STEM Education

Goal Leaders:

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FY2015 Quarter 2

Overview

Goal Statement

Improve science, technology, engineering, and mathematics (STEM) education by implementing the *Federal STEM Education 5-Year Strategic Plan*, announced in May 2013, specifically:

- Improve STEM instruction
- Increase and sustain youth and public engagement in STEM
- Enhance STEM experience of undergraduate students
- Better serve groups historically under-represented in STEM fields
- Design graduate education for tomorrow's STEM workforce
- Build new models for leveraging assets and expertise
- Build and use evidence-based approaches

Urgency

- Advances in STEM have long been central to our nation's economy, security, and ability to preserve the health of its people and the environment; enhancing U.S. students' engagement and success in STEM disciplines is essential to the U.S. maintaining its preeminent position in the world.
- We have considerable progress to make given that our K-12 system ranks "middle of the pack" in international comparisons.
- Meeting the growing demand for STEM expertise and competency is important to the economy and our democracy.
- Increasing opportunities in STEM for more Americans is critical to building a just and inclusive society.

Vision

- The Federal STEM Education 5-Year Strategic Plan sets out ambitious national goals to drive federal investment in five priority STEM education areas toward which significant progress will require improved coherence and coordination across federal agencies with STEM assets and expertise and STEM education resources.

Progress Update

Federal Coordination in STEM Education (FC-STEM) updates:
- New leads identified for the P-12, Graduate, and Engagement IWGs to replace people who have left.

Collaborations examples:
- Cross-agency partnership examples:
  - The Department of Education's 21st Century Community Learning Centers (CCLC) program is piloting collaborations with the National Park Service and the Institute of Museum and Library Services and is expanding its NASA collaboration to include additional sites and engineering challenges (Engagement Priority Goal).
  - In addition to the existing four agencies (Office of Naval Research, Smithsonian Institution, Federal Bureau of Investigation (FBI), and Department of Homeland Security(DHS)), the Graduate Research Internship Program (GRIP) added three partners, Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), and Census Bureau (Graduate Priority Goal).
  - The Graduate Education IWG created a common portal for fellowship and traineeship opportunities across the federal government for graduate students and is working with the Undergraduate Education IWG to include undergraduate opportunities.
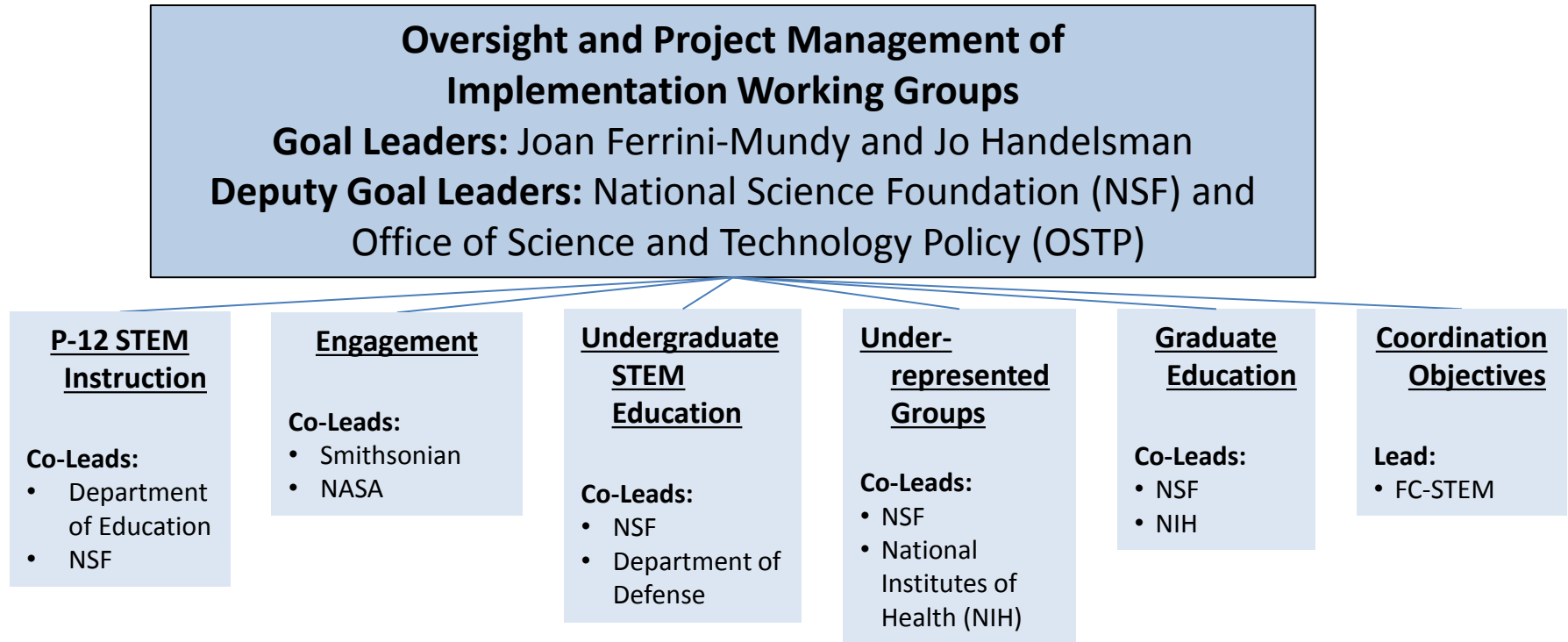
Meetings and Outreach
- The Performance Improvement Council facilitated an interactive brainstorming session for FC-STEM to discuss how to increase access to, and availability of, authentic experiences for both pre-service teachers and students at the P-12 through graduate levels. The session focused on a plan of action for meaningful impact (March 2015).
- The Broadening Participation IWG met with the P-12, Undergraduate, and Graduate IWGs to discuss potential collaborations. The IWGs are developing possible joint milestones to achieve common objectives.

Action Plan Summary

Sub-goal	Major Strategies to Achieve Impact	Key indicators
1. Improve STEM instruction	• Support teacher preparation efforts that encourage use of evidence-based STEM learning opportunities • Increase and improve authentic STEM experiences for teachers	•Percentage of high school mathematics and science teachers who hold degrees in their teaching field or in science of mathematics education
2. Increase and sustain youth and public engagement in STEM	• Provide access to scientific and engineering assets of the federal government • Integrate STEM into school-readiness and after-school programs • Improve empirical understanding of how authentic STEM experiences influence learning or interest	
3. Enhance STEM experience of undergraduate students	• Implement evidence-based instructional practices and innovations • Improve STEM education at 2-year colleges and transfer to 4-year colleges • Support the development of university-industry partnerships to provide relevant and authentic experiences • Address high failure rates in introductory undergraduate mathematics	•Number of STEM bachelor's degrees earned annually
4. Better serve groups historically under-represented in STEM fields	• Be more responsive to rapidly changing demographics • Focus investments on developing and testing strategies for improving preparation for higher education • Invest in efforts to create campus climates that are effective in improving success for students from under-represented groups	•Percentage of bachelor's degrees awarded to women, black or African American, Hispanic, and American Indian or Alaska Native students
5. Design graduate education for tomorrow's STEM workforce	• Recognize and provide financial support to students of high potential • Provide opportunities for fellows' preparation in areas critical to the Nation • Combine and enhance mechanisms that evaluate the impact of fellowships to inform future Federal investments	
6. Build new models for leveraging assets and expertise	• Collaborate to build implementation roadmaps in the goal areas • Reduce administrative barriers to collaboration • Develop a framework to guide coordinated CoSTEM agency budget requests	(Plus further indicators in development – see slide 15)
7. Build and use evidence-based approaches	• Support syntheses of existing research on critical issues in STEM priority areas • Improve and align evaluation and research strategies across Federal agencies • Streamline processes for interagency collaboration	

STEM Education Goal Team and Governance Plan

Oversight and Project Management of Implementation Working Groups
Goal Leaders: Joan Ferrini-Mundy and Jo Handelsman
Deputy Goal Leaders: National Science Foundation (NSF) and Office of Science and Technology Policy (OSTP)

P-12 STEM Instruction

Co-Leads:
- Department of Education
- NSF

Engagement

Co-Leads:
- Smithsonian
- NASA

Undergraduate STEM Education

Co-Leads:
- NSF
- Department of Defense

Under-represented Groups

Co-Leads:
- NSF
- National Institutes of Health (NIH)

Graduate Education

Co-Leads:
- NSF
- NIH

Coordination Objectives

Lead:
- FC-STEM

Governance

- Co-STEM: Jo Handelsman (OSTP) and France Córdova (NSF) are Co-Chairs. Annual report from FC-STEM to Co-STEM

- FC-STEM: Joan Ferrini-Mundy (NSF) and Donald James (NASA) are Co-Chairs. Quarterly reports from Inter-agency Working Groups to FC-STEM

Work Plan: Governance and Coordination

- Build new models for leveraging assets and expertise.
- Build and use evidence based approaches.

Barriers/Challenges
- Baseline data are not easily available for several key areas.
- There is changing participation in the IWGs.
- External input from stakeholders outside the government is needed.

Key Milestones	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Working groups finalized for each sub-goal, including executive secretary	06/2014	Missed	FC-STEM	The IWG co-lead for Undergrad IWG needs to be selected.
Identify baseline data, when appropriate, using relevant data sources	08/2014	Complete	FC-STEM	
Identify and support opportunities for collaboration across working groups	12/2014	Complete	FC-STEM	
Key milestones/metrics/indicators established for all sub-goals	01/2015*	Missed	FC-STEM	A potential obstacle may be the lack of regularly collected metrics. Several of the IWGs are working with the PIC to identify key indicators.
Simplification of key processes such as development of Memoranda of Understandings (MOU) to encourage common procedures and collaborations	03/2015	Missed	FC-STEM	Greater collaboration among agencies has occurred, but common procedures still need to be implemented.

*Due date revised. The original due date was 08/2014. The interagency working groups required more time to develop milestones for each sub-goal.

Work Plan Sub-goal 1: P-12 STEM Education

- Support teacher preparation efforts that encourage use of evidence-based STEM learning opportunities
- Increase authentic STEM experiences for teachers

Key Milestones (Lead: Department of Education / NSF)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Identify opportunities to leverage related efforts of IWG on Undergraduate Education	12/2014	Complete	IWG P-12, IWG Undergrad	Potential obstacles include range of purposes motivating agency commitment to undergraduate and P-12 education, including preservice teacher prep and authentic research experiences for teachers/undergrads.
Create a repository of best practices and research related to teacher preparation and professional learning	02/2015*	Complete	IWG P-12	
Conduct an in-depth analysis of one regional "hotspot zone" to identify all relevant federal asset activity, programs, and local non-governmental efforts to improve STEM instruction	02/2015**	Complete	IWG P-12	Initial analysis has been limited in scope to three areas: Hunstsville, AL; Minneapolis, MN; and, Baltimore area, MD.
Conduct focus group sessions with Institutes of Higher Education (IHE) faculty responsible for educating pre-service teachers around using evidence-based STEM learning opportunities and federal resources. Prepare analysis of sessions.	06/2015	On track	IWG-P12	Time constraints for participants are a potential obstacle.

*Due date revised. The original due date was 09/2014. NSF is working with possible Congressional report language along this line.
**Due date revised. The original due date was 11/2014. Identifying all federal activities has been more challenging for some agencies than originally anticipated.

Work Plan Sub-goal 2: Engagement in STEM Education

- Access to scientific and engineering assets of the federal government
- Integration of STEM into school readiness and after-school programs
- Empirical understanding of how STEM experiences influence learning

Key Milestones (Lead: Smithsonian Institute / NASA)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Identify STEM Engagement Activities of CoSTEM agencies	12/2014*	Missed	IWG-Engagement	Group leadership is in transition; FC-STEM co-chairs are involved in finding solutions.
Identify evaluation models used to effectively study engagement	01/2015**	Missed	IWG-Engagement	Group leadership is in transition; FC-STEM co-chairs are involved in finding solutions.
Implementation of agency commitments related to making and student engagement announced by President Obama at the White House Maker Faire	06/2015	On track	OSTP	No barriers identified.

*Due date revised. The original due date was 07/2014. The IWG met only occasionally until July 2014 when a co-chair was added, although it was possible to accomplish some collection of materials prior to that.
**Due date revised. The original due date was 09/2014. The IWG did not start meeting until July.

Work Plan Sub-goal 3: Undergraduate STEM Education

- Implementation of evidence-based instructional practices and innovations
- Improve STEM education at 2-year colleges and transfer to 4-year colleges
- Support the development of university-industry partnerships to provide relevant and authentic experiences
- Address high failure rates in introductory mathematics at undergraduate

Key Milestones (Lead: NSF/TBD)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Leverage related efforts of IWG on Graduate Education: A) Identify opportunities for collaboration	12/2014 (A)	Complete	IWG Undergrad	No barriers identified.
B) Develop an undergraduate research experiences portal	12/2015 (B)	On track	IWG Undergrad	No barriers identified.
Identify opportunities to leverage related efforts of IWG on P-12 Education	12/2014	Complete	IWG Undergrad	Potential obstacles include range of purposes motivating agency commitment to undergraduate and P-12 education, including preservice teacher education.
Develop an online, cross-agency resource of federal programs of interest to community colleges	12/2014	Complete	IWG Undergrad	No barriers identified.

Work Plan Sub-goal 3: Undergraduate STEM Education

- Implementation of evidence-based instructional practices and innovations
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- Address high failure rates in introductory mathematics at undergraduate

Key Milestones (Lead: NSF/TBD)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Include item on undergraduate mathematics instruction in 2009 High School Longitudinal Survey (HSLS) second follow up: A) Decision to do in-depth cognitive testing or field testing on new item for the HSLS on undergraduate mathematics instruction B) Item integrated into HSLS Second Follow-up C) Survey data collected from HSLS D) Survey results available	12/2014 (A)	Complete	IWG Undergrad	No barriers identified.
	4/2015 (B)	On track	IWG Undergrad	Dependent on A
	12/2016 (C)	On track	IWG Undergrad	Dependent on B
	12/2017 (D)	On track	IWG Undergrad	Dependent on C

Work Plan Sub-goal 3: Undergraduate STEM Education

- Implementation of evidence-based instructional practices and innovations
- Improve STEM education at 2-year colleges and transfer to 4-year colleges
- Support the development of university-industry partnerships to provide relevant and authentic experiences
- Address high failure rates in introductory mathematics at undergraduate

Key Milestones (Lead: NSF/TBD)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Identify common evaluation elements for undergraduate authentic STEM experiences to be used across Federal agencies:		On track	IWG Undergrad	Potential obstacles include range of purposes motivating agency commitment to undergraduate research and intern opportunities.
Phase 1: Common Indicator Metrics Analysis	08/2015	On track	IWG Undergrad	
Phase 2: Preliminary Research Study to Pool Common Data	02/2016	On track	IWG Undergrad	Dependent on Phase 1.
Identify opportunities to leverage related efforts of IWG on Broadening Participation	07/2015	On track	IWG Undergrad	Potential obstacles include range of purposes motivating agency commitment to undergraduate education and broadening participation initiatives.
Develop a Minority Serving Community College and federal agency convening to share information and resources about agency grant opportunities with MSIs	10/2015	On track	IWG Undergrad	
Development of an Undergraduate Education Forum that aligns with the four strategic objectives	02/2016	On track	IWG Undergrad	

Work Plan Sub-goal 4: Broadening Participation in STEM Fields

- Be more responsive to rapidly changing demographics
- Focus investments
- Invest in efforts to create campus climates that are effective in improving success for students from underrepresented groups

Key Milestones (Lead: NIH/NSF)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Create a repository for reports, literature, and committee products and deliverables for subgroups assigned to each major action item	12/2014	Complete	IWG Co-leads	OMB Max site created and populated with meeting minutes, roster, and related materials. DropBox site also created with identical documents. OMB Max will be primary site for most.
Meet with leads for UG, Graduate, P-12, and Engagement IWGs to identify opportunities for collaboration and leveraging of efforts	3/2015*	Complete	IWG BP	Meetings with UG, Graduate, and P-12 working groups completed. Engagement IWG meeting was attended by representative of BP IWG.
Conduct a review of existing portfolio of BP efforts (federal)and non-federal models and approaches using the FC STEM inventory, presentations, literature reviews, and reports	6/2015	On track	IWG BP	After two meetings, it is clear that the committee needs to gain a better understanding of federal portfolio, as well as reports and literature on practices and challenges.
Develop a summary document which includes BP, challenges, and needs in BP to support strategies and recommendations designed to focus federal BP investments	6/2015	On track	IWG BP	No barriers identified.
Agencies identify and begin implementation of modifications to existing program portfolio to address gaps to provide more opportunities for URMs in STEM	9/2015**	On track	IWG BP	No barriers identified.

*Due date revised. The original due date was 02/2015. IWG-BP is holding joint meetings with the other IWGs, not just the co-leads, so scheduling is a challenge.

**Due date revised. The original due date was 01/2015. The IWG held its first meeting in August 2014 and needs time to review existing research, programs, and exemplary models both within and outside of the federal government to help identify gaps and make recommendations for enhancements.

Work Plan Sub-goal 4: Broadening Participation in STEM Fields

- Be more responsive to rapidly changing demographics
- Focus investments
- Invest in efforts to create campus climates that are effective in improving success for students from underrepresented groups

Key Milestones (Lead: NIH/NSF)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Agencies identify strategies and timeline for incorporating campus climate guidelines and best practices into funding opportunities	10/2015*	On track	IWG BP	No barriers identified.
Ideas proposed to maximize the impact of the federal investment with a timeline for agency adoption	12/2015**	On track	IWG BP	No barriers identified.

*Due date revised. The original due date was 06/2015. The IWG held its first meeting in August 2014 and needs more time to complete this milestone.
**Due date revised. The original due date was 10/2014. The IWG held its first meeting in August 2014.

Work Plan Sub-goal 5: Graduate STEM Education

- Recognize and provide financial support to students of high potential
- Provide opportunities for fellows' preparation in areas critical to the nation
- Combine and enhance mechanisms that evaluate the impact of fellowships to inform future federal investments

Key Milestones (Lead: NSF/NIH)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Establish MOUs across agencies to broaden research opportunities of NSF fellows	10/2014	Complete	IWG Grad	No barriers identified.
Assemble inventory of evaluation approaches for graduate programs	01/2015	Complete	IWG Grad	No barriers identified.
Identify available resources for the evaluation of graduate programs	01/2015	Complete	IWG Grad	No barriers identified.
Identify options such as courses and internships to enhance the quality of graduate training to better address the needs of a future STEM workforce	01/2015	Complete	IWG Grad	No barriers identified.
Create common portal for fellowship and traineeship opportunities for graduate students	03/2015*	Complete	IWG Grad	No barriers identified.
Hold a workshop with the Performance Improvement Council to begin to identify new milestones and indicators for 2016	04/2015	Complete	IWG Grad	No barriers identified.

*Due date revised. The original due date was 02/2015. Additional time is needed for design of the portal.

Work Plan Sub-goal 5: Graduate STEM Education

- Recognize and provide financial support to students of high potential
- Provide opportunities for fellows' preparation in areas critical to the nation
- Combine and enhance mechanisms that evaluate the impact of fellowships to inform future federal investments

Key Milestones (Lead: NSF/NIH)	Milestone Due Date	Milestone Status	Owner	Anticipated Barriers or Other Issues Related to Milestone Completion
Expand MOU partners to include most CoSTEM partners in opportunities for NSF fellows	12/2015	On track	IWG Grad	No barriers identified.
Expand Portal to include undergraduate research opportunities	12/2015	On track	IWG Grad and IWG Undergrad	No barriers identified.

*Due date revised. The original due date was 02/2015. Additional time is needed for design of the portal.

Key Indicators*

Key Implementation Data**

Indicator	Source	Baseline	Target?	Frequency	Latest data	Trend
Percentage of high school mathematics and science teachers who hold degrees in their teaching field or in science of mathematics education	Science and Engineering Indicators (S&EI) 2014	2012 (See slide 18)	N/A	Reported in S&EI 2014 biannually but based on variable survey	2012	
Number of STEM bachelor's degrees earned annually	S&EI 2014	554,365 (See slides 19 and 20)	N/A	Biannually	2011	Increasing
Percentage of bachelor's degrees awarded to women, black or African American, Hispanic, and American Indian or Alaska Native students	S&EI 2014	2011 (See slides 21-24)	N/A	Biannually	2011	Increasing

Indicators in Development:

Potential High Level Indicator	Potential Target Areas
• Teachers' science and mathematics content knowledge for teaching • Number of STEM graduate students at institutions by mechanism of support and supporting federal agency	

*The IWGs are working with the PIC to identify additional key indicators for the strategic objectives.
**Updated data will be available January 2016 in Science and Engineering Indicators, 2016.

Teachers' Science and Mathematics Content Knowledge for Teaching

The Education and Human Resources (EHR) Directorate partnered with NSF's National Center for Science and Engineering Statistics (NCSES) in the Directorate of the Social, Behavioral, and Economic Sciences (SBE) to develop a two-year task, awarded to SRI, to provide insight on ways to reconfigure the K-12 chapter in the biennial *Science and Engineering Indicators* (SEI) that incorporates, over time, the 14 indicators identified in the *Monitoring Progress* report. Indicator 6 is **Teachers' science and mathematics content knowledge for teaching.** SRI created a "roadmap" of indicators available in the short-term, as well as those that will require further research and development:

Currently Available Data
- Data from Hill (Harvard) and the MET Project
- Teacher perceptions of preparedness from National Assessment of Educational Progress (NAEP), Trends in International Mathematics and Science Study (TIMSS), and National Survey of Science and Mathematics Education (NSSME)
- B&B, HSLS, and Teaching and Learning International Survey (TALIS) data on college coursework

Near-Term Activities
- Assemble and compare existing survey data and data from Hill and MET studies
- Review and synthesize what is known about correlations between these measures and student achievement

Long-Term Activities
- Develop instruments to measure teacher content knowledge for teaching for science and high school math
- Develop non-survey measures to get at knowledge in use

Additional Research Needs
- Relationship between college backgrounds and self-reports of preparedness and direct assessments of content knowledge for teaching
- Cost-effective measures for direct assessments at scale

Contributing Programs

The Federal Science, Technology, Engineering, and Mathematics (STEM) Portfolio is a report from the Federal Inventory of STEM Education Fast-Track Action Committee that was published in December 2011.

The inventory details federal agencies' spending on STEM education and differs from previous such inventories in several ways.

- A consistent unit of analysis was used across all agencies (henceforth labeled as an "investment");
- the design and implementation of the inventory survey included extensive agency involvement; and
- a more thorough and detailed characterization of each agency's investments was obtained.

The result of these differences is a clearer and more complete picture of the federal investment in STEM education than has previously been available.

http://www.whitehouse.gov/sites/default/files/microsites/ostp/costem__federal_stem_education_portfolio_report_1.pdf

Mathematics and Science Teachers with an Undergraduate or Graduate Degree in Mathematics or Science, by Grade Level (2012)

Mathematics and science teachers with an undergraduate or graduate degree in mathematics or science, by grade level: 2012

(Percent)

Grade level	Mathematics teachers' degree				Science teachers' degree			
	Mathematics	Mathematics education	Mathematics or mathematics education	None of these fields	Science or engineering	Science education	Science, engineering, or science education	None of these fields
Elementary	4	2	4	96	4	2	5	95
Middle	23	26	35	65	26	27	41	59
High	52	54	73	27	61	48	82	18

SOURCE: Banilower ER, Smith PS, Weiss IR, Malzahn KA, Campbell KM, Weis AM, *Report of the 2012 National Survey of Science and Mathematics Education* (2013).

# Number of STEM Bachelor's Degrees Earned Annually (2011)

Appendix table 2-1
S&E degrees awarded, by degree level, Carnegie institution type, and field: 2011

Degree and institution type	All fields	All S&E	Agricultural sciences	Biological sciences	Computer sciences	Earth, atmospheric, and ocean sciences	Mathematics	Physical sciences	Psychology	Social sciences	Engineering
						S&E field					
Bachelor's	1,734,229	554,365	22,759	93,654	43,586	5,299	18,021	19,198	101,568	172,181	78,099
Doctorate-granting universities—very high research activit	444,695	210,425	10,283	37,626	8,193	2,023	6,682	6,852	28,402	69,114	41,250
Doctorate-granting universities—high research activity	249,963	82,410	3,812	13,668	4,909	869	2,176	2,490	13,832	23,135	17,519
Doctoral/research universities	121,588	30,818	874	4,391	4,231	265	835	964	5,389	10,657	3,212
Master's colleges and universities	647,346	158,483	5,162	24,340	16,319	1,397	5,677	5,614	40,877	47,776	11,321
Baccalaureate colleges	199,039	64,878	2,577	12,804	5,554	728	2,626	3,206	12,620	21,163	3,600
Associate's colleges	6,079	845	33	21	778	0	0	0	6	1	6
Medical schools and medical centers	6,435	66	0	66	0	0	0	0	0	0	0
Schools of engineering	1,329	1,168	0	5	41	14	9	25	0	2	1,072
Other specialized institutions	48,610	3,929	0	623	2,679	0	5	37	320	204	61
Tribal colleges	230	68	18	0	2	0	0	0	3	45	0
Not classified	8,915	1,275	0	110	880	3	11	10	119	84	58

NOTES: Medical and other health sciences are included in non-S&E. Carnegie institution type corresponds to the 2010 Carnegie Classification of Academic Institutions.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; National Science Foundation, National Center for Science and Engineering Statistics, Integrated Science and Engineering Resources Data System (WebCASPAR), http://webcaspar.nsf.gov.

Bachelor's Degrees by Broad Field of Degree: 2000-11
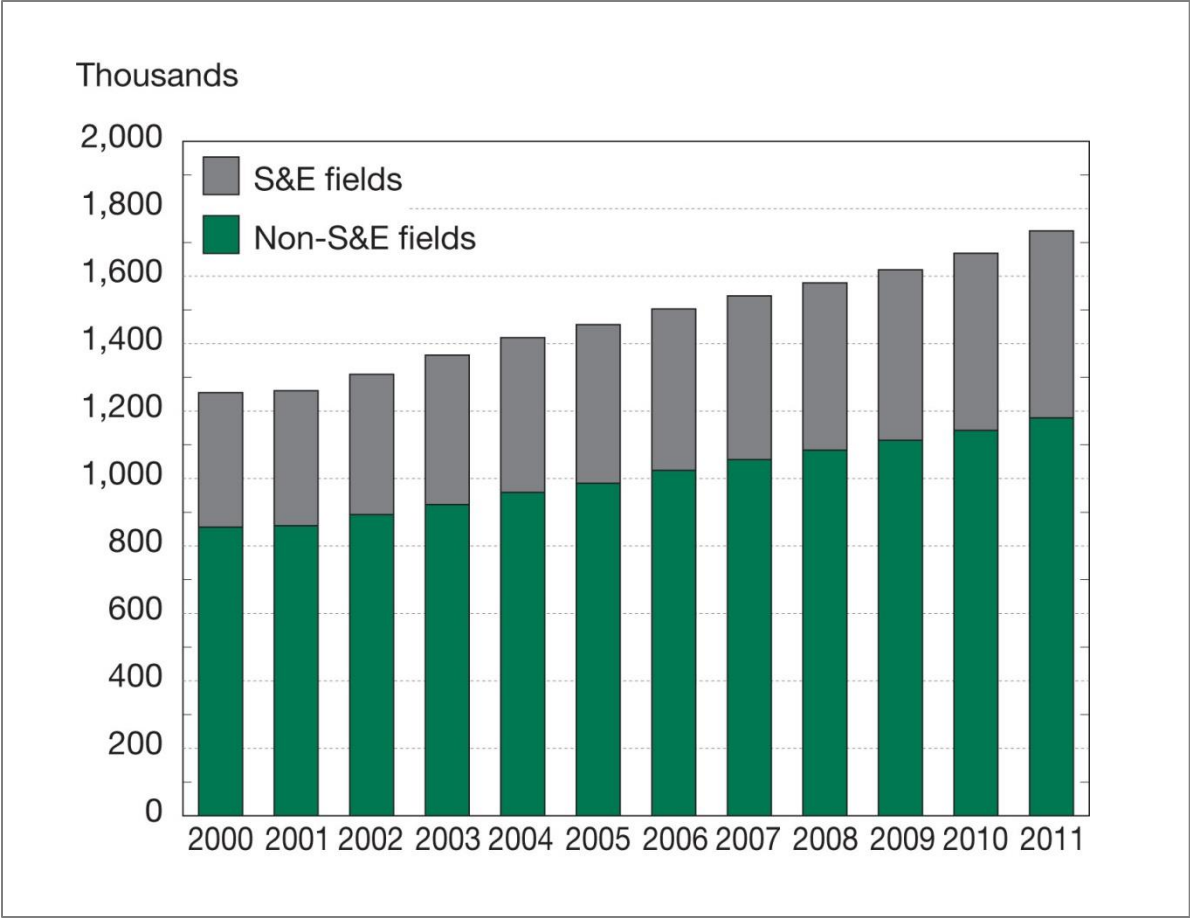
Percentage of Bachelor's Degrees Awarded to Women

Women's share of S&E bachelor's degrees, by field: 2000–11

(Percent)

Year	Physical sciences	Biological/agricultural sciences	Mathematics	Computer sciences	Psychology	Social sciences	Engineering
2000	40.8	55.8	47.8	28.0	76.5	54.2	20.5
2001	41.6	57.3	48.0	27.6	77.5	54.8	20.1
2002	42.7	58.6	46.9	27.5	77.5	54.8	20.9
2003	41.7	59.7	45.6	27.0	77.7	54.7	20.3
2004	42.2	60.1	45.9	25.1	77.8	54.5	20.5
2005	42.6	59.9	44.6	22.3	77.8	54.2	20.0
2006	42.2	59.8	44.9	20.7	77.4	53.7	19.5
2007	41.1	58.6	43.9	18.6	77.4	53.8	18.5
2008	41.1	58.2	43.9	17.7	77.1	53.5	18.5
2009	41.0	58.2	43.0	17.9	77.2	53.6	18.1
2010	40.9	57.8	43.1	18.2	77.1	53.7	18.4
2011	40.3	58.1	43.0	17.7	77.0	54.2	18.8

NOTE: Physical sciences include earth, atmospheric, and ocean sciences.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; National Science Foundation, National Center for Science and Engineering Statistics, WebCASPAR database, http://webcaspar.nsf.gov.
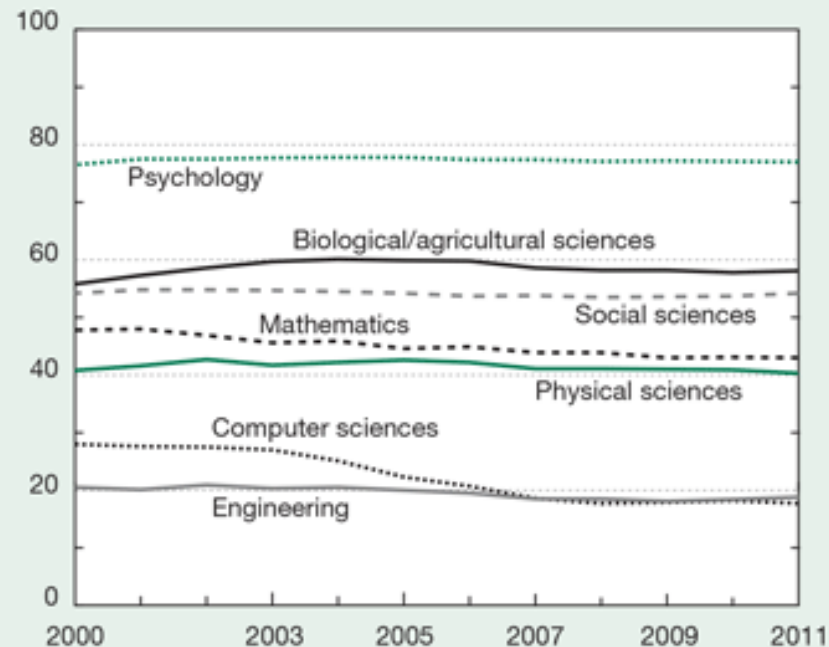
Science and Engineering Indicators 2014

Women's Share of S&E Bachelor's Degrees by Field: 2000-11

Figure 2-18
Women's share of S&E bachelor's degrees, by field: 2000–11

Percent

Psychology
Biological/agricultural sciences
Mathematics
Social sciences
Physical sciences
Computer sciences
Engineering

NOTE: Physical sciences include earth, atmospheric, and ocean sciences.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; and National Science Foundation, National Center for Science and Engineering Statistics, WebCASPAR database, http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Percentage of Bachelor's Degrees Awarded by Race and Ethnicity (2011)

Share of S&E bachelor's degrees among U.S. citizens and permanent residents, by race and ethnicity: 2000–11

(Percent)

Year	Asian or Pacific Islander	Black or African American	Hispanic	American Indian or Alaska Native	White
2000	9.3	8.6	7.3	0.7	70.5
2001	9.5	8.7	7.4	0.7	69.6
2002	9.4	8.7	7.5	0.7	69.2
2003	9.4	8.7	7.7	0.7	68.5
2004	9.4	8.8	7.7	0.7	67.7
2005	9.6	8.8	7.9	0.7	67.2
2006	9.7	8.7	8.0	0.7	67.1
2007	9.7	8.6	8.2	0.7	66.8
2008	9.9	8.6	8.5	0.7	66.1
2009	9.9	8.6	8.8	0.7	65.5
2010	9.9	8.6	9.1	0.7	64.4
2011	9.8	8.7	9.6	0.6	63.4

NOTES: Hispanic may be any race. American Indian or Alaska Native, Asian or Pacific Islander, black, or African American and white refer to individuals who are not of Hispanic origin. Percentages do not sum to 100 because data do not include individuals who did not report their race and ethnicity.

SOURCES: National Center for Education Statistics, Integrated Postsecondary Education Data System, Completions Survey; National Science Foundation, National Center for Science and Engineering Statistics, WebCASPAR database, http://webcaspar.nsf.gov.

Science and Engineering Indicators 2014

Share of S&E Bachelor's Degrees among U.S. Citizens and Permanent Residents by Race and Ethnicity: 2000-11
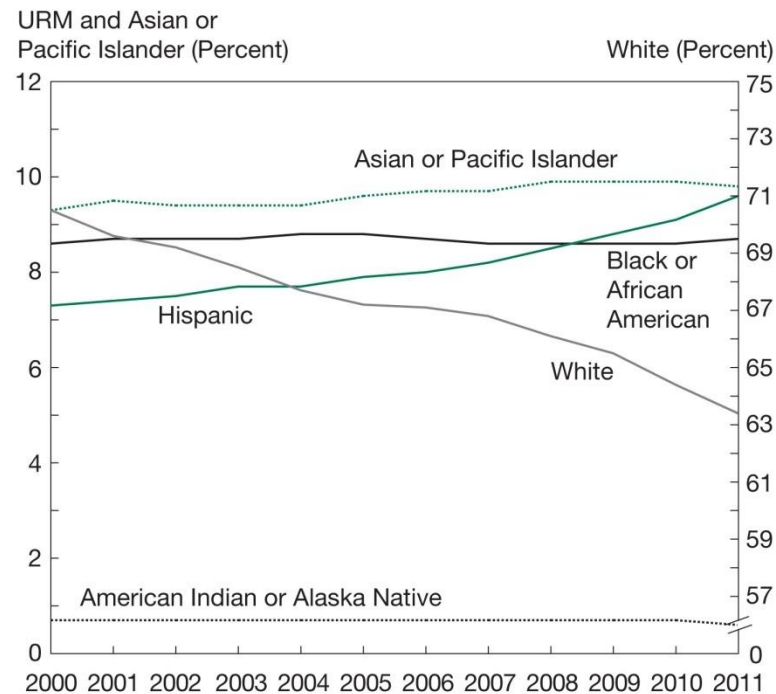
URM = underrepresented minorities (black, Hispanic, and American Indian or Alaska Native).

NOTES: Hispanic may be any race. American Indian or Alaska Native, Asian or Pacific Islander, black or African American, and white refer to individuals who are not of Hispanic origin. Percentages do not sum to 100 because data do not include individuals who did not report their race and ethnicity.

Acronyms

- BP – Best Practices
- CCLC – Century Community Learning Center
- CoSTEM – Committee on Science, Technology, Engineering, and Mathematics
- DHS – Department of Homeland Security
- EHR – Education and Human Resources
- EPA – Environmental Protection Agency
- FBI – Federal Bureau of Investigation
- GRIP – Graduate Research Internship Program
- HSLS – High School Longitudinal Survey
- IHE – Institutes of Higher Education
- IWG – Interagency Working Group
- MET – Measures of Effective Teaching
- MOU – Memoranda of Understanding
- MSI – Minority Serving Institution
- NASA – National Aeronautics and Space Administration
- NAEP – National Assessment of Educational Progress
- NCSES – National Center for Science Engineering Statistics
- NIH – National Institute of Health

- NOAA – National Oceanic and Atmospheric Administration
- NSF – National Science Foundation
- NSSME – National Survey of Science and Mathematics Education
- OMB – Office of Budget and Management
- OSTP – Office of Science and Technology
- PIC – Performance Improvement Council
- S&E – Science and Engineering
- SBE – Social, Behavioral, and Economic Sciences
- SEI – Science and Engineering Indicators
- TALIS – Teaching and Learning International Survey
- TIMSS – Trends in International Mathematics and Science Study