Precollege formative and summative evaluations and capacity building
	— Princeton Plasma Physics Laboratory KidsNetwork Summer Institute	1992	1992	D	Laboratory internal evaluation
	— Brookhaven Minority Teacher Certification Training Program	1991	1991	D	Laboratory internal evaluation
	— Brookhaven Secondary Teachers' Inservice Courses: Environmental Science	1990	1992	D	Laboratory internal evaluation
	Teachers Academy for Mathematics and Science in Chicago	1993	1994	A	Planned evaluation
	Environmental Restoration and Waste Management Division Environmental Education Development Programs Pre-College K-12 Review Panel[a]	1992	1992	D	Environmental Restoration and Waste Management program review

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
——, Not specified.

Continued on next page

Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Teacher Enhancement/Preparation (cont.)					
HHS	Minority High School Student Research Apprentice Program[a]— Teachers (Preservice and Inservice)	1991	Ongoing	C	Annual
	Science Education Partnership Awards[a]—Teacher Enhancement	1991 1991	1994–1995 Ongoing	A C	Most grants include funds for external evaluations. Annual
	Intramural Laboratory Programs—Teachers	1980s	Ongoing	C	Annual
DOI	National Parks as Classrooms[a]	—	—	D	Monitoring each year
	Water Education for Teachers	1993	1993	C	
NASA	Aerospace Education Services Program	—	Ongoing	B	Quarterly; individual curriculum products evaluated, but no systematic analysis of data.
	NASA Educational Workshops for Math, Science, and Technology Teachers/NASA Educational Workshops for Elementary School Teachers	—	Ongoing	B	Contractor collects evaluation data and submits an annual report.
	Challenger Center[a]	—	Ongoing	C	Monthly
	Minority Programs[a]	—	—	C	
NSF	Teacher Enhancement	1987 1990 1992	1987 1993 1992	D A D	Committee of External Experts Program and outcomes audit
	Teacher Preparation	1991 1992 —	1991 1992 1992	D D A	Committee of External Experts Program review Case studies
	Research in Teaching and Learning	1992 1993 1992	1992 — 1992	D A D	Committee of External Experts Program review
	Presidential Awards for Excellence	1992	1992	D	Program review

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Teacher Enhancement/Preparation (cont.)					
SI	National Air and Space Museum Workshops/Teacher Resource Center	1987	Ongoing	B/C/D	
	National Science Resource Center Leadership Institutes	1989	Ongoing	A	
	National Museum of Natural History Teacher Training/Naturalist Center	1990	Ongoing	A	
	National Zoological Park Teacher Workshops	1978	Ongoing	C/D	
Elementary and Secondary—Curriculum Improvement					
USDA	Agriculture in the Classroom	1988	1988	D	
ED	Eisenhower National Mathematics and Science Program—Curriculum Frameworks	1993	1997	A	Evaluation across all projects by external evaluator. Evaluations also conducted by each grantee.
HHS	Science Education Partnership Awards[a]—Curriculum Development Grants	1991 1991	1994–1995 Ongoing	A C	Most grants include funds for external evaluation. Annual
	Ethical, Legal, and Social Implications[a] Human Genome Research Program—Curriculum Supplement and Video	1990	Ongoing	C	Annual
	Risk Reduction Program for High Schools	1990	Ongoing	C/D	Annual
	Curriculum Materials—National Institute on Drug Abuse	1990	Ongoing	C/D	Annual
DOI	National Parks as Classrooms[a]	—	—	D	Monitoring each year
	Education Materials	—	—	C	

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

Continued on next page

Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Curriculum Improvement (cont.)					
DOI (cont.)	Excellence in Education	1993	——	D	Monitoring will occur in 1993
	Joint Education Initiative	——	——	C	Monitoring every year
NASA	Teacher Resource Centers/Central Operation of Resources for Educators	——	Ongoing	C	Monthly process data
	Challenger Center[a]	1991	1991	B	Evaluation of simulation activity conducted by university researcher
	Space Science Involvement Program	——	Ongoing	C	Documents, applications, and awards
	Minority Programs[a]	——	——	C	
NSF	Instructional Materials Development	1991 1991	1991 1991	D D	Committee of External Experts Program review
SI	National Science Resource Center/ Elementary Science Curriculum Development Project	1988	Ongoing	A	
	National Zoological Park Curriculum Kits	1982	Ongoing	C/D	Formative when created
Elementary and Secondary—Organization Reform/Comprehensive					
ED	Eisenhower Regional Consortia	1993 1993	Ongoing 1997	A A	Evaluations conducted by each grantee. Evaluation across all consortia by external evaluator.
	Eisenhower National Clearinghouse	1993	1997	A	Management and program activities evaluated by clearinghouse and external evaluator.

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
——, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Organization Reform/Comprehensive (cont.)					
DOE	Laboratory Partnerships with Rural and Urban Schools	1992	1996	A/B/D	Precollege formative and summative evaluation and capacity building
	— Sandia National Laboratories Science Advisors Program	1991	1991	D	Laboratory internal evaluation
	— Environmental Management Precollege Outreach Program	——	——	——	
	— Pacific Northwest Laboratory Options in Science	1990	1990	D	Laboratory internal evaluation
	— Princeton Plasma Physics Laboratory Trenton Public Schools Partnership	1991	1992	D	Laboratory internal evaluation
	— Continuous Electron Beam Accelerator Facility Becoming Enthusiastic About Math and Science Student Attitudinal Survey Results	1991	1992	C/D	Laboratory internal evaluation
	Environmental Restoration and Waste Management Division Environmental Education Development Programs K–12 Review Panel[a]	1992	1992	D	Environmental Restoration and Waste Management program review. This review spans programs.
HHS	Adopt-A-School Programs	Various	Ongoing	D	
	Science Alliance	1991 1992	1992 1993	A A	Review of first-year pilot Follow-up study on second year
EPA	Environmental Education Grants	1993	1994	A	An evaluation will be conducted each year; exemplary products will be diffused nationally.
NASA	National Space Grant College and Fellowship Program[a] K–12 Outreach Program	1991	Ongoing	B	Comprehensive database—annual

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
——, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Organization Reform/Comprehensive (cont.)					
NASA (cont.)	SHARP: Summer High School Apprenticeship Program	—	Ongoing	C	Contractor submits annual report and maintains longitudinal student tracking.
	National Scholars Program	—	—	C	
NSF	Statewide Systemic Initiative	1992	1997	A	
	Career Access	1992	1995	C/B	
	Comprehensive Regional Centers for	1991	1991	D	Committee of External Experts
	Minorities	1992	1992	D	Program review
Elementary and Secondary—Student Support					
USDA	Research Apprenticeship Program	1992	1993	B	
ED	Upward Bound Mathematics/Science	1991	Annual	D	Annual reports by grantees
	Initiative	1992	Annual	D	ED staff visits to 25 percent of sites
DOE	Prefreshman Enrichment Program	1992	1996	A/B/D	Precollege formative and summative evaluation and capacity building, National Center for Improving Science Education

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Student Support (cont.)					
DOE (cont.)	Research/Learning Experiences for Students	1992	1996	A/B/D	Precollege formative and summative evaluation and capacity building, National Center for Improving Science Education
	— Princeton Plasma Physics Laboratory Summer Internships in Trenton	1992	1992	D	Laboratory internal evaluation
	— Brookhaven Introduction to Computers	1991	1991	D	Laboratory internal evaluation
	— Brookhaven Career Awareness Day	1991	1991	D	Laboratory internal evaluation
	— Continuous Electron Beam Accelerator Facility Becoming Enthusiastic About Math and Science High School Summer Residential Program	1992	1992	D	Laboratory internal evaluation
	— Los Alamos Exploring Science with Teams Program	1990	1992	D	Laboratory internal evaluation
	— Brookhaven Community Summer Science Program	1992	1992	D	Laboratory internal evaluation
	— Sandia National Laboratories Educational Outreach Projects	1992	1992	——	
	High School Honors	1988	1995	C/D	Argonne National Laboratory/Oak Ridge Institute for Science and Education evaluation study
		1992	1996	A/B/D	Precollege formative and summative evaluation and capacity building, National Center for Improving Science Education
	Environmental Restoration and Waste Management Division Environmental Education Development Programs[a] K–12 Review Panel	1992	1992	D	Environmental Restoration and Waste Management program review. This review spans programs.

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
——, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Student Support (cont.)					
HHS	Minority High School Student Research Apprentice Program[a]	1980	Ongoing	C/D	Annual
	Health Careers Opportunity Program[a]—Precollege	1972	Ongoing	C/D	Annual
	National Institutes of Health Summer Science Enrichment Program	1991 1992	1992 Ongoing	A C	Review of first-year pilot Annual
	Science Education Partnership Awards[a]—Student Incentives	1991 1991	1994–1995 Ongoing	A C	Most grants include funds for external evaluations. Annual
	National Institutes of Health High School Laboratory Employment/Fellows	Various	Ongoing	C	Annual
	Intramural Research Training Award[a]/Summer—Precollege	1970s	Ongoing	C	Annual
	Research Supplements for Minorities (High School)	1990	Ongoing	C/D	Annual
	Biomedical Research Advancement—Saturday Scholars	1991 1992	1992 1993	A A	Review of first year pilot Follow-up Study on Second Year
DOI	Bridging Activities	—–	Annual	D	Youth served will continue to be monitored in 1993
	Youth Conservation Corps	—–	Annual	D	Youth served will continue to be monitored in 1993
	Bridging to Universities	—–	Annual	D	Youth served will continue to be monitored in 1993
	Resource Apprenticeship	—–	Annual	C	Monitoring
NASA	Minority Programs[a]	—–	—–	C	
	Federal Junior Fellowships	—–	—–	C	On-the-job performance reviews of participants
	Stay-in-School	—–	—–	C	On-the-job performance reviews of participants

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—–, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Elementary and Secondary—Student Support (cont.)					
NSF	Informal Science Education[a]	1992 1992	1992 1992	D D	Program overview Committee of External Experts
	Young Scholars	1991 1992	1991 1992	B D	 Program review
Elementary and Secondary—Other					
HHS	Centers for Disease Control and Prevention Training Grant[a]—Precollege	1970	Ongoing	C/D	Annual
NASA	Educational Technologies	1987	Annual	C	Participant survey
	Educational Mailings	—	—	C	
NSF	Applications of Advanced Technology	1990 1992	1990 1992	D D	Committee of External Experts Program review

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Undergraduate—Curriculum Improvement					
NSF	Undergraduate Course and Curriculum	1992 1991 1993	1992 1991 1996	D B A	Program review Committee of External Experts
	Instrumentation and Laboratory Improvement	1988 1991 1992 1992	1990 1991 1992 1993	A D D A	 Committee of External Experts Program review
Undergraduate—Faculty Enhancement					
DOE	Faculty Research Participation	1988	1995	C/D	Argonne National Laboratory/Oak Ridge Institute for Science and Education evaluation study
HHS	National Heart, Lung, and Blood Institute Minority Faculty Development Award	1985	Ongoing	C/D	Annual
DOI	Undergraduate Faculty Development	—	—	D	Monitoring will continue in 1993
NASA	Summer Faculty Fellowship Program	—	Ongoing	C	Extensive program reviews are conducted by the American Society of Engineering Education.
NSF	Undergraduate Faculty Enhancement	1991 1992 1991	1991 1992 1993	D D A	Committee of External Experts Program review
Undergraduate—Student Support					
ED	National Science Scholars	1991	Annual	D	Annual reports
DOE	Laboratory Cooperative Undergraduate Program	1979	1988	C/D	Argonne National Laboratory/Oak Ridge Institute for Science and Education evaluation study
	Science and Engineering Research Semester	1989	1995	C/D	Argonne National Laboratory/Oak Ridge Institute for Science and Education evaluation study

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Undergraduate—Student Support (cont.)					
DOE (cont.)	Student Research Participation	1988	1995	C/D	Argonne National Laboratory/Oak Ridge Institute for Science and Education evaluation study
	— Lawrence Berkeley Laboratory Science Consortium—Student Development Programs[a]	1982	1992	D	Internal laboratory evaluation
	— Brookhaven Semester Program	1987	1987	D	Internal laboratory evaluation
	— Lawrence Berkeley Laboratory Center of Science and Engineering Education Program	1991	1991	D	Internal laboratory evaluation
	— Lawrence Livermore National Laboratory Partnership in Environmental Technology and Education Summer Internship	1992	1992	D	Internal laboratory evaluation
HHS	Minority Access to Research Careers[a]—Honors Undergraduate Research Training		mid-1980s	B	National Academy of Science report available
		1993	1994	A	Study will examine actual outcomes, expected and unexpected
	Health Careers Opportunity Program[a]—Undergraduate 2-year and 4-year	1972	Ongoing	C/D	Annual
	National Institutes of Health Undergraduate Laboratory Employment/Fellowships	Various	Ongoing	C	Annual
	Short-Term Training for Minority Students	1991	Ongoing	C	Annual
	Research Supplements—Minorities	1990	Ongoing	C/D	Annual
	Intramural Research Training Awards[a] Summer—Undergraduate	Various	Ongoing	C	Annual
	Centers for Disease Control and Prevention Training Grants[a]—Undergraduate	1970	Ongoing	C/D	Annual

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
——, Not specified.

Continued on next page

Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Undergraduate—Student Support (cont.)					
HHS (cont.)	Minority Access to Research Careers[a]—Summer Research Training	— 1993	mid-1980s 1994	B A	National Academy of Science report available Study will examine actual outcomes expected and unexpected.
	Introduction to Biomedical Research	1990	Ongoing	C	Annual
	Research Supplements—Disabled Individuals	1990	Ongoing	C/D	Annual
DOI	Historically Black Colleges and Universities Intern/Summer Employment	—	—	D	Report will be compiled on numbers served
	Cooperative Education Program	—	—	D	Monitoring
	Minority Participant Earth Science	—	—	D	Report will be compiled on numbers served
EPA	National Network for Environmental Management Studies[a]	—	Ongoing	D	Annual survey, designed to fine tune the program survey, is distributed to campus facilitators, student participants, and laboratory sponsors. In addition, individual projects are reviewed by the sponsor.
NASA	Co-op[a]	—	—	C	
	Minority Programs[a]	—	—	C	Annual database activity
	National Space Grant College and Fellowship Program[a]—Undergraduate Program	—	—	C	Annual database activity
	Advanced Design Program	—	—	C	Evaluation conducted by American Society for Engineering Education
NSF	Research Experiences for Undergraduates	1988	1991	A	
SI	National Museum of Natural History Natural History Intern Program	1983	Ongoing	C/D	Research training program

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

Continued on next page

Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Undergraduate—Organization Reform/Comprehensive					
ED	Minority Science Improvement	1972	Annual	D	Annual reports
DOE	Lawrence Berkeley Laboratory Center for Science and Engineering Education	1992	1992	D	Internal lab evaluation
HHS	Bridges to the Future—2-year and 4-year	1992–1993 1992	1994–1995 Ongoing	A C	Grants include funds for external evaluations. Annual
	Minority Biomedical Research Support Undergraduate Colleges	1972 —	Ongoing 1980s	C A	Annual Reports available
	Minority Access to Research Careers[a]— Ancillary Grants	1972 — 1993	Ongoing mid-1980s 1994	C B A	Annual National Academy of Science report available Study will examine actual outcomes—expected and unexpected
	National Institute of Neurological Disorders and Stroke Traineeships in Biotechnology	1990	Ongoing	C	Annual
DOI	Historically Black Colleges and Universities	—	—	D	Agency will monitor in 1993
NASA	Community College Programs	—	—	C	
	Minority Programs[a]	—	Ongoing	C	Annual evaluation reports are submitted.
NSF	Alliances for Minority Participation	1993	Ongoing	C/D	Formative
	Research Careers for Minority Scholars	1990 1992 1992	1990 1992 1992	D C D	Committee of External Experts Program review
Undergraduate—Other					
DOE	Community College Partnership for Environmental Technology Education	1993	1994	C	

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified

Continued on next page

Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Graduate—Student Support (Predoctoral Fellowships)					
USDA	National Needs Graduate Fellowships	1992	1993	B	
HHS	National Research Service Awards[a]— Predoctoral Fellowships	1976 1980s 1980s	Ongoing Ongoing Ongoing	C A B	Annual Comprehensive program evaluation conducted by National Academy of Sciences every 4 years per legislative mandate; reports available Database on outcomes updated annually; reports available
	Health Services Dissertation Research Grants	1990	Ongoing	C	Annual monitoring; new program—evaluation plans under development
NASA	Graduate Student Researcher	—	Ongoing	C	Participant data
	Minority Programs[a]	—	Ongoing	C	Participant data
NSF	Graduate Fellowship/Minority Graduate Fellowship/Women in Engineering	1988 1993 1992 1992	1988 1993 1992 1992	A A D D	Review of validity of the process/effect of award Review of validity of the process/effect of award Committee of External Experts Program review
SI	Smithsonian Institution-Wide Fellowship Program[a]	1970	Ongoing	D	

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

Continued on next page

Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Graduate—Student Support (Predoctoral Traineeships)					
HHS	National Research Service Awards[a]—Predoctoral Traineeships	1976 1976 1980s	Ongoing Ongoing Ongoing	C A B	Annual Comprehensive program evaluation conducted by National Academy of Sciences every 4 years per legislative mandate; reports available Database on outcomes updated annually; reports available
	Centers for Disease Control and Prevention Training Grants[a]—Graduate	1972	Ongoing	C	Annual
	National Library of Medicine Training in Medical Informatics	1976 1976 1980s	Ongoing Ongoing Ongoing	C A B	Annual Comprehensive program evaluation conducted by National Academy of Sciences every 4 years per legislative mandate; reports available Database on outcomes updated annually; reports available
	National Research Service Awards[a]—Health Services Research Traineeship	1990 1990 1980s	Ongoing Ongoing Ongoing	C A B	Annual Comprehensive program evaluation conducted by National Academy of Sciences every 4 years per legislative mandate; reports available Database on outcomes updated annually; reports available
DOI	Cooperative Research Units	—	—	C	Monitoring
NASA	National Space Grant College and Fellowship Program[a]—Graduate Program	1991	Ongoing	C	Annual database of activity

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

Continued on next page

Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Graduate—Student Support (Postdoctoral Fellowships)					
HHS	National Research Service Awards[a]—Postdoctoral Fellowships	1976 1976 1980s	Ongoing Ongoing Ongoing	C A B	Annual Comprehensive program evaluation conducted by National Academy of Sciences every 4 years per legislative mandate; reports available Database on outcomes updated annually; reports available
NASA	Resident Research Associate	——	Ongoing	C	Participant data
	National Space Grant College and Fellowship Program[a]—Research Capability Enhancement	1991	Ongoing	C	Annual database of activity
SI	Smithsonian Institution-Wide Fellowship Program[a]	1970	Ongoing	D	
Graduate—Student Support (Postdoctoral Traineeships)					
HHS	National Research Service Awards[a]—Postdoctoral Traineeships	1976 1976 1980s	Ongoing Ongoing Ongoing	C A B	Annual Comprehensive program evaluation conducted by National Academy of Sciences every 4 years per legislative mandate; reports available Database on outcomes updated annually; reports available

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
——, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
			Graduate—Other		
DOE	Graduate Student Research Participation	1988	1990	C/D	Argonne National Laboratory/Oak Ridge Institute for Science and Education evaluation study
HHS	Intramural Research Training Awards[a]—Summer	1986	Ongoing	C	Annual
	Cancer Education Program (Cancer Epidemiology and Biostatistics Training, Cancer Epidemiology Program, and Cancer Prevention Fellowship Program)	Various	Ongoing	C/D	Annual
	Bridges to the Future—M.S./Ph.D.	1992–1993 1992	1994–1995 Ongoing	A C	Grants include funds for external evaluation. Annual
	Biomedical Research Technology—National Cancer Institute	1990	Ongoing	C	Annual
	Biotechnology Training	1980s	Ongoing	C	Annual
	National Heart, Lung, and Blood Institute Academic Teacher Awards	1971	Ongoing	C/D	Annual
	National Heart, Lung, and Blood Institute Minority Institute Research Training Program	1985	Ongoing	C/D	Annual
	National Institutes of Health Graduate Laboratory Employment	Various	Ongoing	C/D	Annual
	Veteran's Affairs Postgraduate Program—Food and Drug Administration	1979	Ongoing	C	Annual
	Ethical, Legal, and Social Issues Program[a]—Graduate Program and Lecture Series	1990	Ongoing	C	Annual

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Graduate—Other (cont.)					
EPA	National Network for Environmental Management Studies[a]	—	Ongoing	D	Annual survey, designed to fine tune the program survey, is distributed to campus facilitators, student participants, and laboratory sponsors. In addition, individual projects are reviewed by the sponsor.
NASA	Co-op[a]	—	—	C	Data on participants are collected.

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Public Understanding of Science—Education Programs for Decision Makers					
DOI	Public Science Literacy	——	——	D	Department will monitor in 1993
Public Understanding of Science—Media Resources					
DOI	Media Programs	——	——	D	Monitoring
NSF	Informal Science Education[a]	1992 1992	1992 1992	D D	Program overview Committee of External Experts
Public Understanding of Science—Public and Community-Linked Dissemination					
DOE	Energy Research Science Literacy	1993	1998	——	Planned future evaluation
HHS	National Institutes of Health Science Education Partnership Awards[a]—Public Understanding of Science	1991 1991	1994–1995 Ongoing	A C	Most grants include funds for external evaluations. Annual
	National Institute of Mental Health Science Education Partnership Awards[a]—Public Understanding of Science Grants	1992 1992	1994–1995 Ongoing	A C	Most grants include funds for external evaluations. Annual
	Ethical, Legal, and Social Issues Program—Public Science Education	1990	Ongoing	C	Annual
DOI	Public Education and Interpretive	——	——	D	Monitoring
NSF	Informal Science Education[a]	1992 1992	1992 1992	D D	Program overview Committee of External Experts

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
——, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Public Understanding of Science—Public and Community-Linked Dissemination (cont.)					
SI	National Museum of Natural History Exhibit Hall Restoration	1990	Ongoing	B/C	Formative for each exhibition
	National Air and Space Museum Long-Range Exhibition Program	1990	Ongoing	A/C	
	National Zoological Park Education Programs and Exhibits	1978	Ongoing	C/D	All programs evaluated; about 50 percent of exhibitions evaluated.
	National Air and Space Museum Education Programs	1992	Ongoing	B/C	
	National Museum of Natural History Education Programs	1985	Ongoing	A	
Public Understanding of Science—Science Education Resources					
ED	Educational Resources Information Center	1966	Ongoing	D	Extensive internal monitoring
DOI	National Water Information Clearinghouse	——	——	C	Department will maintain reports in 1993.

[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
——, Not specified.

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Table 2-4—Continued

Agency	Program Title	Review Start	Review End	Review Type	Comments
Evaluation, Studies, Dissemination—Studies					
ED	National Assessment of Educational Progress	—	—	—	An ongoing assessment of student knowledge and skills in mathematics and science
NSF	Studies	1992	1992	D	Program review
Evaluation, Studies, Dissemination—Evaluation					
NASA	National Research Council Committee for a Study of NASA's Educational Programs Outcome	1992	1994	B	To identify appropriate measures of program outcomes for further evaluation of NASA programs
NSF	Evaluation Program	1992	1993	B	Evaluation of NSF Evaluation Program

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[a] Program evaluation has been cross-listed in more than one level and/or program category.
[b] Contingent upon being awarded science and education Evaluation Funds.
—, Not specified.

Agency Evaluation Overviews

Department of Agriculture

The Department of Agriculture (USDA) awards formula and competitive grants as well as special grants for particular projects. The larger portion of the money is in competitive grants programs. Most of these programs are new and have not been evaluated other than for administrative review.

Project Evaluations

Project evaluation is the appropriate method of evaluation for several competitive grants programs because each project conducted by one or more universities is a stand-alone activity. However, neither the 1890 Capacity Grants Program nor the Institution Challenge Grants Program has existed long enough to engage in such evaluation. The initial grants were made in each of these programs in FY 1990.

Program Evaluations

USDA's Secretariat of Science and Education has a congressionally funded administrative account for evaluations (the only USDA source of support other than program administration) that is inadequate for conducting an evaluation. These monies are allocated to Science and Education agencies yearly on a competitive basis. Currently, two programs are under review—the Graduate Fellowships Program and the Research Apprenticeship Program. Universities are conducting these reviews for USDA by means of cooperative agreements.

Department of Defense

The Department of Defense (DOD) and its military components support more than 200 programs related to science, mathematics, and engineering education across the entire educational spectrum. The total FY 1993 DOD investment in these programs is more than $2 billion.

The first "DOD Master Plan for Science, Mathematics, and Engineering Education" was transmitted to Congress in August 1992. Its purpose is to ensure adequate supplies of science, mathematics, and engineering personnel in the disciplines expected to impact future military capabilities most directly. The plan includes specific programs to enhance undergraduate, graduate, and doctoral education in scientific disciplines; assist existing faculty as well as attract and train new faculty in scientific disciplines critical to national security; engage in partnership programs with defense laboratories to train students; provide scholarships and fellowships; sponsor cooperative work-education programs; and equip and renovate laboratories for performing defense research.

The Director of Defense Research and Engineering established a Science and Engineering Education Panel in July 1991 to review and assess DOD programs in science,

mathematics, and engineering education. The panel is composed of members of the military departments and relevant defense agencies. The panel is directed to provide recommendations, oversight, and coordination, for the multitude of DOD science, mathematics, and engineering educational activities and programs in the military departments and various defense agencies and to coordinate with other Federal Government activities through the Federal Coordinating Council for Science, Engineering and Technology and other interagency groups.

The panel will perform program review and assessment in accordance with actions identified in the DOD Management Plan for Science and Engineering Education. It will assess the effectiveness of DOD's programs and activities in meeting overall program objectives through annual reviews. It will monitor current and planned levels of funding for DOD science, mathematics, and engineering education to support reviews of DOD components' program objectives and will annually advise the Director of Defense Research and Engineering about programs that should be initiated, expanded, or eliminated.

Department of Education

Programs

The Department of Education (ED) has both formula grant and discretionary grant programs. The much larger portion of money is in the formula grants programs, such as Chapter 1 and the Eisenhower Mathematics and Science Education State Grant Program, where money is allocated to states and then to local districts by a predetermined set of rules (e.g., number of students, proportion of students economically deprived). In the discretionary programs, ED has greater control, although the substance of the program is often mandated by Congress.

Evaluations

Program offices routinely gather data to monitor operations, primarily through reports from grantees and site visits by ED staff. In addition to routine monitoring, ED conducts program evaluations. Generally, a centralized ED unit, the Planning and Evaluation Service, administers contracts for outside firms to evaluate ED's programs. Typically, evaluations have been summative, emphasizing experimental and quasi-experimental designs. However, a broader set of approaches, including case studies, is now common. Although Congress often mandates that ED evaluate specific programs, ED has some flexibility in selecting additional programs to evaluate.

In the discretionary grant programs, an evaluation plan is required in the grant applicant's proposal and is judged by reviewers as one of the criteria for selection. The points assigned are usually few: 5 or 10 out of 100 is a typical amount. This process does not guarantee that evaluation is actually performed. Monitoring of evaluations after award can be problematic because of limited staffing and lack of staff expertise in evaluation. Also, collection, aggregation, and analysis of project evaluation information for program evaluation purposes are not consistently covered by project funds.

ED determines the effectiveness and outcomes of the formula grants through various approaches. There are evaluation contracts to fund national studies. There are formal annual state performance reports for the Eisenhower State Grant Program. Finally, there are informal state- and school-district-sponsored self-identified project evaluations.

The Department of Education forwards Eisenhower State Grant funding and annual performance reports to state office coordinators. States then revise the forms and distribute

them to districts that in turn modify and revise the forms for each school or project. All performance information is then compiled and returned to each of the originating offices.

The yearly performance or annual reports that state coordinators complete and return are based on data usually collected from districts, schools, and projects. Data are usually demographic, with quantitative information on participants, rather than qualitative information. Historically, ED has been allowed by the Office of Management and Budget to collect only the data directly specified in the regulation or legislation; ED has not been able to collect qualitative data. Recent meetings with and directives from the Office of Management and Budget indicate a change, with more qualitative data collection being encouraged.

Department of Energy

The Department of Energy (DOE) was established in 1977; since then, science and technology education has been a part of its mission. DOE was authorized to support education as one of its major missions in 1991. Evaluation is an integral part of DOE's culture and that of its laboratories and facilities and is a natural part of all DOE programs.

Coordination responsibility for DOE's university and science education-sponsored activities and their evaluation resides with the Office of Science Education and Technical Information. This office directly supports a variety of science and engineering education programs from precollege to the postgraduate levels, including external as well as internal evaluation of these programs.

Other DOE program offices are also deeply involved in supporting education activities. For example, the Office of Environmental Restoration and Waste Management sponsors education programs related to its mission and determines how these programs should be evaluated. DOE also provides substantial support for science education through its national laboratories, technology centers, and other research facilities. Each entity conducts its own education programs and sponsors its own program evaluation.

Internal evaluation as part of the practice of science has been a part of many of the education programs supported by the Department of Energy and its preceding agencies since inception. External evaluation of DOE's national precollege, undergraduate, and graduate programs has been supported since 1986. In 1991, the Department of Energy Organization Act was amended to formalize science education as a major mission of the Department. Increases in education funding began in FY 1990. With these increases came the need for internal evaluation of precollege programs implemented by DOE laboratories. External evaluation for precollege programs is being provided by a four-year grant to the National Center for Improving Science Education.

Evaluation was performed previously at the discretion of the education staff of the program office that provided program support. The program office decided whether evaluation is to be done internally or externally and by whom. Monitoring reviews and determinations of the extent to which program goals are met are generally the types of evaluations done internally by those responsible for education programs. Evaluations designed to determine merit or worth and to judge merit based on easily obtained evidence are usually done by external evaluators.

The Department of Energy Office of Environmental Restoration and Waste Management operates a larger number of discretionary programs, both precollege and postsecondary. The programs are carried out by DOE employees, by DOE contractors, and by education institutions and personnel (through contracts and grants). Evaluation activities are carried out with the purpose of (1) identifying successful projects, (2) finding out why successful

projects work, (3) identifying actions to allow for continuous improvement, and (4) developing data to allow for overall program optimization.

Project Monitoring

All Office of Environmental Restoration and Waste Management projects are tracked with respect to documentation, budgets, and progress toward milestones. DOE has a formal reporting system that all project managers are required to use. Monitoring is most useful for early detection of project implementation problems, and allows for reallocation of resources to be made.

Project Evaluation

DOE requires evaluation of all projects. An evaluation plan is required in the funding proposal; it is the responsibility of the project manager to see that an appropriate evaluation is completed. Funding issues are negotiated with the project manager. Technical assistance and an overall program strategy for evaluation are provided to the project to assist the manager in the design and completion of an appropriate evaluation; this assistance also minimizes duplication of effort and resources across the program.

Program Evaluation

Program evaluation is carried out by a central team of experts and by consultants and external expert review panels. These activities are all funded by headquarters. These program evaluations are both formative and summative, with emphasis on the large, high-leverage activities. The review panel process involves grouping projects into similar activity types (e.g., precollege programs, academic partnerships, etc.) and convening a panel with expertise in that area. The panel reports are then used to adjust both project activities and program priorities.

Peer Review Process

DOE is developing a comprehensive evaluation strategy that monitors and frequently assesses both programs' and individual projects' effectiveness by using internal and external experts. One of the program assessment techniques used is that of program review by an external panel. The peer panel review provides a systematic assessment of program coverage and delivery, with rapid and continuous feedback about specific projects. The panel recommendations provide both program personnel and headquarters staff with valuable incremental information about their programs. The panel's recommendations are used by program managers and headquarters to improve their programs, to increase overall coordination of programs, and to strengthen the overall evaluation functions.

Department of Health and Human Services

The Department of Health and Human Services (HHS) supports both extramural grants and intramural programs in life sciences education through its Public Health Service agencies. Most HHS science education program funding is through extramural grants. Within the last several years, the Public Health Service has adopted a policy that all new programs will have an evaluation component.

Each Public Health Service agency has a central division (generally referred to as planning and evaluation) that serves as the focal point for program evaluation. In addition, most of the bureaus, institutes, or centers within each agency have a centralized evaluation office. Each of these units has trained evaluators on staff who are responsible for conducting and/or coordinating program evaluations as well as developing evaluation requests for proposals and identifying appropriate contractors. Similarly, an evaluation component is

found—implicitly or explicitly—in various working groups, task forces, workshops, conferences, and symposia; these are supported and conducted by the agencies to assist them in selected areas of policy development and program management.

Within Public Health Service agencies, evaluations are supported through operating or program funds and through the centrally managed evaluation set-aside fund. The Secretary of HHS may allocate up to one percent of the Public Health Service appropriation for program evaluation studies. The amount spent on evaluation comes from each agency's appropriation.

The process through which priorities are set for program evaluation activities is inextricably linked to program planning, analysis, budgeting, program management, legislation, and policy development. An important focus of HHS evaluations in recent years has been life sciences education programs related to research, manpower, and training, with an emphasis on those programs that aim to improve the participation of underrepresented groups.

The types of evaluations used by HHS vary with the nature of the program. Program outcome or impact evaluations are typically the method of choice for the vast majority of HHS science education programs (e.g., the graduate student and postdoctoral research training programs). Process or implementation studies are the usual approach to evaluating the relatively few precollege science education programs supported by HHS agencies.

Evaluations of individual science education grant projects are also supported by HHS. In these cases, the evaluation plans are usually included in the proposal and reviewed as a component of the proposal. Many of the requests for proposals for science education grant programs include the requirement that proposals provide an evaluation plan for the project. In the past, the results of these evaluations conducted as small components of grant projects generally have not been reviewed or disseminated by the funding agencies. However, efforts to improve this situation are under way.

Public Health Service

Past Work

- *Precollege.* In the last few years, the Public Health Service has developed a number of innovative pilot programs. Formative evaluations have been built into the development costs of these programs, and the data collected from the initial pilots is being used to increase the effectiveness of the programs in preparation for wider dissemination.

- *Undergraduate.* In the mid-1980s, the National Academy of Sciences conducted an evaluation of the Minority Access to Research Careers Honors Undergraduate Research Training program. The study consisted of an analysis of existing data on the training of minority group scientists, site visits to ongoing training programs, and a survey of former trainees. A new study was planned for 1993–1994.

- *Graduate.* By legislative mandate, the National Academy of Sciences performs an extensive evaluation and needs assessment for biomedical and behavioral research training programs every four years.

Future Plans

- *Precollege.* The Public Health Service will continue to require built-in evaluations in new programs.
- *Undergraduate.* A new evaluation of the Minority Access to Research Careers Honors Undergraduate Research Training program is planned for FY 1992–93. The evaluation will look at the numbers of students majoring in the sciences and graduating with the B.S. degree; their ability to gain entry to doctoral programs in biomedical research; and the likelihood that they will pursue doctoral degrees. Information will also be gathered on the educational and career outcomes of former Minority Access to Research Careers trainees.
- *Graduate.* The Public Health Service is developing an evaluation plan for all of its education programs. It is also considering expanding the criteria used for measuring outcomes of research training.

Department of the Interior

The Department of the Interior (DOI) funds mathematics, science, and student development programs through each bureau; DOI also receives funds from the Department of Education under formula and discretionary programs. The majority of the science, mathematics, and technology programs are funded by each of DOI's agencies; however, the largest program is funded by the Eisenhower Mathematics and Science Program.

Project Evaluation

Interior Department projects are evaluated by each individual agency. DOI does not have a central office that evaluates the education projects solely sponsored by Interior for effectiveness. A few agencies have evaluation plans for their specific projects; however, the majority of these is summative evaluations that do not address long-term impacts. The majority of the projects addresses numbers of students participating; numbers of teachers and schools participating; amount of materials distributed to teachers; and other summative issues. There are no funds available specifically for formal evaluations, except from the funds appropriated for specific projects.

Program Evaluations

The single evaluation unit in the Department of the Interior devoted to education evaluation is in the Bureau of Indian Affairs. Other agencies have evaluation units, but they focus on issues that are not educational in nature. The Geologic Survey, the Fish and Wildlife Service, and other agencies have scientific missions, but they concentrate on mission-specific program issues other than education.

The Bureau of Indian Affairs' evaluation unit conducts both monitoring and evaluations for each of its 183 schools. The policy of the bureau is that school evaluations are to be conducted by this office. External evaluators are used in addition to bureau employees.

The Eisenhower program and the Chapter 1 of the Elementary and Secondary Education Act of 1965 programs funded through the Bureau of Indian Affairs conduct their own evaluations, which are submitted to the Department of Education. The other agencies do not submit their evaluations to any department outside of the Department of the Interior.

Environmental Protection Agency

Environmental education has been a part of the Environmental Protection Agency's (EPA's) effort aimed at combatting current environmental problems and anticipating and preventing new ones. Although support for environmental education has fluctuated in the past two decades, many view environmental education as fundamental to slowing environmental degradation and creating a sustainable society. In the broadest sense, EPA sees the current outcome of this long-term effort—an ever increasing participation by the public in all aspects of environmental decisionmaking—as a success, but not a complete success. In the last few years, American consumers have become more environmentally aware, improving their understanding of issues and of how personal actions affect environmental quality; however, far more must be done in the classroom to provide teachers and students with opportunities to acquire the knowledge, values, attitudes, commitments, and skills needed to understand, protect, and improve the environment. Bridging this gap presents a significant challenge for environmental education, specifically in such areas as risk communication, target populations, teacher training, curriculum development, curriculum content, and research and evaluation.

At present, EPA funds kindergarten through graduate education programs by means of a competitive grant process. Evaluation as a component of any grant has not been a prerequisite for award. Future program plans for the larger programs, however, will and are beginning to include evaluations. Some evaluations will be accomplished through grants to external groups; others will be accomplished internally by the program's coordinator.

There are a number of significant obstacles that affect EPA's ability to conduct education program evaluations. They include the following items.

- The agency is not actively conducting evaluations on any of its programs.
- The agency does not operate its education program through any one office.
- Staff members are not trained to design, conduct, or oversee evaluation.
- Most of the agency's programs have begun this year; there are limited data.
- There are no funds set aside for evaluation.

In the coming years, EPA expects that funds will be set aside to evaluate a limited number of programs. Administratively, there are no efforts to establish an evaluation office or train staff in evaluation. Any agency program evaluation will be further complicated by certain indicators atypical of other agencies. Such indicators include measures of behavioral changes; the number, type, and quality of individuals entering environmental science and engineering as a career, having been exposed to our programs; and measurable environmental quality improvements.

National Aeronautics and Space Administration

Short-Term Evaluation Strategy

The National Aeronautics and Space Administration (NASA) has established a five-part short-term evaluation strategy.

1. Establish organizational management of program evaluation. This activity was accomplished in November 1991 upon the formation of the Technology and Evaluation Branch in the Education Division. The Technology and Evaluation Branch has functional management of agency-wide evaluation activity pertaining to education programs.
2. Collect data on education programs agencywide. NASA is developing a computer system database that will store data and generate reports on evaluations conducted agency wide. The first phase of database development (the database collects existing summary reports from program managers) is operational. An agency-wide survey has been conducted to list all NASA education programs.
3. Revise databases to store evaluation data. The University Management Information System collects data pertaining to all sponsored NASA grants and contracts with educational institutions. The University Management Information System, developed about twenty years ago, has been reprogrammed to provide more timely, useful, and comprehensive reports.
4. Conduct program evaluations for all new or existing programs. Both internal and external evaluations of individual education programs are being conducted. Most evaluations are done internally. New programs are required to include an evaluation plan before they can be improved.
5. Review national precollege program for alignment with Federal Coordinating Council for Science, Engineering and Technology Committee on Education and Human Resources priorities. An internal review team is evaluating the goals and objectives for each precollege program to determine alignment with the national education goals and Federal Coordinating Council priorities. A set of program review standards has been developed.

Long-Term Evaluation Strategy

NASA has also established a three-part long-term evaluation strategy.

1. Conduct a study with the National Research Council to identify evaluation indicators. A contract has been awarded to the National Research Council Office of Scientific and Engineering Personnel. This 18-month study will include a workshop to identify evaluation indicators and will be implemented under the guidance of a 7-member panel of experts.
2. Revise databases and data collection methods based on the National Research Council study. NASA data collection procedures and systems will be modified to retain data recommended by the National Research Council. The modification is designed to define appropriate evaluation indicators for NASA's education program utilizing an objective, third-party process for determining indicators. The following method will be followed: (1) sample programs will be identified; (2) a committee of experts will oversee the study; (3) a workshop on evaluation indicators will be held; (4) National Research Council staff will support the committee in preparing its report to NASA; and (5) NASA will revise data collection procedures.

3. Emphasize evaluation by including it as one of three key enabling systems in the NASA *Strategic Plan for Education*.

National Science Foundation

Structure

The National Science Foundation (NSF) has a specific organization unit called the Division of Research, Evaluation, and Dissemination that evaluates education programs as part of its mission. Within this division, there is a professional staff of three that plans evaluations, constructs requests for proposals for evaluation services, oversees the contractors who carry out evaluations, and provides evaluation services internally to all of the education and human resources divisions.

There are evaluation advisory committees that lend expert opinion on the evaluation activities of each of the organizational units (divisions) of the Directorate for Education and Human Resources (K–12, undergraduate, graduate, systemic reform, etc.). There is a separate committee that advises the Division of Research, Evaluation, and Dissemination.

Issues

Beginning in FY 1991, the National Science Foundation was given a congressional mandate to evaluate the education programs of other Federal agencies, as well as all of its own programs. NSF has taken the viewpoint that it can best meet this mandate by providing strong evaluation leadership and coordination through the Federal Coordinating Council for Science, Engineering and Technology Committee on Education and Human Resources process. NSF representatives chair the interagency Evaluation Working Group, put on workshops and seminars, and establish activities such as the Expert Panel that prepared this report.

Programs

The education and human resource programs of the National Science Foundation can be categorized, almost exclusively, as core science, mathematics, engineering, and technology education programs (with the exception of the programs that support graduate students through research grants).

Evaluation

The Directorate for Education and Human Resources (which operates most of NSF's education programs) has established a formal plan for evaluating its programs. This plan calls for each program to be evaluated on a five-year cyclical basis. Program evaluation strategies or types differ depending on the nature of the program to be evaluated and the needs of the organization unit that houses the program. Within each of the directorate's programs, individually funded projects are required to perform evaluations. NSF is currently designing a comprehensive database with indicator data from all of its education and human resource programs that will serve evaluation and other functions.

Smithsonian Institution

For several years, the Smithsonian Institution (SI) has emphasized the importance of formal evaluation. In 1987 the Secretary appointed a special assistant for institutional studies, who had as one major responsibility to guide and assist SI units in evaluating their programs.

Despite this concern with evaluation, the number of formal studies conducted by SI units has been limited, mainly from lack of funding, shortage of trained staff, and fear of negative outcomes. Nonetheless, a 1991 educational program inventory revealed that many bureaus had conducted informal assessments of their activities, especially of large-scale activities that have been in place for a considerable period or that serve large numbers of students.

In general, informal assessments and small-scale studies conducted by the individuals planning the activities—rather than more formal, objective, and independent studies—characterize the evaluation of educational activities at the Smithsonian. A report based on a 1991 educational program inventory poses major questions that the institution must answer if it is to establish an overarching policy on evaluation: What kind of overall approach should be implemented to assess the effectiveness of educational activities? What type of training should be offered to assist professional staff in conducting assessments that can improve programming development?

In August 1990, the Smithsonian's Council of Information and Education Directors submitted to the Secretary a policy paper reviewing the current state of SI education and recommending actions. The Council of Information and Education Directors paper argues for the importance of both design-side and in-place evaluation of exhibitions and programs. Further, it urges the Smithsonian Institution to issue a policy mandating the use of both of these kinds of evaluation for all major initiatives. The writers stressed the usefulness of in-place evaluation as not so much a final "report card," but more as a tool for refining exhibitions and programs. In addition, the writers conclude, the policy should require that all funding requests include well-thought-out evaluation components, thus recognizing the need to train staff to understand the uses of different evaluation strategies.

The issues raised by both documents—the educational program inventory report and the Council of Information and Education Directors policy paper—are currently being considered as part of an institution-wide policy statement on education.

Expert Panel Charter
Statement of Mission and Procedures

Federal Coordinating Council for Science, Engineering and Technology Committee on Education and Human Resources

Expert Panel on Review of Federal Science, Mathematics, Engineering, and Technology Education Programs

August 21, 1992

Introduction

The National Science Foundation (NSF), acting on behalf of the Federal Coordinating Council for Science, Engineering and Technology (FCCSET) Committee on Education and Human Resources (CEHR), establishes an Expert Panel to inform CEHR of the evaluation needs of member agencies. The members of the Panel will consist of independent nationally recognized experts (external to the Federal Government) in science, mathematics, engineering, and technology; education policy and research; education administration and teaching; and program evaluation.

Mission

The mission of the Panel is to broadly review CEHR agencies' evaluation plans and programs. The Panel is to make use of existing information provided by CEHR and the member agencies and other such methods as appropriate.

Specifically, the Expert Panel is asked to—

1. Examine the scope and balance of existing science, mathematics, engineering, and technology education programs across agencies by—

   - Determining the programmatic areas of strength and weakness across agencies and the extent to which programs are addressing national needs.
   - Identifying the types of initiatives that might be more or less effective in accomplishing CEHR goals.
   - Suggesting ways to make the best use of Federal resources in order to maximize the impact of Federal programs on the improvement of science and mathematics education nationally.

2. Examine the scope of evaluation activity across agencies by—
   - Reviewing CEHR evaluation plans and agency evaluation studies.
   - Suggesting areas where further information should be gathered and would be most fruitful.
   - Advising on future directions for evaluation and areas for improvement.
3. Report findings and recommendations to CEHR and the National Science Foundation.

Work of the Panel

There will be 15 members of the Expert Panel. There will be three panelists from each of these background categories: science, mathematics, engineering, and technology; education policy and research; education administration; science and mathematics instruction; and program evaluation. The panelists will be chosen according to contributions they have made to their fields and the skills and backgrounds they possess.

Professional staff with backgrounds in education and program evaluation will be provided by NSF to support the Panel's activities. Each agency will be represented by its FCCSET CEHR Evaluation Working Group representative or by a substitute representative designated by the agency.

The Panel will carry out its work using existing information provided by FCCSET CEHR and the agencies as well as other sources of data the Panel may deem appropriate. Panel staff will work with agency personnel prior to the first meeting of the Panel in an attempt to gather background information and fill information gaps. Information will also be obtained through the Panel's interactions with agency personnel and other experts within and outside the Federal Government.

Product

A written report is expected to include—

- A description of the array of science, mathematics, engineering, and technology education programs and an identification of programmatic gaps and overlaps and areas of strength and weakness.
- A description of the current level of program evaluation activity within and across agencies.
- Suggestions on how programs and evaluation activities can be improved.
- Recommendations for future directions for interagency cooperation.

Panelists

Karl Pister, Co-chair
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