

EDUCATION AND HUMAN RESOURCES

\$737,000,000

The FY 2006 Budget Request for the Directorate for Education and Human Resources (EHR) is \$737.0 million, a decrease of \$104.42 million, or 12.4 percent, below the FY 2005 Current Plan of \$841.42 million.

Education and Human Resources Funding

(Dollars in Millions)

	FY 2004 Actual	FY 2005		Change over FY 2005	
		Current Plan	FY 2006 Request	Amount	Percent
Math and Science Partnership (MSP)	138.71	79.36	60.00	-19.36	-24.4%
Experimental Program to Stimulate Competitive Research (EPSCoR)	94.24	93.68	94.00	0.32	0.3%
Elementary, Secondary and Informal Education (ESIE)	206.39	181.95	140.80	-41.15	-22.6%
Undergraduate Education (DUE)	162.91	153.67	135.00	-18.67	-12.1%
Graduate Education (DGE)	155.35	154.70	155.00	0.30	0.2%
Human Resource Development (HRD)	120.09	118.54	118.40	-0.14	-0.1%
Research, Evaluation and Communication (REC)	66.41	59.52	33.80	-25.72	-43.2%
Total, EHR¹	\$944.10	\$841.42	\$737.00	-\$104.42	-12.4%

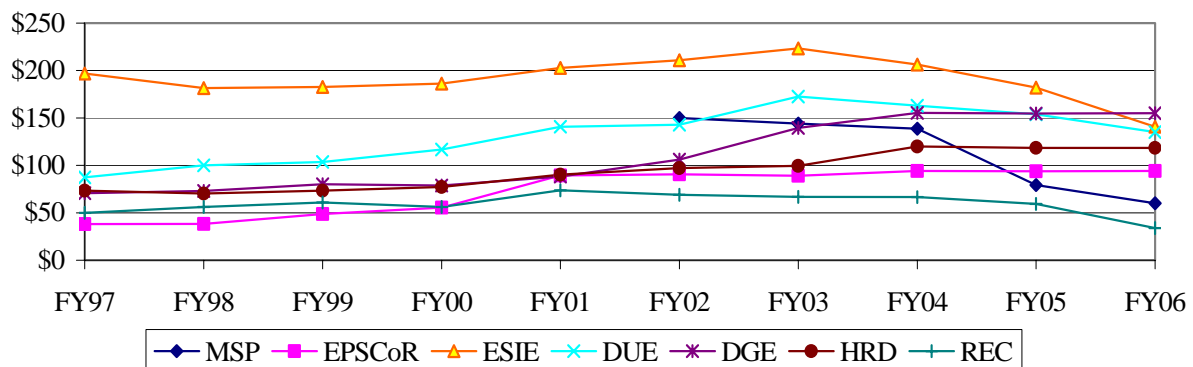
Totals may not add due to rounding.

¹ Excludes \$57.28 million in FY 2004 and an estimated \$100.0 million in FY 2005 and FY 2006 from H-1B Nonimmigrant Petitioner Fees.

NSF, in accordance with the NSF Act of 1950, is the principal federal agency charged with promoting science and engineering (S&E) education. In support of this mission, EHR promotes the development of a diverse and well-prepared workforce of scientists, technicians, engineers, mathematicians and educators and a well-informed citizenry that have access to the ideas and tools of science and engineering. The EHR Directorate supports education, research, and infrastructure development in all science, technology, engineering and mathematics (STEM) disciplines. The purpose of these activities is to enhance the quality of life of all citizens and the health, prosperity, welfare and security of the nation.

EHR Subactivity Funding

(Dollars in Millions)



Appropriation Language

EDUCATION AND HUMAN RESOURCES

For necessary expenses in carrying out science and engineering education and human resources programs and activities pursuant to the National Science Foundation Act of 1950, as amended (42 U.S.C. 1861-1875), including services as authorized by 5 U.S.C. 3109, and rental of conference rooms in the District of Columbia, ~~\$848,207,000~~\$737,000,000, to remain available until September 30, 2006: ~~Provided, That to the extent that the amount of this appropriation is less than the total amount authorized to be appropriated for included program activities, all amounts, including floors and ceilings, specified in the authorizing Act for those program activities or their subactivities shall be reduced proportionally: Provided further, That not to exceed \$5,500,000 of these funds shall be for all costs, direct and indirect, associated with personnel assignments under the Intergovernmental Personnel Act 2007. (Departments of Veterans Affairs and Housing and Urban Development, and Independent Agencies Appropriations Act, 2005.)~~

Explanation of proposed changes to appropriation language:

- Deletes language related to allocating funds proportionately across programs and ceilings on funding for Intergovernmental Personnel Act appointments. Each of these issues is more appropriately addressed through administrative measures.

Education and Human Resources

FY 2006 Summary Statement

(Dollars in Millions)

	Enacted / Request	Rescission	Carryover / Recoveries	Transfers	Total Resources	Obligations Incurred / Estimated
FY 2004 Appropriation	944.55	-5.57	6.53	--	945.51	944.10
FY 2005 Current Plan	848.21	-6.79	1.41	--	842.83	842.83
FY 2006 Request	737.00	--	--	--	737.00	737.00
\$ Change from FY 2005	-111.21				-105.83	
% Change from FY 2005	-13%				-13%	

Totals may not add due to rounding.

Explanation of Carryover

Within the Education and Human Resources (EHR) appropriation \$1.41 million was carried forward into FY 2005. This includes \$1.0 million for the Louis Stokes Alliances for Minority Participation (LSAMP), \$214,807 for Graduate Fellowships and \$140,000 for the Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring Program (PAESMEM). The remaining amounts are from several awards in various programs that were not ready for obligation in FY 2004.

RELEVANCE

EHR is a principal source of federal support for strengthening STEM education. EHR programs support technological innovation to enhance economic competitiveness and new job growth. EHR addresses the

workforce needs of the nation to ensure a scientifically literate population and a robust supply of qualified experts.

Critical issues face the nation's STEM educational system. Too few K-12 teachers are knowledgeable in science or mathematics. By high school, unacceptably low numbers of students are motivated to enroll in physics or chemistry, and only 20-25 percent of graduating high school seniors have completed enough mathematics to be ready to study science or engineering. In addition, the individuals who continue on to obtain baccalaureate or graduate degrees in S&E fields do not adequately reflect the nation's diverse population. Importantly, the U.S. Department of Labor estimates that 60 percent of the new jobs being created in our economy today will require technological literacy, while only 22 percent of the young people entering the job market now actually possess those skills.

EHR activities help strengthen U.S. education at all levels and help ensure continued U.S. economic and research preeminence. These activities respond to the need expressed in the recent National Science Board report, The Science and Engineering Workforce: Realizing America's Potential, "to ensure our country's capacity in S&E in an increasingly competitive and changing global labor market."

In addressing these issues, the EHR portfolio focuses on four goals. They are to:

- Prepare the next generation of STEM professionals and attract and retain more Americans in STEM careers.
- Develop a robust research community that can conduct rigorous research and evaluation that will support excellence in STEM education and will integrate research and education.
- Increase the technological, scientific and quantitative literacy of all Americans so that they can exercise responsible citizenship and live productive lives in an increasingly technological society.
- Broaden participation (individuals, geographic regions, types of institutions, STEM disciplines) and close achievement gaps in all STEM fields.

For each of these goals, key programmatic strategies have been developed. The FY 2006 Budget Request provides support for a broad range of educational activities:

- Math and Science Partnerships bridge K-12 and higher education through a focus on the engagement of disciplinary faculty in K-12 activities.
- EPSCoR's goal is to maximize the potential inherent in a state's science and technology resources and use those resources as a foundation for economic growth.
- K-12 programs that develop effective instructional materials and provide preparation and professional development for teachers. Development of instructional materials that promote scientific and technological literacy and develop life-long skills for learners of all ages enhance these projects.
- Undergraduate programs focus on: developing courses, curricula and laboratory experiences for two- and four-year colleges and universities, expanding the nation's STEM talent, addressing federal workforce needs for cybersecurity specialists, fostering STEM education capacity at minority-serving institutions, and promoting the advancement of women and minority students to increase their participation in the STEM enterprise.
- Graduate programs provide support to attract and prepare U.S. students for STEM careers.
- Evaluation and research on education are emphasized throughout the EHR portfolio to inform improvements in educational practice. EHR emphasizes the use of information technology in education and the translation of research results into educational practice.

Summary of Major Changes by Division

(Dollars in Millions)

EHR FY 2005 Current Plan	\$841.42
Math and Science Partnership Program (MSP)	-\$19.36
MSP funds support awards made in previous years, plus data collection, evaluation, knowledge management and dissemination. No new partnership awards will be made in FY 2006.	
Experimental Program to Stimulate Competitive Research (EPSCoR)	+\$0.32
EPSCoR is funded at a similar level to the FY 2005 Current Plan.	
Division of Elementary, Secondary, and Informal Education (ESIE)	-\$41.15
Within the ESIE reduction of \$41.15 million, major changes include: The Teacher Professional Continuum program is reduced by \$27.20 million and few new awards will be supported in FY 2006. The Instructional Materials Development program is decreased by \$9.52 million, supporting fewer awards. Curricula evaluations and materials development will be reduced. The Centers for Learning and Teaching program request is \$21.80 million, a decrease of \$4.57 million from the FY 2005 Current Plan.	
Division of Undergraduate Education (DUE)	-\$18.67
Within the DUE reduction of \$18.67 million, major changes include: The Course, Curriculum, and Laboratory Improvement program is reduced by \$9.64 million, down from the FY 2005 Current Plan of \$40.64 million. In FY 2006 the Federal Cyber Service: Scholarship for Service Program is decreased by \$4.12 million to \$10.0 million. The National STEM Education Digital Library Request is \$15.0 million, a decrease of \$3.43 million from the FY 2005 Current Plan. As a result of these reductions, fewer awards will be supported in FY 2006. The Higher Education Centers for Learning and Teaching are increased by \$140,000 over the FY 2005 Current Plan to a total of \$1.0 million. NSF Director's Award for Distinguished Teaching Scholars is discontinued in FY 2006; it was supported at \$1.31 million in the FY 2005 Current Plan.	
Division of Graduate Education (DGE)	+\$0.30
Increased funding will be distributed equally among the Graduate Research Fellowship Program, the Integrative Graduate Education and Research Traineeship Program, and the Graduate Teaching Fellows in K-12 Education program.	
Division of Human Resource Development (HRD)	-\$0.14
FY 2006 funding will be similar to the FY 2005 Current Plan with two exceptions: The Model Institutions for Excellence (MIE) program has met its funding obligations and no funds are being requested for FY 2006. The MIE funds (\$2.49 million) will be reallocated to the Centers of Research Excellence in Science and Technology (CREST) program, bringing CREST to a total of \$18.50 million.	
Division of Research, Evaluation and Communication (REC)	-\$25.72
In FY 2006, REC will continue support for awards made in FY 2005 and earlier years. No new awards are expected in FY 2006.	
Subtotal, Changes	-\$104.42
FY 2006 Request, EHR	\$737.00

Directorate-Wide Investments

- **Special FY 2006 Emphasis on Broadening Participation in the Science and Engineering Workforce.** The FY 2006 Request places special emphasis on programs with a proven track record of broadening participation in the science and engineering workforce. Three highly successful programs are focal points for linking activities in NSF's EHR Directorate with NSF's R&RA Directorates to strengthen collaborations that integrate research and education:
 - The Louis Stokes Alliances for Minority Participation (LSAMP),
 - Alliances for Graduate Education and the Professoriate (AGEP), and
 - Centers of Research Excellence in Science and Technology (CREST).

Support for these highly successful and respected programs will aid in addressing the S&E workforce needs of the nation to ensure a scientifically literate population and a robust supply of qualified experts across all fields. FY 2006 funds (\$8.0 million) in the Research and Related Activities Account will be used to support activities that foster integration and collaboration with these programs.

PRIORITY AREAS

In FY 2006, EHR will support research and education efforts related to broad, Foundation-wide priority areas in Nanoscale Science and Engineering and Mathematical Sciences.

EHR Investments in NSF Priority Areas (Dollars in Millions)

	FY 2005		FY 2006 Request	Change over	
	FY 2004	Current		FY 2005	
	Actual	Plan		Amount	Percent
Human and Social Dynamics	0.99	0.00	0.00	0.00	N/A
Nanoscale Science and Engineering	2.29	3.07	2.90	-0.17	-5.5%
Mathematical Sciences	5.00	2.72	2.22	-0.50	-18.4%

Nanoscale Science and Engineering. EHR's contribution to NSE decreases by \$170,000 to \$2.90 million in FY 2006 to support undergraduate education and K-12 nanoscience education.

Mathematical Sciences. FY 2006 support totals \$2.22 million, a decrease of \$500,000 from the FY 2005 Current Plan. It will provide continuing support for mathematical sciences education activities.

QUALITY

EHR maximizes the quality of the research and education it supports through the use of a competitive, merit-based review process. Project evaluation is required with projects reporting their progress and impact through annual and final reports to NSF. In addition, external program evaluations are conducted for EHR-managed activities.

To ensure the highest quality in processing and recommending proposals for awards, EHR convenes Committees of Visitors, composed of qualified external evaluators, to review each program every three years. These experts assess the integrity and efficiency of the processes for proposal review and provide a retrospective assessment of the quality of results of NSF's investments.

The Directorate also receives advice from the Advisory Committee for Education and Human Resources (EHRAC) on such issues as: the mission, programs, and goals that can best serve the scientific community; how EHR can promote quality graduate and undergraduate education in science, technology, engineering and mathematics (STEM); and priority investment areas in STEM education research. The EHRAC meets twice a year and members represent a cross section of STEM disciplines; a cross section of institutions including industry; broad geographic representation; and balanced representation of women and underrepresented minorities.

PERFORMANCE

The table below shows the strategic planning and evaluation framework for activities funded through the Education and Human Resources (EHR) appropriation. This framework was established in the NSF Strategic Plan for FY 2003-2008. The Advisory Committee for GPRA Performance Assessment assesses NSF's strategic outcome goals annually. The investment categories are assessed using the Program Assessment Rating Tool (PART). Additional information on these activities is available in the Performance Information section of this document.

Education and Human Resources By Strategic Outcome Goal and Investment Category

(Dollars in Millions)

	FY 2005			Change over	
	FY 2004	Current	FY 2006	FY 2005	
	Actual	Plan	Request	Amount	Percent
<i>People</i>					
Individuals	242.69	237.57	206.23	-31.34	-13.2%
Institutions	140.08	137.27	118.34	-18.93	-13.8%
Collaborations	363.55	275.14	244.27	-30.87	-11.2%
	<u>746.32</u>	<u>649.98</u>	<u>568.84</u>	<u>-81.14</u>	<u>-12.5%</u>
<i>Ideas</i>					
Fundamental Science and Engineering	54.32	50.20	29.30	-20.90	-41.6%
Capability Enhancement	114.08	109.55	112.50	2.95	2.7%
	<u>168.40</u>	<u>159.75</u>	<u>141.80</u>	<u>-17.95</u>	<u>-11.2%</u>
<i>Tools</i>					
Infrastructure and Instrumentation	18.00	18.43	15.00	-3.43	-18.6%
	<u>18.00</u>	<u>18.43</u>	<u>15.00</u>	<u>-3.43</u>	<u>-18.6%</u>
<i>Organizational Excellence</i>					
	<u>11.39</u>	<u>13.26</u>	<u>11.36</u>	<u>-1.90</u>	<u>-14.3%</u>
Total, EHR	<u>\$944.10</u>	<u>\$841.42</u>	<u>\$737.00</u>	<u>-\$104.42</u>	<u>-12.4%</u>

Totals may not add due to rounding.

In developing the FY 2006 Budget Request, NSF completed the PART for two investment categories that receive EHR funding. Both were rated "effective," the highest rating.

- **Institutions.** Major activities in EHR include Advanced Technological Education; Course, Curriculum and Laboratory Improvement; Instructional and Assessment Materials Development; and the STEM Talent Expansion program. Overall, the PART found Institutions to be an "effective" program and that additional attention should continue to be focused on achieving performance and efficiency targets.

- Collaborations.** Major activities in EHR include Centers for Learning and Teaching, Evaluation, the Historically Black Colleges and Universities Undergraduate Program (HBCU-UP), Informal Science Education, the Louis Stokes Alliances for Minority Participation (LSAMP), the Math and Science Partnership Program (MSP), the Alliances for Graduate Education and the Professoriate (AGEP), the Research in Disabilities Education (RDE) program, the Program for Gender Equity (PGE), and the Tribal Colleges Undergraduate Program. Overall, the PART found Collaborations to be an “effective” program and that additional attention should continue to be focused on achieving performance and efficiency targets.

Recent Research Highlights

Graduate Research Fellow at the University of California, Riverside. Sonia Zarate, a Graduate Research Fellow at the University of California, Riverside, is researching how plants such as tomatoes and squash respond to and defend themselves from herbivores that are not leaf-eaters but that feed from phloem – the conduit for carrying nutrients a plant needs to grow. In an effort to understand this complex plant-insect interaction, Ms. Zarate is using the model plant *Arabidopsis thaliana* (*At*) and infesting it with silverleaf whitefly (SLWF). She has determined that *At* perceives this insect as a pathogen (virus, bacteria/fungi) and that it can respond to adults feeding and or their egg deposition. She has also utilized a gene/enhancer trap collection and has identified a novel, plant-specific gene that is regulated by SLWF. In 2003, she gave a talk at the American Society of Plant Biologists and also presented her research to President Dynes of the University of California. Last year, Ms. Zarate was honored as the best graduate student presenter within her subfield of Molecular/Developmental Biology at The Society for the Advancement of Chicano and Native Americans in Science (SACNAS, www.sacnas.org) conference.



Sonia Zarate, winner of best graduate student presentation award for molecular / developmental biology at The Society for the Advancement of Chicano and Native Americans in Science October 2004 conference in Austin, Texas.



Computer Science students at Armstrong Atlantic used J2ME to wirelessly control a Bluetooth equipped racecar from a cell phone. The project combined cutting edge Bluetooth wireless technology to control the miniature racecar with cell phone programming to create the control application.

Handheld Computing is Everywhere in the Undergraduate Curriculum. How do we prepare students today to develop applications for tomorrow’s computing platforms? Devices like cell phones and personal digital assistants are the computing platforms of tomorrow. Over the last four years, with funding from the NSF, IBM, and Motorola, a project at Armstrong Atlantic State University in Savannah, Georgia began to address software engineering challenges in the undergraduate Computer Science curriculum. This project has developed course and laboratory materials to introduce pervasive computing into Armstrong’s introductory Computer Science sequence. The labs use arcade and logic games to motivate students while teaching them important

concepts such as application development and cryptography. The capstone course prepares students to develop sophisticated, all-encompassing computing solutions for a variety of devices through hands-on-labs involving: secure computing using Java Card smart cards, wireless Personal Area Networks using Bluetooth, and cell phone development using Sun’s Java 2 Micro Edition (J2ME).



Teacher Leaders from the Santa Ana Unified School District look on as a Teacher Leader from the Compton Unified School District tosses a set of dice as part of a probability activity.

Teacher Institutes for the 21st Century. STEM disciplinary faculty at institutions of higher education, working with K-12 teachers of mathematics and the sciences, meet a national need for a new generation of experienced teacher-leaders at a time when many teachers of similar stature are retiring. Colleges and universities open their doors for *MSP Institute Partnerships: Teacher Institutes for the 21st Century* to provide imaginative and stimulating multi-year summer and academic year programs that deepen and update teachers' content knowledge, instructional strategies and leadership skills. Teachers prepare to become intellectual leaders in their fields and catalysts for reforming the mathematics and science programs in their schools. Their schools and districts commit to providing the time and resources commensurate with

the positions of increased responsibility that the emerging teacher-leaders are expected to assume upon completion of an Institute program. Collectively, the Institutes support courses and experiences that span all K-12 grade levels and disciplines within the sciences and mathematics. Tufts University, for example, delivers a distance-learning program for K-8 science teachers, while Rice University offers mathematics for high school teachers and Florida Atlantic University focuses on middle school mathematics.

The Research in Disabilities

Education program funds the Northwest Alliance, led by the University of Washington's award-winning DO-IT (Disabilities, Opportunities, Internetworking and Technology) program. This program has conducted successful NSF projects since 1992. Regional site teams at UW and Washington State University, the two largest STEM research institutions in the State of Washington, are collaborating with K-



Phase I Scholars attend DO-IT Summer Study Session

12 and postsecondary schools, employers, and leading STEM research institutions in neighboring states, including Idaho, Oregon, Hawaii and Alaska. Through September of 2004, Northwest Alliance presentations had been given to over 100 faculty, counselors and outreach program staff. Additionally, at least 655 postsecondary faculty and staff received NW Alliance project information. NW Alliance staff also created the AccessSTEM Knowledge Base, a searchable collection of web-based questions and answers, case studies and promising practices that focus on K-12 and postsecondary teaching strategies, universal design of instruction, disability-related accommodations, strategies for making STEM classes accessible to all students, adaptive technology for computers, and other assistive technologies for students with disabilities. Northwest Alliance efforts have increased awareness among staff working in women and racial/ethnic minority programs that individuals with disabilities and members of other underrepresented groups face similar issues.

Other Performance Indicators

The table below shows the number of people benefiting from EHR funding.

Number of People Involved in EHR Activities

	FY 2004 Estimate	FY 2005 Estimate	FY 2006 Estimate
Senior Researchers	5,900	5,500	4,800
Other Professionals	3,800	2,200	1,700
Postdoctorates	450	290	150
Graduate Students	3,400	3,400	3,400
Undergraduate Students	21,000	19,000	13,000
K-12 Students	14,000	10,500	7,000
K-12 Teachers	85,500	73,000	56,000
Total Number of People	134,050	113,890	86,050

MATH AND SCIENCE PARTNERSHIP

\$60,000,000

The FY 2006 Request for the Math and Science Partnership (MSP) program is \$60.0 million, a decrease of \$19.36 million, or 24.4 percent, from the FY 2005 Current Plan of \$79.36 million.

Math and Science Partnership Funding
(Dollars in Millions)

	FY 2005		FY 2006 Request	Change over FY 2005	
	FY 2004	Current		Amount	Percent
	Actual	Plan			
Math and Science Partnership	\$138.71	\$79.36	\$60.00	-\$19.36	-24.4%

About MSP:

In launching the Math and Science Partnership (MSP) program in FY 2002, the NSF assumed important responsibilities for building the capacity to implement a key facet of the President’s *No Child Left Behind* (NCLB) vision for K-12 education. The MSP program at NSF is a research and development effort for building capacity and integrating the work of higher education – especially its disciplinary faculty in mathematics, the sciences and engineering – with that of K-12, to strengthen and reform science and mathematics education. The MSP seeks to improve student outcomes in mathematics and science for all students, at all K-12 levels.

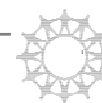
All FY 2006 MSP funds support awards made in previous years, plus data collection, evaluation, knowledge management and dissemination. No new partnership awards will be made in FY 2006.

In FYs 2002-2004, the MSP program received almost 900 proposals in response to a series of solicitations. From external merit review, 80 awards were made during these three years, for an overall funding rate of approximately 9 percent.

Collectively, the funded Partnerships bring together about 150 institutions of higher education with some 450 K-12 school districts and a host of other stakeholders. Corporate and business partners include Pfizer, Inc.; Ford Motor Company; Texas Instruments, Inc.; Xerox Corporation; GlaxoSmithKline; Progress Energy; International Business Machines Corporation; Merck & Company, Inc.; Synopsys, Inc.; Agilent Technologies and Intel Corporation.

MSP is comprised of three distinct components:

- *Comprehensive and Targeted Partnerships* collectively address K-12 and preservice science and mathematics education. *Comprehensive Partnerships* implement change across the K-12 continuum in mathematics, science, or both. *Targeted Partnerships* focus on improved student achievement in a narrower grade range or disciplinary emphasis within mathematics and/or science.
- *Institute Partnerships* will build on the acknowledged strengths of the original NSF *Teacher Institutes*, while giving attention to the changing needs of teachers in our time. These partnerships develop teachers that are school-based intellectual leaders with deep content expertise in mathematics, science and related technologies and who engage their colleague teachers and motivate students towards continued study of mathematics and science.
- The *MSP-Research, Evaluation and Technical Assistance* component of the portfolio assists Partnership awardees in the implementation and evaluation of their work through (a) the conduct of focused research and studies designed to guide improvements in educational practice and learning, (b)



the development of tools and resources to assess progress and make educational work more strategic and (c) increased capacity-building to engage in educational evaluation and research.

The MSP portfolio is distinguished from other efforts with a focus on K-12 mathematics and science education by its emphasis on (a) partnerships between institutions of higher education – especially their disciplinary faculty in mathematics, science and/or engineering – and local school districts; and (b) institutional/organizational change in all core partners that ensures the sustainability of promising policies and practices derived from evidence collected in project work. The degree and the means of engagement of disciplinary faculty are notable. Not only do disciplinary faculty provide in-service professional development in mathematics and the sciences for teachers, they also engage in the redesign of undergraduate courses to better prepare the next generation of teachers, work directly with K-12 students in summer camps and other venues, bring to their university classes a willingness to be more reflective about their own teaching practice and engage in numerous and varied experiences that challenge and precipitate a rethinking of their traditional beliefs about K-12 education.

The MSP portfolio is supplemented by contracts for data collection through the MSP Management Information System (MSP-MIS) and for an overall program evaluation (MSP-PE).

MSP Priorities for FY 2006:

- Core activity in the MSP program supports effective oversight and management of a significant portfolio of existing awards to maximize their effectiveness in meeting project and program goals and their production of evidence-based outcomes that contribute to better understanding of (a) how students effectively learn mathematics and science and (b) what teachers need to know and be able to do in order to facilitate effective student learning.
- Priority will be given to deepening the MSP infrastructure for data collection, program evaluation, knowledge management and dissemination. Support will be continued for (a) the development of data collection modules in the MSP Management Information System (MSP-MIS); (b) MSP Program Evaluation (MSP-PE); (c) MSPnet, the electronic community for MSP projects; (d) knowledge management that synthesizes findings from MSP work and integrates them into the larger knowledge base for educational reform, thus strengthening the potential bonds between educational research and practice and contributing to the nation's capacity to understand and engage in large-scale education innovation; and (e) dissemination of key findings and promising policies and practices derived from MSP project work and evaluation.
- NSF collaboration with the U.S. Department of Education will continue as the two agencies manage their separate but parallel MSP programs for greatest effectiveness.

Changes from FY 2005:

MSP

-\$19.36 million

The MSP program at NSF made its last awards for new Partnerships in FY 2004. No awards for new Partnerships will be made in FY 2006. The FY 2006 Request of \$60.0 million supports (a) out-year commitments to existing Partnerships and (b) data collection, program evaluation, knowledge management and dissemination.

**EXPERIMENTAL PROGRAM TO STIMULATE
COMPETITIVE RESEARCH**

\$94,000,000

The FY 2006 Request for the Experimental Program to Stimulate Competitive Research (EPSCoR) is \$94.0 million, an increase of \$320,000, or 0.3 percent, from the FY 2005 Current Plan of \$93.68 million.

Experimental Program to Stimulate Competitive Research Funding
(Dollars in Millions)

	FY 2004 Actual	FY 2005	FY 2006 Request	Change over FY 2005	
		Current Plan		Amount	Percent
EPSCoR Funding	\$94.24	\$93.68	\$94.00	\$0.32	0.3%

About EPSCoR:

The Experimental Program to Stimulate Competitive Research (EPSCoR) has the mission of assisting the Foundation in its statutory function “to strengthen research and education throughout the United States and to avoid undue concentration of such research and education.” Hence, the primary goal of the NSF EPSCoR program is to stimulate sustainable improvements in Research and Development (R&D) capacity and competitiveness within the major research universities of designated EPSCoR jurisdictions.

NSF EPSCoR currently operates in twenty-five states, the Commonwealth of Puerto Rico, and the Territory of the Virgin Islands. The States are: Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, New Mexico, North Dakota, Oklahoma, Rhode Island, South Carolina, South Dakota, Tennessee, Vermont, West Virginia, and Wyoming.

EPSCoR’s programmatic objectives are to:

- Catalyze selective efforts within each jurisdiction’s research enterprise that can power knowledge generation, dissemination, and application;
- Activate collaborations among academic, governmental, and private sector stakeholders that advance innovation and its multiple benefits to society; and
- Broaden participation through enhanced STEM opportunities for institutions, organizations, and people within the EPSCoR jurisdictions.

In general, 35 percent of the EPSCoR portfolio is available for new awards and activities. The remaining 65 percent funds awards made in previous years.

EPSCoR Priorities for FY 2006:

To address its goal and objectives, the EPSCoR Office currently employs a portfolio of three complementary investment strategies: (1) the Research Infrastructure Improvement (RII) grants program; (2) the EPSCoR co-funding mechanism, which is a major cross-directorate NSF activity that involves EPSCoR participation with meritorious proposals submitted for co-funding consideration from all the Directorates and the Offices of Polar Programs, Integrative Activities, and International Science and Engineering; and (3) the EPSCoR Outreach program, which supports travel to EPSCoR jurisdictions and events by NSF personnel from all the Directorates and Offices, including staff from administrative units such as the Division of Grants and Agreements and the Division of Information Systems.

- **Research Infrastructure Improvement (RII) awards** are 36-48 month awards of up to a total of \$9.0 million for research infrastructure improvements in science and technology (S&T) areas identified by the jurisdiction's EPSCoR governing committee as critical to future R&D competitiveness and innovation plans. In addition to continuing the RII focus on long-term, strategic capacity-building within the jurisdictions, the EPSCoR Office will encourage universities to align a significant part of their R&D base with regional innovation efforts. These new Regional Innovation Collaboratives (RICs) encourage exploration of the hypothesis that modern universities in EPSCoR jurisdictions can play a key role in the promotion of economic diversity at not only the local level, but at the regional level as well. RICs will establish critical foundations for the successful pursuit of broad interdisciplinary research projects and new collaborative educational programs that together can foster innovation-driven economic development. These RIC clusters will function by generating new ideas, expanding human talent and capital, and forming powerful partnerships with other universities, industry, community organizations, and governmental allies, across jurisdictional lines.

The modifications to the RII/RIC program are expected to result in increased proposal submissions, awards, and total award amounts, along with the formation of new regional cluster groups that will facilitate interdisciplinary research and innovation-based activities. Further flexibility will be initiated both in the total amount of these RII/RIC awards and their duration (e.g., up to 5 years, with an intensive review during the 3rd year).

- **EPSCoR co-funding** – Efforts at NSF involve joint support of research and education proposals submitted by investigators from EPSCoR jurisdictions to the Foundation's regular grant programs. These proposals are reviewed under the normal NSF peer review process and are then forwarded for co-funding consideration if they satisfy criteria specified by the EPSCoR Office. EPSCoR co-funding accelerates the movement of EPSCoR researchers and institutions into the mainstream of federal and private sector R&D support.

During the period of FYs 1998-2004, researchers from EPSCoR states received over 1,452 awards totaling \$465.5 million through this mechanism. NSF research programs provided \$262.6 million of this total, with the remainder contributed by the EPSCoR Office. Co-funding remains an EPSCoR priority during FY 2006, with the EPSCoR Office encouraging co-funding of multi-investigator, interdisciplinary research projects and centers.

EPSCoR co-funding continues in FY 2006 at about the same level targeted for FY 2005, i.e., ~\$30 million. However, co-funding for NSF programs with high impact potential on research collaborations, new interdisciplinary areas, university/industry partnerships, regional centers, technology-based entrepreneurship, innovation, and STEM graduate student recruitment/retention will be selectively emphasized in FY 2006.

- NSF program officers and staff coordinate a **comprehensive outreach program** to universities, industry, and state government in EPSCoR states to inform researchers and Science & Technology administrators of NSF funding opportunities, program priorities, and policy. Since the program's inception in FY 1998, NSF staff members have made ~1,000 visits to EPSCoR jurisdictions to foster successful participation by institutions and researchers in NSF-supported activities. Given the magnitude of the impact from this relatively small investment, the Outreach Initiative will remain a priority during FY 2006; however, it will be secondary compared to RII and co-funding.

The EPSCoR outreach program complements the other two components in the EPSCoR portfolio. EPSCoR seeks maximum leveraging of its outreach investments, with particular attention to the development of the Regional Innovation Collaboratives within and between EPSCoR jurisdictions.

ELEMENTARY, SECONDARY, AND INFORMAL EDUCATION **\$140,800,000**

The FY 2006 Request for the Division of Elementary, Secondary, and Informal Education (ESIE) is \$140.80 million, a decrease of \$41.15 million, or 22.6 percent, from the FY 2005 Current Plan of \$181.95 million.

Elementary, Secondary, and Informal Education Funding
(Dollars in Millions)

	FY 2005			Change over	
	FY 2004 Actual	Current Plan	FY 2006 Request	FY 2005 Amount	FY 2005 Percent
Instructional and Assessment					
Materials Development	29.32	28.52	19.00	-9.52	-33.4%
Teacher Development	114.94	90.37	58.80	-31.57	-34.9%
Informal Science Education	62.13	63.06	63.00	-0.06	-0.1%
Total, ESIE	\$206.39	\$181.95	\$140.80	-\$41.15	-22.6%

Totals may not add due to rounding.

About ESIE:

ESIE’s research-based program portfolio – unique within federal agencies in its comprehensive coverage of grade levels, STEM disciplines, and learning venues – provides cutting-edge resources and strategies that advance the nation’s preK-12 and informal STEM education agenda.

Instructional materials and student assessments that promote active investigation, together with new models for teacher education, broaden access to high quality STEM instruction and contribute to classrooms that serve all students well. Media, exhibit, and community-based efforts increase scientific literacy; bring cutting-edge research to the nation’s citizens; and develop life-long skills for learners of all ages. Programs promote high standards in content, pedagogy, and assessment, as well as capitalize on the combined strengths of formal and informal education, research and practitioner communities, and major stakeholders (e.g., higher education, school districts, state agencies). By increasing student achievement, reducing achievement gaps, and promoting interest in STEM disciplines, ESIE programs work to create a solid education foundation for the future research, instructional, and technological workforce.

In general, 40 percent of the ESIE portfolio is available for new awards and activities. The remaining 60 percent funds awards made in previous years. In FY 2005, ESIE will support about 100 new awards – a funding rate of about 13 percent – and provide oversight for over 550 continuing projects.

ESIE Priorities for FY 2006:

In FY 2007, *No Child Left Behind* adds science to its assessment battery. In anticipation of needs for challenging instructional materials and a highly qualified instructional workforce, ESIE will develop and evaluate content-rich elementary curricula, companion professional development resources for preparing teachers, and district-wide enhancement strategies that promote high-quality instruction. This effort strategically integrates resources of the Instructional Materials Development and Teacher Professional Continuum programs; and builds on knowledge from work of the Centers for Learning and Teaching and NSF’s Math and Science Partnership programs.

Instructional Materials Development (IMD) projects focus on developing the next generation of standards-based, elementary science instructional materials, incorporating advances in education

technologies, embedded assessments for guiding classroom instruction, experiential learning, and literacy. Curriculum models are built on a growing understanding of the needs of today's diverse student population and research on how children learn. In FY 2006, these projects support fewer large-scale evaluations of K-12 curricula developed with NSF support, and support no new activities to create materials for high school science and laboratory experiences, or for engineering and technology education.

Funds for **Teacher Professional Continuum (TPC)** are reduced by over 45 percent. TPC initiates research and development on models and resources that promote large-scale, district efforts to enhance teacher quality; incorporates best practices on adult professional learning; addresses strategies for cost-effectiveness; and focuses on content, teacher leadership and reduction of achievement gaps. The program will focus on elementary science in FY 2006. Research on strategies to effectively address needs of underserved populations and capitalize on use of scientific communities in developing teacher content knowledge and new mathematics efforts will be limited.

Centers for Learning and Teaching (CLT) places priority on continuing existing centers at a level that allows them to maintain on-going efforts to develop national leadership capacity for preparing highly qualified teachers; to research issues in STEM education facing the nation; and to translate this research into practice. In FY 2006 CLT will not make new awards.

Informal Science Education (ISE) will emphasize projects that level the playing field for institutions, advance informal STEM education nationally, as well as build on lessons learned from prior work and findings from education research. Priority is placed on projects that strengthen infrastructure; engage underserved audiences, including young children and older adults; incorporate inquiry in after-school programs; involve the public in the scientific process; and apply new technologies to informal learning.

Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) provides national career recognition for exemplary elementary and secondary teachers.

Changes from FY 2005:

The FY 2006 Request includes a decrease of \$41.15 million that will be directed towards the following:

- **IMD.** In FY 2004, ESIE received 84 proposals, and was able to fund approximately 20 percent. In FY 2006, 10 new awards are likely in this strategically-focused program. The EHR FY 2006 Request for IMD is \$19.0 million, a decrease of \$9.52 million from the FY 2005 Current Plan.
- **TPC.** In FY 2004, ESIE received 198 proposals, and was able to fund approximately 14 percent. In FY 2006, 30 new awards are likely in this strategically-focused program. The EHR FY 2006 Request for TPC is \$33.0 million, a decrease of \$27.20 million from the FY 2005 Current Plan.
- **CLT.** In FY 2004, ESIE received 14 Center proposals, and was able to fund approximately 21 percent of them. No new awards will be supported in FY 2006. The EHR FY 2006 Request for CLT is \$21.80 million, a decrease of \$4.57 million from the FY 2005 Current Plan.
- **ISE.** FY 2006 funding for ISE is \$63.0 million, a decrease of \$60,000 from the FY 2005 Current Plan. About 60 new awards will be supported in FY 2006, about the same number as in FY 2005.
- **PAEMST.** The EHR FY 2006 Request for PAEMST is \$4.0 million, an increase of \$200,000 over the FY 2005 Current Plan.

UNDERGRADUATE EDUCATION

\$135,000,000

The FY 2006 Request for the Division of Undergraduate Education (DUE) is \$135.0 million, a decrease of \$18.67 million, or 12.1 percent, from the FY 2005 Current Plan of \$153.67 million.

Undergraduate Education Funding

(Dollars in Millions)

	FY 2005		Change over		
	FY 2004 Actual	Current Plan	FY 2006 Request	FY 2005 Amount	
Curriculum, Laboratory and Instructional					
Development	94.16	94.41	80.00	-14.41	-15.3%
Workforce Development	68.75	59.26	55.00	-4.26	-7.2%
Total, DUE	\$162.91	\$153.67	\$135.00	-\$18.67	-12.1%
Authorized Programs:					
Robert Noyce Scholarship Program	8.00	7.89	8.00	0.11	1.4%
Scholarship for Service	15.84	14.12	10.00	-4.12	-29.2%
STEM Talent Expansion Program	25.00	25.28	25.00	-0.28	-1.1%

Totals may not add due to rounding.

About DUE:

DUE serves as NSF’s focal point for the improvement of undergraduate science, technology, engineering, and mathematics (STEM) education. The DUE Portfolio has two major emphases: (a) curriculum, laboratory and instructional development, and (b) workforce development.

DUE provides leadership and leveraged project support for efforts that promote engagement in inquiry-based learning by all undergraduate students, including disciplinary majors, prospective preK-12 teachers, prospective technicians, and non-majors/citizens in an increasingly technological society. Most supported projects are based at 2- and 4-year colleges and universities. The objectives are to improve STEM learning across the undergraduate spectrum through the reform of courses, laboratories, curricula, and instructional materials, and to increase the quality and quantity of the science and engineering workforce.

In general, 72 percent of the DUE portfolio is available for new awards and activities. The remaining 28 percent funds awards made in previous years.

Each year DUE receives over 2,300 proposals – more than can be funded.

DUE priorities for FY 2006:

- The **Course, Curriculum, and Laboratory Improvement (CCLI)** Program strengthens NSF’s efforts to assure access to high-quality STEM education for all undergraduate students. Based on a cyclic model of knowledge production and improvement of practice, the CCLI Program supports efforts that conduct research on undergraduate STEM teaching and learning, create new learning materials and teaching strategies, develop faculty expertise, implement educational innovations, assess learning, and evaluate innovations.
- The **Robert Noyce Scholarship Program** seeks to encourage talented STEM majors and professionals to become K-12 mathematics and science teachers by offering scholarships for juniors

and seniors majoring in mathematics, science or engineering, and stipends for science, mathematics, or engineering professionals seeking to become teachers. Projects help recipients obtain certification and become successful math and science teachers in high-need K-12 schools.

- The **STEM Talent Expansion Program (STEP)** supports efforts at colleges and universities to increase the number of U.S. citizens and permanent residents receiving associate or baccalaureate degrees in established or emerging STEM fields. The program also supports educational research projects on associate or baccalaureate degree attainment in STEM.
- The **National STEM Education Digital Library (NSDL)** supports a national digital library that constitutes an online network of learning environments and resources for STEM education at all levels, in both formal and informal settings. The program supports projects that provide stewardship for the content and services needed by major communities of learners or that develop services which support users, collection providers, and integration efforts, and which enhance the impact, efficiency, and value of the library.
- The **Federal Cyber Service: Scholarship for Service (SfS)** program seeks to build a cadre of individuals in the federal sector with the skills needed to protect the nation's critical information infrastructure. Scholarships provide full tuition, fees and stipends in exchange for service in federal agencies after graduation. Capacity building grants improve the quality of academic programs and increase the number of information assurance and computer security professionals.
- With an emphasis on two-year colleges, **Advanced Technological Education (ATE)** supports improvement in technician education in science- and engineering-related fields that drive the nation's economy. The ATE program supports the design and implementation of new curricula, courses, laboratories, educational materials, opportunities for faculty and student development, and collaboration among educational institutions and partners from business, industry, and government. The program also supports articulation between two-year and four-year programs for K-12 prospective teachers in technological education and applied research relating to technician education.

Changes from FY 2005:

Approximately 220 new awards will be supported in FY 2006 – about 10 percent of proposals received. The FY 2006 Request includes a decrease of \$18.67 million and will be implemented as follows:

Curriculum, Laboratory, and Instructional Development Programs

- The FY 2006 Request for **CCLI** is \$31.0 million, a decrease of \$9.64 million from the FY 2005 Current Plan of \$40.64 million. Fewer new awards will be supported in FY 2006.
- FY 2006 funding for the **Noyce Scholarship** program is \$8.0 million, an increase of \$110,000 from the FY 2005 Current Plan. Approximately 15 new awards will be supported in FY 2006, about the same number as in FY 2005.
- The FY 2006 Request for **STEP** is \$25.0 million, a decrease of \$280,000 from the FY 2005 Current Plan. Approximately 20 new awards will be supported in FY 2006, about the same number as in FY 2005.
- The FY 2006 Request for **NSDL** is \$15.0 million. This is a decrease of \$3.43 million from the FY 2005 Current Plan of \$18.43 million. Fewer new awards will be supported in FY 2006.

Workforce Development Programs

- FY 2006 funding for **SfS** is decreased by \$4.12 million from the FY 2005 Current Plan level to \$10.0 million. Approximately 660 students will be supported in FY 2006.
- In FY 2006, funding for **ATE** is decreased by \$140,000 from the FY 2005 Current Plan to \$45.0 million. Fewer new awards will be supported in FY 2006.
- FY 2006 funding for the **Higher Education Centers for Learning and Teaching** will increase by \$140,000 to \$1.0 million in FY 2006 and will fund the final continuing grant increment for this cross-directorate program.
- The **Distinguished Teaching Scholars** program is eliminated in FY 2006, a savings of \$1.31 million.

GRADUATE EDUCATION

\$155,000,000

The FY 2006 Request for the Division of Graduate Education (DGE) is \$155.0 million, an increase of \$300,000, or 0.2 percent, from the FY 2005 Current Plan of \$154.70 million.

Graduate Education Funding
(Dollars in Millions)

	FY 2005			Change over	
	FY 2004	Current	FY 2006	FY 2005	
	Actual	Plan	Request	Amount	Percent
Graduate Education	\$155.35	\$154.70	\$155.00	\$0.30	0.2%
Major Components:					
Integrative Graduate Education and Research Traineeships (IGERT)	25.29	24.50	24.60	0.10	0.4%
Graduate Research Fellowships (GRF)	87.92	88.47	88.57	0.10	0.1%
Graduate Teaching Fellowships in K-12 Education (GK-12)	42.14	41.73	41.83	0.10	0.2%

Totals may not add due to rounding.

About DGE:

DGE investments support graduate students and innovative graduate programs to prepare tomorrow's leaders in science and engineering. DGE support for science, technology, engineering, and mathematics (STEM) graduate education supports the creation of a diverse STEM workforce to meet the needs of the nation in the 21st century. DGE accomplishes this by providing fellowships and traineeships, by supporting innovations in STEM graduate education to prepare students for the challenges of the new century, and by building stronger links between higher education and K-12 education. These efforts help strengthen U.S. education at all levels and help ensure continued U.S. economic and research preeminence.

DGE meets its objectives through three large graduate education programs: the Integrative Graduate Education and Research Traineeship Program (IGERT), the Graduate Research Fellowship Program (GRF), and the Graduate Teaching Fellows in K-12 Education program (GK-12). Approximately 4,600 graduate fellowships and traineeships will be supported NSF-wide in FY 2006.

In general, 47 percent of the DGE portfolio is available for new awards and activities. The remaining 53 percent funds awards made in previous years.

DGE Priorities for FY 2006:

- The **Integrative Graduate Education and Research Traineeship (IGERT)** program is an NSF-wide program administered by DGE. IGERT prepares U.S. doctoral students to lead the nation in advancing knowledge in emerging areas of research and to pursue successful careers in academia, industry or the public sector. IGERT (institutional) awardees prepare doctoral students by integrating research and education in innovative ways that are tailored to the unique requirements of newly emerging interdisciplinary fields and new career options. IGERT campuses train students to be leading scientists and engineers in the 21st century, while also providing selected Trainees with international experiences and focusing on broadening participation. Funds for this program are

increased by \$100,000. Approximately 1,385 IGERT trainees will be supported across NSF in FY 2006.

- The **Graduate Research Fellowship (GRF)** Program strategically invests in intellectual capital, providing support to individuals who are pursuing graduate education. It prepares the most promising science, mathematics, and engineering students in the U.S. for a broad range of disciplinary and cross-disciplinary careers. It offers three years of financial support, which may be used over a five-year period, providing a flexible operational framework. In FY 2006, priorities include broadening participation in the applicant and awardee pools.

Since 1952, over 41,000 U.S. students have received GRFs. In FY 2006, DGE support for this program is increased by \$100,000. NSF-wide, approximately 2,280 fellows will be supported, primarily with DGE funds. The Directorates for Engineering and Computer and Information Science and Engineering also provide support for the GRF program. Although at early stages of their careers, Fellows begin to build distinguished records of accomplishment.

- The **Graduate Teaching Fellows in K-12 Education** program (GK-12) supports fellowships and associated training that enable graduate students in NSF-supported STEM disciplines to acquire additional skills that will broadly prepare them for professional and scientific careers in the 21st century. Through interactions with teachers in K-12 schools, graduate students improve communication and teaching skills while enriching STEM instruction in these schools. With an increase of \$100,000 in DGE, and including support from other NSF Directorates, approximately 935 graduate fellows will be supported in FY 2006.

Changes from FY 2005

Approximately 995 new awards will be made in FY 2006, a funding rate of approximately 10.7 percent. IGERT and GK-12 awards are made to institutions and GRF awards are made to individuals. The FY 2006 Request includes an increase of \$300,000 that will be directed towards the following:

- **IGERT.** Each year IGERT receives more excellent proposals than can be funded. In the current FY 2005 competition, the IGERT program received 114 full proposals and a funding rate of 21 percent is expected. Approximately 22 new awards will be supported in FY 2006. The EHR FY 2006 Request for IGERT is \$24.60 million, an increase of \$100,000 over the FY 2005 Current Plan. NSF-wide, support for IGERT is \$69.07 million.
- **GRF.** In FY 2005, DGE received 9,121 applications, and was able to fund approximately 11 percent of them. Approximately 945 new awards will be supported in FY 2006. The EHR FY 2006 Request for GRF is \$88.57 million, an increase of \$100,000 over the FY 2005 Current Plan. NSF-wide, support for GRF is \$96.63 million.
- **GK-12.** Each year GK-12 receives more excellent proposals than can be funded. In the FY 2005 competition, the GK-12 program received 96 proposals, and a funding rate of approximately 21 percent is expected. Approximately 28 new awards will be supported in FY 2006. The EHR FY 2006 Request for GK-12 is \$41.83 million, an increase of \$100,000 over the FY 2005 Current Plan. NSF-wide, support for GK-12 is \$49.99 million.

HUMAN RESOURCE DEVELOPMENT

\$118,400,000

The FY 2006 Request for the Division of Human Resource Development (HRD) is \$118.40 million, a decrease of \$140,000, or 0.1 percent, from the FY 2005 Current Plan of \$118.54 million.

Human Resource Development Funding

(Dollars in Millions)

	FY 2004	FY 2005	FY 2006 Request	Change over	
	Actual	Current Plan		FY 2005 Amount	FY 2005 Percent
Undergraduate/Graduate Student Support	67.64	70.37	70.40	0.03	0.0%
Research and Education Infrastructure	37.54	33.15	33.50	0.35	1.1%
Opportunities for Women and Persons with Disabilities	14.91	15.02	14.50	-0.52	-3.5%
Total, HRD	\$120.09	\$118.54	\$118.40	-\$0.14	-0.1%

Totals may not add due to rounding.

About HRD:

HRD supports programs and activities that enhance the quantity, quality and diversity of individuals engaged in U.S. science, technology, engineering, and mathematics (STEM). HRD plays a central role in increasing opportunities in STEM education for individuals from historically underserved populations – particularly minorities, women and persons with disabilities – as well as the educators, researchers, and institutions dedicated to serving these populations. HRD’s current portfolio of programs serves to build the knowledge base in educational research on issues of access and success regarding diversity in STEM; strengthen the educational capacity of minority-serving institutions; support far-reaching alliances of institutions, industry and government to produce high-quality graduates at the baccalaureate and graduate levels; strengthen the research capacity of individuals and institutions; and promote the recognition and broad dissemination of successful practices.

In general, 37 percent of the HRD portfolio is available for new awards and activities. The remaining 63 percent funds awards made in previous years.

Assuming no increase in proposal submissions, HRD expects to fund a similar number of projects in each program in FY 2006. However, CREST will likely fund an increased number of awards and the Gender Equity programs will likely be able to fund fewer awards.

HRD Priorities for FY 2006:

Special FY 2006 Emphasis on Broadening Participation in the Science and Engineering Workforce. The FY 2006 Request places special emphasis on programs with a proven track record of broadening participation in the science and engineering workforce. Three highly successful programs are focal points for linking activities in NSF’s EHR Directorate with NSF’s R&RA Directorates to strengthen collaborations that integrate research and education:

- The Louis Stokes Alliances for Minority Participation (LSAMP),
- Alliances for Graduate Education and the Professoriate (AGEP), and
- Centers of Research Excellence in Science and Technology (CREST).

The demand for these programs exceeds NSF's recent capacity and support for these highly successful and respected programs will aid in addressing the S&E workforce needs of the nation to ensure a scientifically literate population and a robust supply of qualified experts across all fields. FY 2006 funds (\$8.0 million) in the Research and Related Activities Account will be used to support activities that foster integration and collaboration with these programs.

Core activities in HRD support education and research programs that address three constituencies underserved in STEM – minorities, women and persons with disabilities. HRD programs address three priorities: (1) expanding upon and using a strong educational research and evaluation base to foster broad implementation of innovative and effective strategies for increasing participation and achievement of minorities, women, and persons with disabilities in STEM education and research activities; (2) strengthening the synergy among key minority-focused programs and the interactions among grantees within these programs and with other NSF programs in research and education; and (3) increasing substantially the diversity of the STEM professoriate.

The dual goals of nurturing diversity and developing human potential are largely achieved by increasing support to minority-serving institutions. Programs focusing on building the capacity of Tribal and Historically Black Colleges and Universities also contribute to the production of STEM graduates with a focus on national, regional, and cultural needs.

Programs addressing the STEM academic and workforce experiences of women and persons with disabilities make mainstream efforts more inclusive, broaden the pool of STEM professionals with new ideas, and promote the development of tools to enable discovery and learning.

Crosscutting initiatives in HRD recognize exemplary individual and institutional efforts in mentoring that benefit all students, strengthen the research capacity of minority-serving institutions, and enhance the Foundation-wide effort to promote a diverse workforce of scientists, engineers, mathematics, technologists and STEM educators.

Changes from FY 2005:

Undergraduate/Graduate Student Support

- **Louis Stokes Alliances for Minority Participation (LSAMP)** strengthen and encourage STEM baccalaureate degree production of students from underrepresented populations by utilizing the knowledge, resources, and capabilities of a broad range of organizations. In FY 2005, LSAMP received 10 proposals and expects to fund about 70 percent of them. Additionally, 19 Bridge to the Doctorate supplements are anticipated in FY 2005. The Bridge to the Doctorate initiative supports graduate activities for selected LSAMP baccalaureate degree recipients during the initial two years of graduate study. This initiative broadens participation by attracting underrepresented minorities in STEM disciplines at some of the nation's top institutions. LSAMP funding for FY 2006 is \$35.0 million, a decrease of \$20,000 from the FY 2005 Current Plan.
- **Historically Black Colleges and Universities-Undergraduate Program (HBCU-UP)** provides awards to enhance the quality of undergraduate STEM programs through curricular reform and enhancement, faculty development, research experiences for undergraduates, upgrade of scientific instrumentation, and improvement of research infrastructure. In FY 2005, the program received 21 proposals and anticipates funding approximately 40 percent of them. The total HBCU-UP funding for FY 2006 is \$25.0 million, a decrease of \$220,000 from the FY 2005 Current Plan.

- **Tribal Colleges and Universities Program (TCUP)** promotes the improvement of STEM instructional and community outreach programs, with an emphasis on the leveraged use of information technologies, at Tribal Colleges and Universities, Alaska Native-serving institutions and Native Hawaiian-serving institutions. The total TCUP funding for FY 2006 is \$10.0 million, an increase of \$160,000 over the FY 2005 Current Plan.
- **Presidential Awards for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM)**, administered by NSF on behalf of the White House, identify outstanding mentoring efforts/programs designed to enhance the participation of groups underrepresented in science, mathematics and engineering. The total PAESMEM funding for FY 2006 is \$400,000, an increase of \$110,000 over the FY 2005 Current Plan.

Research and Education Infrastructure

- **Alliances for Graduate Education and the Professoriate (AGEP)** implement innovative models for increasing STEM Ph.D. attainment among students from underrepresented minority populations and encouraging those students to enter the professoriate. Currently, there are 20 Alliances and approximately 7 additional alliances are anticipated in FY 2005. The total AGEP funding for FY 2006 is \$15.0 million, an increase of \$210,000 over the FY 2005 Current Plan.
- **Centers of Research Excellence in Science and Technology (CREST)** serve as hubs for conducting competitive research at minority institutions, including those that produce well-trained doctoral students in STEM. The HBCU Research University Science and Technology (THRUST) program (commonly known as RISE) strengthens the research capacity of doctoral degree granting Historically Black Colleges and Universities in STEM disciplines by investing in collaborative research, training, equipment and doctoral student support. In FY 2005, 14 Centers and 11 THRUST/RISE sites will be supported. The total CREST funding within EHR for FY 2006 is \$18.50 million, an increase of \$2.63 million over the FY 2005 Current Plan. This increase will be used for evaluation and to support one additional center.
- **Model Institutions for Excellence (MIE)** support minority model institutions with a strong track record of attracting and graduating underrepresented African American, Hispanic and Tribal College students at the baccalaureate level, providing undergraduate research, student support, faculty development, improved campus infrastructure, and encouraging those students to pursue graduate degrees. FY 2006 marks the end of this long-term (11-year) initiative, which received almost \$99 million in support over its lifetime. The MIE program has supported four MIE sites, and partnered throughout its lifetime with two NASA funded sites. Funding obligations for this program have been met and no funds are being requested for FY 2006.

Opportunities for Women and Persons with Disabilities

- The **Program for Gender Equity (PGE)**, also known as Research on Gender in Science and Engineering (GSE), supports research, dissemination and adaptation projects that lead to change in education policy and practice with the aim of broadening the participation of females STEM. PGE funding for FY 2006 is \$9.0 million, a decrease of \$820,000 from the FY 2005 Current Plan.
- The **Research in Disabilities Education (RDE)** program, formerly the Program for Persons with Disabilities, supports efforts to increase the participation and achievement of individuals with disabilities in STEM education and careers. The total RDE funding for FY 2006 is \$5.50 million, an increase of \$300,000 over the FY 2005 Current Plan.

RESEARCH, EVALUATION AND COMMUNICATION

\$33,800,000

The FY 2006 Request for the Division of Research, Evaluation and Communication (REC) is \$33.80 million, a decrease of \$25.72 million, or 43.2 percent, below the FY 2005 Current Plan of \$59.52 million.

Research, Evaluation, and Communication Funding

(Dollars in Millions)

	FY 2005		FY 2006 Request	Change over FY 2005	
	FY 2004 Actual	Current Plan		Amount	Percent
Research	54.31	50.20	29.30	-20.90	-41.6%
Evaluation	12.10	9.32	4.50	-4.82	-51.7%
Total, REC	\$66.41	\$59.52	\$33.80	-\$25.72	-43.2%

Totals may not add due to rounding.

About REC:

REC supports research that strengthens and undergirds education efforts at all levels, including programs that the Directorate for Education and Human Resources (EHR) offers. REC funds evaluations of EHR programs and communicates research findings and accomplishments from EHR programs to the public. Among the research elements of the division are programs aimed at discovering and describing the conceptual learning, cognitive affective processes needed for lifelong STEM learning, and programs that support the development of innovative and effective curriculum, materials, and assessments that enhance the learning of STEM by all Americans. In addition, this division supports development and refinement of new education research and evaluation methods and increased capacity in the research and evaluation communities. The evaluation function supports contracts and grants for assessing the merit and value of EHR programs, the design and oversight of independent, third party evaluations, and provision of evaluative information (to EHR staff and decision-makers) that is useful for the improvement of programs and the refinement of policies.

There is a wide range of sources of interest or origination of an evaluation including: Congress, NSF management, and EHR staff. Currently there are over 30 active evaluation task orders, many either wholly or partially funded by other NSF organizations. REC staff are often asked to design evaluations in collaboration with program staff.

In FY 2006 approximately 6 awards will be supported, about 70 fewer awards than in FY 2004.

The REC Portfolio has two major modes of support – research awards and support for evaluation projects. Each year REC receives approximately 400 proposals, which is more than can be funded.

REC Priorities for FY 2006:

In FY 2006, REC will continue support for awards made in FY 2005 and earlier years. No new awards are anticipated in FY 2006. Funding for awards within the following REC programs are FY 2006 priorities.

- The **Research on Learning and Education (ROLE)** Program helps advance progress toward EHR’s goals through the development and application of new scientific knowledge related to education at all levels. To enhance STEM education, ROLE seeks to develop research-based learning tools,

pedagogical approaches and materials, and also to examine the overall curriculum structure (including selection, ordering, and prioritizing of topics). It is important to understand how pre-kindergarten through secondary teacher and post-secondary faculty content knowledge and pedagogy relate to the implementation that innovative and effective curricula, materials, and assessments require. New education research methods also need to be developed and refined and the research capacity of the field increased, especially the development of new researchers and research oriented education practitioners. Also, data must be collected, analyzed and used to inform researchers, decision makers and the general public. If the full participation of all Americans in the STEM enterprise is to be attained, then the factors that enhance and the approaches that increase this participation must be understood. Finally, it is important to increase the knowledge of learning, teaching and organizational models that lead to substantial and large-scale improvement in the efficiency, efficacy, and cost-effectiveness of the United States educational system. ROLE funding for FY 2006 is \$24.0 million, \$14.20 million below the FY 2005 Current Plan.

- The **Interagency Education Research Initiative (IERI)** is an interagency program managed by leaders from NSF, the Department of Education's Office of Institute of Education Sciences (IES) and the National Institutes of Health (NIH). Initiated as a response to a 1997 report to the President, it had as its primary goal the improvement of preK-12 student learning and achievement in reading, mathematics and science. IERI funds research on the scaling up to real school environments of STEM technology-based learning interventions that have been proven successful in small, well-controlled studies. IERI is being phased out. The total IERI funding within EHR for FY 2006 is \$5.30 million, a decrease of \$6.70 million from the FY 2005 Current Plan. No new awards will be made in FY 2006.
- Evaluation is also a responsibility for REC, primarily planning and overseeing third-party evaluations of EHR programs. These evaluations have been held on a rotating schedule to evaluate old and new EHR programs in order to provide information to benefit the programs in as timely a fashion as possible, with recent emphasis on newer programs or ones of higher visibility. REC provides technical assistance to other EHR divisions and to other Directorates in NSF in responding to GPRA mandates and broader evaluation and information and knowledge management concerns.

One component of the Evaluation portfolio is the **Evaluative Research and Evaluation Capacity Building (EREC)** program, which began in FY 2002. It is designed to support evaluative studies that build the knowledge base about effective STEM education policy and practice, and to increase the size and capacity of the evaluation community to respond to the needs of STEM education. EREC aims to add diversity of content to the evaluation portfolio, and to reach a broader set of performers from the evaluation and research community. There are two major components: (1) a focus on the development of "evaluative research" studies and partnerships for education, and (2) a focus on the development of evaluative capacity of the field, meaning both human resource development, and the methods, tools, and theories for performing high quality evaluation. Total Evaluation funding for FY 2006 is \$4.50 million, a decrease of \$4.82 million from the FY 2005 Current Plan. This reduction will result in no new awards in the EREC program.

H-1B NONIMMIGRANT PETITIONER FEES

\$100,000,000

The FY 2006 H-1B Nonimmigrant Petitioner Fees are projected to be \$100.0 million, equivalent to the FY 2005 projection.

H-1B Nonimmigrant Petitioner Fees Funding

(Dollars in Millions)

	FY 2004	FY 2005	FY 2006	Change over	
	Actual	Current Plan	Estimate	Amount	Percent
H-1B Nonimmigrant Receipts	\$57.28	\$100.00	\$100.00	\$0.00	0.0%

Beginning in FY 1999, Title IV of the American Competitiveness and Workforce Improvement Act of 1998 (P.L. 105-277) established an H-1B Nonimmigrant Petitioner Account in the general fund of the U.S. Treasury for fees collected for each petition for alien nonimmigrant status. That law required that a prescribed percentage of funds in the Account be made available to NSF for the following activities:

- Computer Science, Engineering, and Mathematics Scholarships (CSEMS). The program supported grants for scholarships to academically-talented, financially needy students pursuing associate, baccalaureate, or graduate degrees in computer science, computer technology, engineering, engineering technology, or mathematics. Grantee institutions awarded scholarships of up to \$2,500 per year for two years to eligible students.
- Grants for Mathematics, Engineering, or Science Enrichment Courses. These funds were intended to provide opportunities to students for enrollment in year-round academic enrichment courses in mathematics, engineering, or science.
- Systemic Reform Activities. These funds supplemented the rural systemic reform efforts administered under the Division of Educational System Reform (ESR).

In FY 2001, Public Law 106-311 increased the funds available by increasing the Petitioner fees. Also, the American Competitiveness in the 21st Century Act (P.L. 106-313) amended P.L. 105-277 and changed the way petitioner fees were to be expended.

- The Computer Science, Engineering, and Mathematics Scholarships (CSEMS) activity continued under P.L. 106-313 with a prescribed percentage of H-1B receipts. The maximum scholarship duration was four years and the annual stipend was \$3,125. Funds for this scholarship program totaled 59.5 percent of the total H-1B funding for NSF.
- Private-Public Partnerships in K-12. P.L. 106-313 directed the remaining 40.5 percent of receipts toward K-12 activities involving private-public partnerships in a range of areas such as materials development, student externships, and mathematics and science teacher professional development.
- Information Technology Experiences for Students and Teachers (ITEST) developed as a partnership activity in K-12 to increase the opportunities for students and teachers to learn about, experience, and use information technologies within the context of STEM, including Information Technology (IT) courses. ITEST included three major components: (a) youth-based projects with strong emphases on career and educational paths; (b) comprehensive projects for students and teachers; and (c) Resource Centers that engaged in research related to funded projects, provided technical support and had

responsibilities for national dissemination of project models, instructional materials, and best practices.

Approximately \$26.25 million of funds remain, nearly all to fund the upcoming ITEST competition.

In FY 2005, Public Law 108-447 reauthorized H-1B funding. NSF is provided with 40 percent of the total H-1B receipts that are collected. Thirty percent of H-1B receipts (75 percent of the receipts that NSF receives) are to be used for the Low-income Scholarship Program, formerly CSEMS. Ten percent of receipts (25 percent of the receipts that NSF receives) are designated for support of the Grants for Mathematics, Science, or Engineering Enrichment Courses.

Low-income Scholarship Program, which has been called CSEMS at NSF. Eligibility for the scholarships has been expanded from the original fields of computer science, engineering, and mathematics to include “other technology and science programs designated by the Director.” The maximum annual scholarship award amount has been raised from \$3,125 to \$10,000. NSF may use up to 50 percent of the funds “for undergraduate programs for curriculum development, professional and workforce development, and to advance technological education.”

Since its inception the **CSEMS** program has received 1,475 proposals from all types of colleges and universities and has made awards for 553 projects. Approximately 28,000 students have received scholarships ranging from one to four years. In addition to scholarships, projects include student support activities featuring close involvement of faculty, student mentoring, academic support, and recognition of the students. Such activities are important in recruiting and retaining students in high-technology fields through graduation and into employment.

ITEST Grants for Mathematics, Science, or Engineering Enrichment Courses. K-12 activities under the Consolidated Appropriations Act, 2005 will support the ITEST program, which invests in informal education programs for middle and high school students and teachers that are intended to stimulate interest in high technology fields and that emphasize IT-intensive STEM subject areas. ITEST provides substantive learning opportunities that expand upon science experiences received as part of formal classroom instruction. The three categories of awards include: (1) *Youth Projects* for school-age children, grades 7-12; (2) *Comprehensive Projects* that include opportunities for STEM teachers to gain familiarity with IT that can be transported to their classrooms; and (3) the *ITEST Learning Resource Center* that serves as a national resource disseminating best practices, research on student learning, and strategies for project evaluation.

The ITEST portfolio consists of 32 community-based projects that allow students and teachers to work hand-in-hand with scientists and engineers on extended research projects, ranging from biotechnology to environmental resource management to programming and problem-solving. Projects draw on a wide mix of local resources, including universities, industry, museums, science and technology centers, and school districts. ITEST engages both informal and formal communities in order to identify the characteristics of informal settings – content and format – that make them successful for a wide range of young people, especially those not successful in traditional school settings. In FY 2004, funded projects will reach more than 14,000 students, 600 parents and other caregivers, and 1,100 teachers.

Interest in ITEST continues to grow. In FY 2005, ITEST expects to receive over 160 proposals, an increase of nearly 64 percent over FY 2004, with a success rate of about 15 percent.