Woodrow Wilson International Center for Scholars

Program on America and the Global Economy

FROM THE CLASSROOM TO WASHINGTON:

EINSTEINS ON EDUCATION REFORM

Edited by Kent H. Hughes and Elizabeth A. Byers

Woodrow Wilson
International
Center
for Scholars

Program on America
and the Global Economy

FROM THE CLASSROOM TO WASHINGTON:

EINSTEINS ON EDUCATION REFORM

Available from:

Program on America and the Global Economy
Woodrow Wilson International Center for Scholars
One Woodrow Wilson Plaza
1300 Pennsylvania Avenue NW
Washington, DC 20004-3027

www.wilsoncenter.org/page

ISBN: 1-933549-89-0

September 2010

The Woodrow Wilson International Center for Scholars, established by Congress in 1968 and headquartered in Washington, D.C., is a living national memorial to President Wilson. The Center's mission is to commemorate the ideals and concerns of Woodrow Wilson by providing a link between the worlds of ideas and policy, while fostering research, study, discussion, and collaboration among a broad spectrum of individuals concerned with policy and scholarship in national and international affairs. Supported by public and private funds, the Center is a nonpartisan institution engaged in the study of national and world affairs. It establishes and maintains a neutral forum for free, open, and informed dialogue. Conclusions or opinions expressed in Center publications and programs are those of the authors and speakers and do not necessarily reflect the views of the Center staff, fellows, trustees, advisory groups, or any individuals or organizations that provide financial support to the Center.

The Center is the publisher of *The Wilson Quarterly* and home of Woodrow Wilson Center Press, *dialogue* radio and television, and the monthly news-letter "Centerpoint." For more information about the Center's activities and publications, please visit us on the web at www.wilsoncenter.org.

CONTENTS

ACKNOWLEDGMENTS

The Albert Einstein Distinguished Educator Fellows 20th Anniversary Summit was organized by the E20 planning committee and hosted by the Woodrow Wilson Center's Program on America and the Global Economy (PAGE) directed by Kent Hughes. The E20 planning committee was co-chaired by Kathleen M. Gorski and Art Lebofsky. Other committee members were Liz Burck, John Jackson, David Kapolka, Luke Laurie, Ruth McDonald, and Tiah E. McKinney. Members of other subcommittees were: Diedre Adams, Julie Angle, Anthonette Peña, Jenelle Hopkins, Stephen Scannell, Kevin Simmons, and Lorna Vazquez. Debbie Murray of the Triangle Coalition For Science and Technology Education provided invaluable assistance and inspiration. Vance Ablott, Triangle Coalition Executive Director, and Kathryn Culbertson, Einstein Fellowship Program Manager, were extremely supportive of this effort throughout the process. It is impossible to overstate the imagination and effort of the co-chairs and the planning committee that was dedicated to the 20th Anniversary Summit.

We also want to recognize the many contributions of the panelists and speakers. We were particularly pleased to have heard from former Congressman Ralph Regula and Congressman Michael Honda, two true warriors for opportunity and excellence in education. Former fellow, and current congressional candidate Ed Potasnak, was gracious with his time and motivation long before as well as during the Summit.

The Program on America and the Global Economy would like to thank the Carroll and Milton Petrie Foundation for launching PAGE's work on education and the Einstein Fellows for their insight into many aspects of education, their assessment of various reform proposals, and their many contributions to PAGE and its education-related events. A number of people at the Wilson Center were instrumental in the preparation of this conference and its report, including Monica Schager, Matthew Robinson, Michael Darden, Joshua Nickell, and Clark Taylor. Special thanks go to Elizabeth Byers, who developed the overall design of the report and artfully assembled its many pieces. Thanks also to Sarah Coon for her design work on the report.

INTRODUCTION

by Kent H. Hughes

The Woodrow Wilson International Center for Scholars was delighted to host a group of current and former Albert Einstein Distinguished Educator Fellows as they celebrated the 20th anniversary of the fellowship program. Outstanding math and science teachers in America's K–12 schools, the Einstein Fellows spend a year (or sometimes two) working on Capitol Hill or in the science related offices of several federal agencies.

The 1990 cohort of Einstein Fellows was part of a growing national concern about the performance of Americas K–12 schools and the lagging performance of American students in mathematics and science. Now, 20 years later they continue to be a part of a growing federal role in seeking excellence and equal opportunity in the nation's schools.

The road to effective education reform has been long. Many past efforts will continue to shape the debate around national standards and education reform. The Einstein Fellows have been active in learning from and building upon past education reform as well as helping to shape new policy as the United States moves forward in the hopes of improving the K–12 school system.

Below is a brief history of five decades of education initiatives that have formed a basis on which the Einstein Fellows have built their own efforts at reform. Their professional lives have been affected by a series of reforms; reforms that have both shaped and been shaped by their professional experience.

SPUTNIK AND AMERICAN REFORM

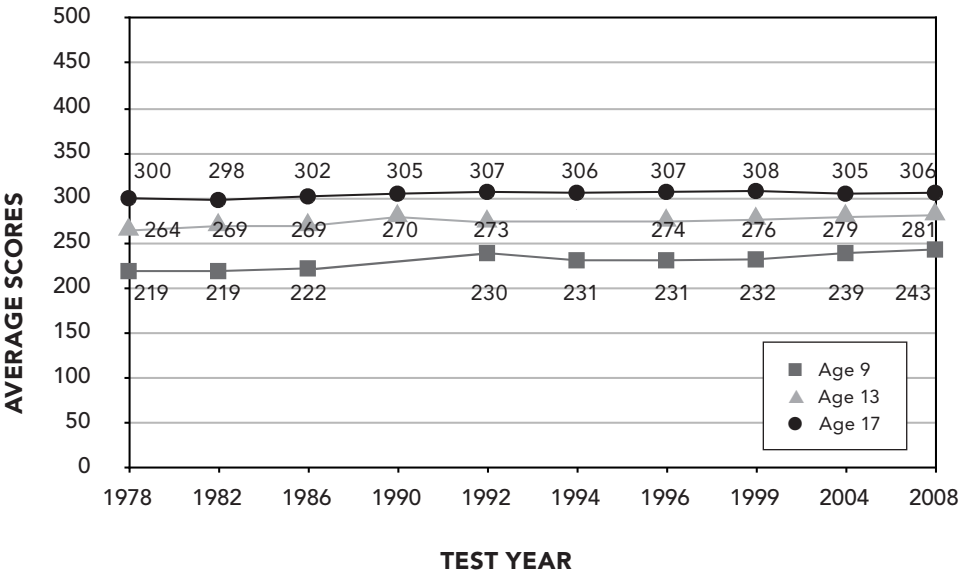
It was the Soviet launch of Sputnik in 1957 that jolted the nation and the federal government into an added emphasis on education in general and mathematics, science, and foreign languages in particular. The first step was the adoption of the National Defense Education Act, in September 1958, that provided federal support for post-graduate education in mathematics, science, engineering, and economics. The National Defense Foreign Language Fellowships, now known as the Title VI Foreign Language and Area Studies Fellowships, were added to the program to meet national security needs. This was not just education for education's sake. Everyone from local school boards to the federal government responded with a sense of urgency to what they saw as a global challenge from the Soviet Union.

In the 1960s, the federal role expanded again through the adoption of the Elementary and Secondary Education Act — focused on providing added support for low-income students. The emphasis here was not on science or engineering but on the long-standing American goal of equality of opportunity.

The 1960s also saw a broad questioning of the established order. The country made great strides in opening up opportunity for all Americans. What started as a civil rights movement to bring full citizenship to African Americans soon spread and empowered a host of other groups. The K–12 schools were also affected by the assertion of rights on behalf of students as well as teachers. New methods were tried and there was an ongoing debate about what methods worked best in which kind of classrooms.

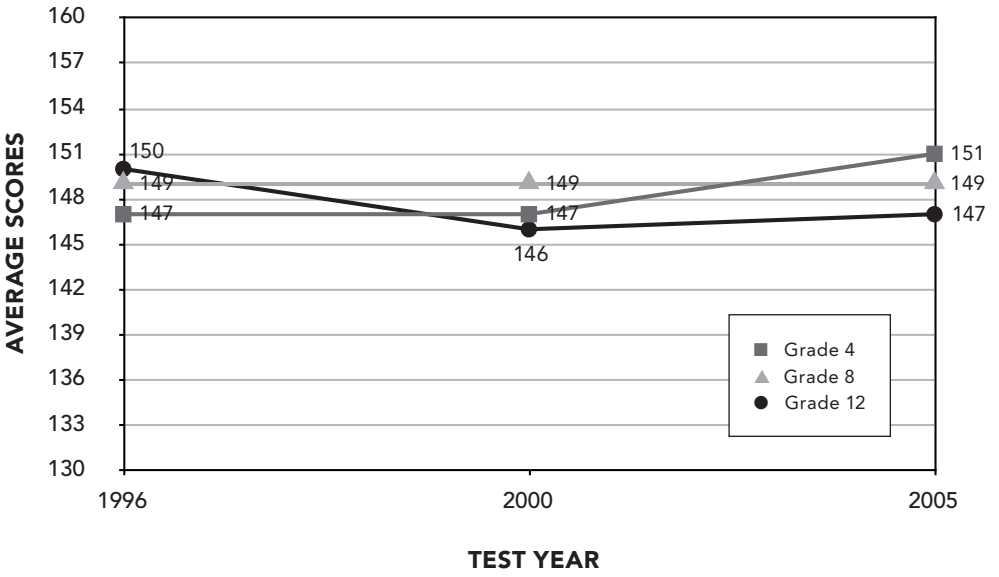
The progress in rights, however, was not matched by progress in education. The National Assessment of Education Progress (NAEP) showed a slight decline, a slight rise and then stagnation in education performance. Developed in 1964 with a grant from the Carnegie Corporation, the NAEP, is the largest nationally representative and continuing assessment of what students in the United States. know and can do in various subject areas. The first assessments were conducted in 1969. Assessments are conducted periodically in mathematics, reading, science, writing, the arts, civics, economics, geography, and U.S. history.

FIGURE 1: NAEP MATH TEST SCORES



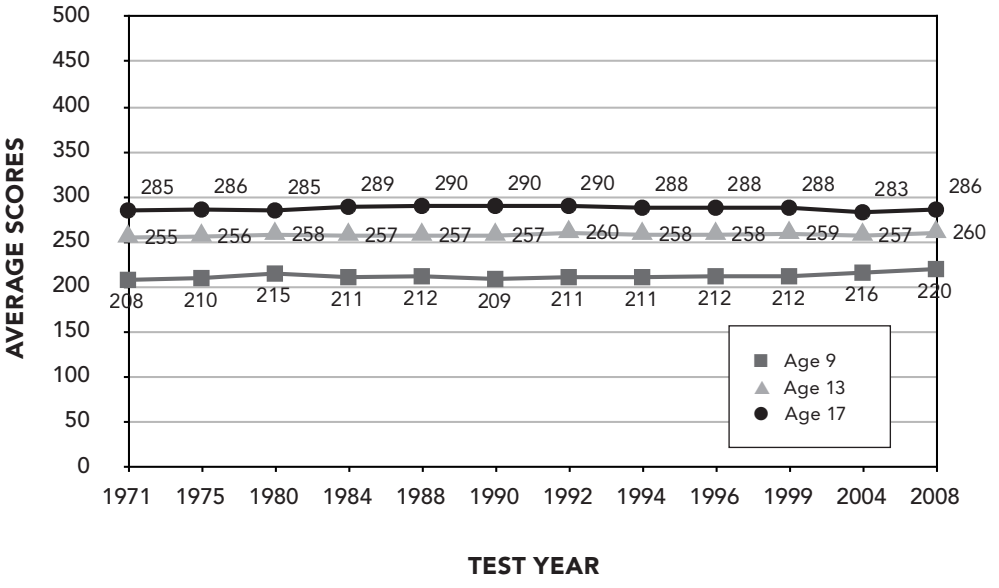
Source: National Center for Educational Statistics

FIGURE 2: NAEP SCIENCE TEST SCORES



Source: National Center for Educational Statistics

FIGURE 3: NAEP READING TEST SCORES



Source: National Center for Educational Statistics

A NATION AT RISK

There is seldom a single date that marks the rise of a new national movement. Many, however, date the modern movement for higher standards from *A Nation at Risk*, a report issued by President Reagan's Secretary of Education Terrel Bell. The report was severely critical of the state of the nation's schools and issued a clear call for action. The report is still remembered for a striking and memorable quote: "If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war."

Soon after *A Nation at Risk*, Reagan called for the nation to start using standardized test scores to analyze and critique schools' performances. His administration subsequently made schools continuing eligibility for federal aid contingent on rising test scores.

In 1983, President Reagan also formed the President's Commission on Industrial Competitiveness (PCIC). Widely known as the Young Commission after its chairman John Young, then CEO of Hewlett-Packard, the PCIC developed a strategy for long-term competitiveness or productivity growth that, among other factors, emphasized education and training. Young built on the PCIC in 1986 by founding the Council on Competitiveness that included leaders from business, organized labor, and higher education.

A few years earlier in 1979, the business community joined with university leaders to form the Business-Higher Education Forum. They were also concerned about long-term competitiveness and the importance of education.

Elected in 1988, President George H. W. Bush was determined to be the education president. He called the nation's governors together for a summit on education — only the third time a president had held a summit with the governors. The governors responded to his call and asked a young, then obscure governor from Arkansas, William Clinton, to act as their lead at the summit. President Bush together with the governors, set ambitious goals for the country to meet by 2000: increase the high school graduation rate to 90 percent, be first in the world in science and mathematics, have every adult American literate, have all schools free of drugs and violence, and all students in grades four, eight, and twelve demonstrating competence in English, mathematics, science, history, and geography.

In 1990 the Einstein Fellows program was started with significant foundation support. In 1994, Congress provided federal support for the Einstein Fellows program to add an emphasis on the importance of teachers and the need for excellence in mathematics and science.

EDUCATION AND THE BUSINESS COMMUNITY

The business community also responded to the President Bush's call for education excellence. The Business Roundtable, an organization of 184 leading CEOs in the country, paired CEOs with each governor to help focus business support on education. In particular, Louis Gerstner, then CEO of IBM, and David Kearns of Xerox became leading advocates of opportunity and excellence in education.

The Business Roundtable has remained an active advocate of strengthening U.S. K–12 education. Their current initiative is entitled "Education, Innovation, and the Workforce" and focuses on the need to maintain a high quality educational system in the United States. One of the primary issues for the initiative is Pre-K–12 Education. As part of their education initiative, the Business Roundtable works with policymakers and educators to promote education reform. The Business Roundtable is also part of Tapping America's Potential (TAP), which has made STEM Education a top priority and committed itself to establishing "communities of support" for promoting new and existing STEM Education programs.

After he was elected president in 1992, President William Jefferson Clinton also sought to create national standards. He encountered considerable resistance from the Congress and the states. Standards have traditionally been a state and often a local matter, in a country always harboring suspicions about federal intrusion.

NATIONAL STANDARDS

Throughout the mid 1990s national education standards for Mathematics, English and Science became an integral component of proposed reforms for improving America's academic performance in K–12 education. The National Science Education Standards were produced by the National Research Council, the research arm of the National Academies, in 1995 and published in 1996. The Standards were the result of four years of work by twenty-two scientific and science education societies and over 18,000 individual contributors. For purposes of approval of the standards report, the National Research Council sought input from study group members chosen for their special competences and regard for appropriate balance. Members included the councils of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

In 1991 the National Council of Teachers of Mathematics (NCTM), published Professional Standards for Teaching Mathematics, which described the elements

of effective mathematics teaching. Assessment Standards for School Mathematics, which appeared in 1995, established objectives against which assessment practices can be measured. In 1995 NCTM's Board of Directors appointed the Commission on the Future of the Standards to recommend how NCTM might proceed in updating its existing Standards documents. As a result, the Standards 2000 project was begun in 1997, with the appointment of a Writing Group to produce an updated Standards document.

Clinton also sought the support of the business community at an education summit held in New York in 1996. The business leaders pushed for national standards. Told that state and local and hence congressional opposition was too intense, the business leaders reportedly joked about how obviously algebra would vary from one state to the next.

NO CHILD LEFT BEHIND

It was President George W. Bush who took the next major step toward high standards in the K–12 schools. President Bush proposed a new approach to the Elementary and Secondary Education Act that became known as the No Child Left Behind Act. The president worked effectively with key congressional Democrats including the late Senator Edward Kennedy and succeeded in signing his proposal into law.

Under NCLB, the focus was on reading and mathematics in the fourth and eighth grades. States were encouraged to make yearly progress in all schools and in key demographic groups. Even with a high overall performance, a school would suffer potential penalties if a specific group lagged behind. NCLB focused on elementary education with a specific emphasis on reading and mathematics.

While NCLB was the most far reaching involvement of the federal government with local schools, it did not succeed in setting uniform standards. State standards were set by the individual states and therefore could vary from one state to the next. Some states set low standards perhaps with an eye to avoiding penalties. In some cases, the contrast between doing well on state exams while doing relatively poorly on the NAEP highlighted the extreme variance in state standards.

While the goals of NCLB were widely embraced, it encountered other problems in addition to variable state standards. Teachers felt that the law that expected improvement in every class every year did not make allowance for how the skills of the entering students could vary from year to year. There was also a concern that by making reading and mathematics so high stakes schools were neglecting other important subjects including science.

INTERNATIONAL COMPARISON

Despite more than two decades of focus on education, the United States continued to lag on international tests in mathematics, science, and reading.

Trends in Mathematics and Science Study (TIMSS), was developed and is implemented at the international level by the International Association for the Evaluation of Educational Achievement (IEA)—an international organization of national research institutions and governmental research agencies. TIMSS is used to measure over time the mathematics and science knowledge and skills of fourth and eighth graders. TIMSS currently tests mathematics and science achievement of U.S. 4th- and 8th-grade students compared to that of students in other countries. TIMSS data have been collected in 1995, 1999, 2003, and 2007.

The 2007 test is the fourth in a cycle of internationally comparative assessments dedicated to improving teaching and learning in mathematics and science for students around the world. Carried out every four years in fourth and eighth grades, TIMSS provides data about trends in mathematics and science achievement over time. Thirty-six countries or educational jurisdictions participated at grade four in 2007, while 48 participated at grade eight. More than 60 countries and jurisdictions, including the United States, will participate in TIMSS 2011 (*see table 1–2 on page 11–14*).

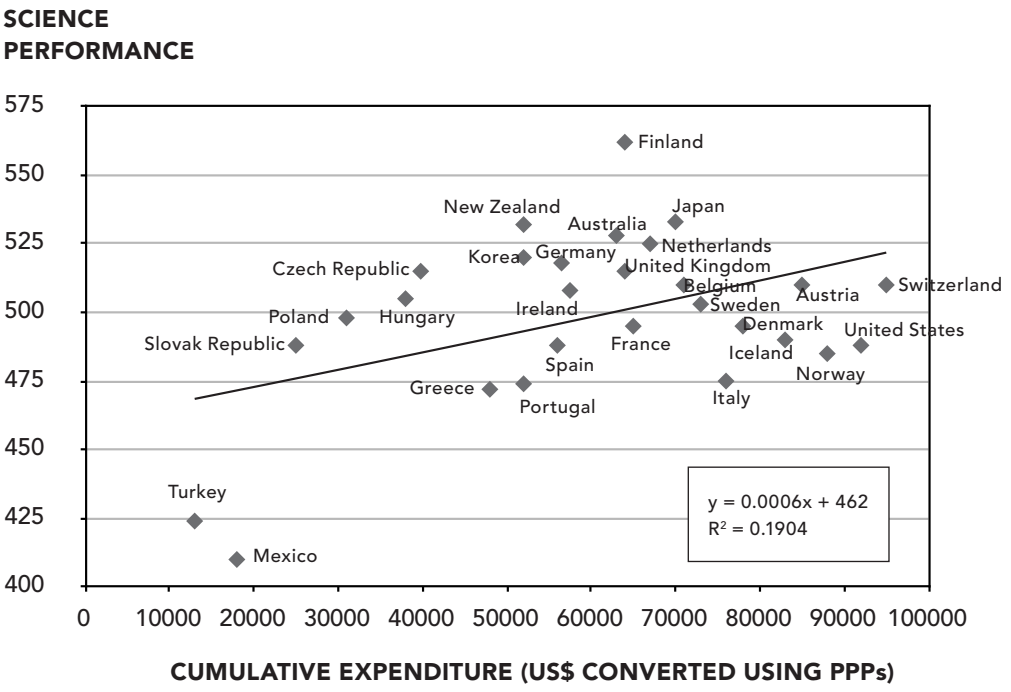
The Programme for International Student Assessment (PISA) is conducted by the Organization for Economic Co-operation and Development (OECD) and is an internationally standardized assessment that was developed by participating countries and administered to 15-year-olds. The 2006 PISA survey assessed the knowledge and skills of 15-year-olds in 57 countries, covering 87 percent of the world economy (*see table 3 on page 15–18*). While the scores of U.S. students have remained almost stagnant in the last few assessments, other countries have surpassed the United States in achievement. In 2006, 28 countries, including 20 in Europe, ranked above the United States in science performance.

An interesting component of the PISA data is the analysis of school spending in relation to performance (*see figure 4 on page 10*). Educational spending does have an affect on performance, though it only accounts for roughly 20 percent of the variability between countries. The United States spends the most per student on education, but performs worse than many countries that spend significantly less, including Finland and Korea. This difference may be accounted for by looking at how countries spend their money. U.S. funding goes primarily to lowering class sizes, while Korea, for example, has sacrificed small classes and invested more in teachers, giving them higher salaries and creating a good working environment with professional development opportunities and ample time for instruction and planning. While small classes are beneficial, policymakers must choose from a variety of policy options and the

Korean and Finnish experience suggest that investing in teachers may be even more cost-effective.

The countries with the best scores on the PISA have clearly defined and challenging universal standards, along with individual school autonomy. This approach is emulated in most European systems, which have centralized standards for how students should perform in each grade level, but give schools discretion with their curriculum, budget, organization, hiring, and teaching decisions. The United States, on the other hand, lacks universal standards and also has a much greater degree of local control than other countries, leading to both widespread variability in student learning outcomes and lower performance. Top-performing countries also succeed in attracting great teachers to the profession, in providing them with a supportive working environment, and in holding teachers accountable through various methods beyond student test scores.

FIGURE 4: COMPARISON OF SCHOOL SPENDING AND PISA TEST RESULTS



Source: Organization for Economic Co-operation and Development

TABLE 1: TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY AVERAGE — MATHEMATICS SCORES OF FOURTH- AND EIGHTH-GRADE STUDENTS, BY COUNTRY: 2007

FOURTH GRADE		EIGHTH GRADE	
COUNTRY	AVERAGE SCORE	COUNTRY	AVERAGE SCORE
TIMSS scale average	500	TIMSS scale average	500
Hong Kong SAR[1]	607	Chinese Taipei	598
Singapore	599	Korea, Rep. of	597
Chinese Taipei	576	Singapore	593
Japan	568	Hong Kong SAR[1,4]	572
Kazakhstan[2]	549	Japan	570
Russian Federation	544	Hungary	517
England	541	England	513
Lativia[2]	537	Russian Federation	512
Netherlands[3]	535	**UNITED STATES[4,5]**	**508**
Lithuania[2]	530	Lithuania[2]	506
UNITED STATES[4,5]	**529**	Czech Republic	504
Germany	525	Slovenia	501
Denmark[4]	523	Armenia	499
Australia	516	Australia	496
Hungary	510	Sweden	491
Italy	507	Malta	488
Austria	505	Scotland[4]	487
Sweden	503	Serbia[2,5]	486
Slovenia	502	Italy	480
Armenia	500	Malaysia	474
Slovak Republic	496	Norway	469
Scotland[4]	494	Cyprus	465
New Zealand	492	Bulgaria	464
Czech Republic	486	Israel[7]	463
Norway	473	Ukraine	462
Ukraine	469	Romania	461
Georgia[2]	438	Bosnia and Herzegovina	456
Iran, Islamic Rep. of	402	Lebanon	449
Algeria	378	Thailand	441
Colombia	355	Turkey	432
Morocco	341	Jordan	427

El Salvador	330	Tunisia	420
Tunisia	327	Georgia[2]	410
Kuwait[6]	316	Iran, Islamic Rep. of	403
Qatar	296	Bahrain	398
Yemen	224	Indonesia	397
		Syrian Arab Republic	395
		Egypt	391
		Algeria	387
		Colombia	380
		Omen	372
		Palestinian Nat'l Auth.	367
		Botswana	364
		Kuwait[5]	354
		El Salvador	340
		Saudi Arabia	329
		Ghana	309
		Qatar	307

☐ Average score is higher than U.S. average score ($p < .05$)

☐ Average score is not measurably different from the U.S. average score ($p < .05$)

☐ Average score is lower than the U.S. average score ($p < .05$)

[1]Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.
[2]National Target Population does not include all of the international Target Population defined by the Trends in International Mathematics and Science Study (TIMSS).
[3]Nearly satisfied guidelines for sample participation rates only after substitute schools were included.
[4]Met guidelines for sample participation rates only after substitute schools were included.
[5]National Defined Population cover 90 percent to 95 percent of National Target Population.
[6]Kuwait tested the same cohort of students as other countries, but later in 2007, at the beginning of the next school year.
[7]National Defined Population covers less than 90 percent of National Target Population (but at least 77 percent).

NOTE: Countries are ordered by 2007 average score. The tests for significance take into account the standard error for the reported difference. Thus, a small difference between the United States and one country may be significant while a large difference between the United States and another country may not be significant. The standard errors of the estimates are shown in table E-1 and E-2 available at http://nces.ed.gov/pubsearch/pubinfo.asp?pubid=2009001.

Source: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

TABLE 2: TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY AVERAGE — AVERAGE SCIENCE SCORES OF FOURTH- AND EIGHTH-GRADE STUDENTS, BY COUNTRY: 2007

FOURTH GRADE		EIGHTH GRADE	
COUNTRY	AVERAGE SCORE	COUNTRY	AVERAGE SCORE
TIMSS scale average	500	TIMSS scale average	500
Singapore	587	Singapore	567
Chinese Taipei	557	Chinese Taipei	561
Hong Kong SAR[1]	554	Japan	554
Japan	548	Korea, Rep. of	553
Russian Federation	546	England	542
Lativia[2]	542	Hungary	539
England	542	Czech Republic	539
UNITED STATES[3,4]	**539**	Slovenia	538
Hungary	536	Hong Kong SAR[1,3]	530
Italy	535	Russian Federation	530
Kazakhstan[2]	533	**UNITED STATES[3,4]**	**520**
Germany	528	Lithuania[2]	519
Australia	527	Australia	515
Slovak Republic	526	Sweden	511
Austria	526	Scotland[3]	496
Sweden	525	Italy	495
Netherlands	523	Armenia	488
Slovenia	518	Norway	487
Denmark[3]	517	Ukraine	485
Czech Republic	515	Jordan	482
Lithuania[2]	514	Malaysia	471
New Zealand	504	Thailand	471
Scotland[3]	500	Serbia[2,4]	470
Armenia	448	Bulgaria	470
Norway	477	Israel[7]	468
Ukraine	474	Bahrain	467
Iran, Islamic Rep. of	436	Bosnia and Herzegovina	466
Georgia[2]	418	Romania	462
Colombia	400	Iran, Islamic Rep. of	459
El Salvador	390	Malta	457
Algeria	354	Turkey	454

Kuwait[6]	348	Syrian Arab Republic	452
Tunisia	318	Cyprus	452
Morocco	297	Tunisia	445
Qatar	294	Indonesia	427
Yemen	197	Oman	423
		Georgia[2]	421
		Kuwait[6]	418
		Colombia	417
		Lebanon	414
		Egypt	408
		Algeria	408
		Palestinian Nat'l Auth.	404
		Saudi Arabia	403
		El Salvador	387
		Botswana	355
		Qatar	319
		Ghana	303

☐ Average score is higher than U.S. average score ($p < .05$)

☐ Average score is not measurably different from the U.S. average score ($p < .05$)

☐ Average score is lower than the U.S. average score ($p < .05$)

In 2007, the average score of U.S. fourth-graders was 539 and the average score of U.S. eighth-graders was 520, compared to the TIMSS scale of 500 at each grade level.

At grade four, the average U.S. science score was higher than those in 25 of the 35 countries, lower than the average scores in 4 countries (all of them Asia), and not measurably different from from the average scores of students in the remaining 6 countries.

At grade eight, the average U.S. science score was higher than those in 35 of the 47 other countries, lower than in 9 countries (all located in Asia or Europe), and not measurably different from the average scores in the other 3 countries.

[1]Hong Kong is a Special Administrative Region (SAR) of the People's Republic of China.
[2]National Target Population does not include all of the international Target Population defined by the Trends in International Mathematics and Science Study (TIMSS).
[3]Met guidelines for sample participation rates only after substitute schools were included.
[4]National Defined Population cover 90 percent to 95 percent of National Target Population.
[5]Nearly satisfied guidelines for sample participation rates only after substitute schools were included.
[6]Kuwait tested the same cohort of students as other countries, but later in 2007, at the beginning of the next school year.
[7]National Defined Population covers less than 90 percent of National Target Population (but at least 77 percent).

NOTE: Countries are ordered by 2007 average score. The tests for significance take into account the standard error for the reported difference. Thus, a small difference between the United States and one country may not be significant while a large difference between the United States and another country may not be significant. The standard errors of the estimates are shown in table E-1 and E-2 available at http://nces.ed.gov/pubsearch/pubinfo.asp?pubid=2009001.

Source: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2007.

TABLE 3: PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT — AVERAGE SCORES OF 15-YEAR-OLD STUDENTS ON COMBINED SCIENCE LITERACY SCALE AND SCIENCE LITERACY SUBSCALES, BY JURISDICTION: 2006

COMBINED SCIENCE LITERACY SCALE			
JURISDICTION	SCORE	JURISDICTION	SCORE
OECD average	500		
OECD JURISDICTION		NON- OECD JURISDICTION	
Finland	563	Hong Kong-China	542
Canada	534	Chinese Taipei	532
Japan	531	Estonia	531
New Zealand	530	Liechtenstein	522
Australia	527	Slovenia	519
Netherlands	525	Macao-China	511
Korea, Republic of	522	Croatia	493
Germany	516	Latvia	490
United Kingdom	515	Lithuania	488
Czech Republic	513	Russian Federation	479
Switzerland	512	Israel	454
Austria	511	Chile	438
Belgium	510	Republic of Serbia	436
Ireland	508	Bulgaria	434
Hungary	504	Uruguay	428
Sweden	503	Jordan	422
Poland	498	Thailand	421
Denmark	496	Romania	418
France	495	Republic of Montenegro	412
Iceland	491	Indonesia	393
UNITED STATES	**489**	Argentina	391
Slovak Republic	488	Brazil	390
Spain	488	Colombia	388
Norway	487	Tunisia	386
Luxembourg	486	Azerbiajan	382
Italy	475	Qatar	349
Portugal	474	Kyrgyz Republic	322
Greece	473		
Turkey	424		
Mexico	410		

SCIENCE LITERACY SUBSCALES

IDENTIFYING SCIENTIFIC ISSUES

JURISDICTION	SCORE	JURISDICTION	SCORE
OECD average	499		
OECD JURISDICTION		NON- OECD JURISDICTION	
Finland	555	Hong Kong-China	528
New Zealand	536	Liechtenstein	522
Australia	535	Slovenia	517
Netherlands	533	Estonia	516
Canada	532	Chinese-Taipei	509
Japan	522	Croatia	494
Korea, Republic of	519	Macao-China	490
Ireland	516	Latvia	489
Belgium	515	Lithuania	476
Switzerland	515	Russian Federation	463
United Kingdom	514	Israel	457
Germany	510	Chile	444
Austria	505	Republic of Serbia	431
Czech Republic	500	Uruguay	429
France	499	Bulgaria	427
Sweden	499	Thailand	413
Iceland	494	Romania	409
Denmark	493	Jordan	409
UNITED STATES	**492**	Columbia	402
Norway	489	Republic of Montenegro	401
Spain	489	Brazil	398
Portugal	486	Argentina	395
Poland	483	Indonesia	393
Luxembourg	483	Tunisia	384
Hungary	483	Azerbiajan	353
Slovak Republic	475	Qatar	352
Italy	474	Kyrgyz Republic	351
Greece	469		
Turkey	427		
Mexico	421		

☐ Average score is higher than U.S. average

☐ Average score is not measurably different from the U.S. average

☐ Average score is lower than the U.S. average

SCIENCE LITERACY SUBSCALES — CONTINUED

EXPLAINING PHENOMENA SCIENTIFICALLY

JURISDICTION	SCORE	JURISDICTION	SCORE
OECD average	500		
OECD JURISDICTION		NON- OECD JURISDICTION	
Finland	566	Hong Kong-China	540
Canada	531	Chinese-Taipei	545
Czech Republic	527	Estonia	541
Japan	527	Slovenia	523
New Zealand	522	Macao-China	520
Netherlands	522	Liechtenstein	516
Australia	520	Lithuania	494
Germany	519	Croatia	492
Hungary	518	Latvia	486
United Kingdom	517	Russian Federation	483
Austria	516	Bulgaria	444
Korea, Republic of	512	Israel	443
Sweden	510	Republic of Serbia	441
Switzerland	508	Jordan	438
Poland	506	Chile	432
Ireland	505	Romania	426
Belgium	503	Uruguay	423
Denmark	501	Thailand	420
Slovak Republic	501	Republic of Montenegro	417
Norway	495	Azerbiajan	412
Spain	490	Indonesia	395
Iceland	488	Brazil	390
UNITED STATES	**486**	Argentina	386
Luxembourg	483	Tunisia	383
France	481	Colombia	379
Italy	480	Qatar	356
Greece	476	Kyrgyz Republic	334
Portugal	469		
Turkey	423		
Mexico	406		

SCIENCE LITERACY SUBSCALES — CONTINUED

USING SCIENTIFIC EVIDENCE

JURISDICTION	SCORE	JURISDICTION	SCORE
OECD average	500		
OECD JURISDICTION		NON- OECD JURISDICTION	
Finland	567	Hong Kong-China	542
Japan	544	Liechtenstein	535
Canada	542	Chinese-Taipei	532
Korea, Republic of	538	Estonia	531
New Zealand	537	Slovenia	516
Australia	531	Macao-China	512
Netherlands	526	Latvia	491
Switzerland	519	Croatia	490
Belgium	516	Lithuania	487
Germany	515	Russian Federation	481
United Kingdom	514	Israel	460
France	511	Chile	440
Ireland	506	Uruguay	429
Austria	505	Republic of Serbia	425
Czech Republic	501	Thailand	423
Hungary	497	Bulgaria	417
Sweden	496	Romania	407
Poland	494	Republic of Montenegro	407
Luxembourg	492	Jordan	405
Iceland	491	Indonesia	386
Denmark	489	Argentina	385
UNITED STATES	**489**	Colombia	383
Spain	485	Tunisia	382
Slovak Republic	478	Brazil	378
Norway	473	Azerbiajan	344
Portugal	462	Qatar	324
Italy	467	Kyrgyz Republic	288
Greece	465		
Turkey	417		
Mexico	402		

Source: Organization for Economic Cooperation and Development (OECD), Program for International Student Assessment (PISA), 2006.

RISING ABOVE THE GATHERING STORM

During President Bush's second term, congressional leaders and the business community emphasized the importance of science, technology, engineering, and mathematics (STEM) education. At the urging of key congressional leaders, the National Academies formed the Committee on Prospering in the Global Economy of the 21st Century (often known as the Augustine Committee after its chair, Norman Augustine, former CEO of Lockheed Martin) to study how to strengthen the U.S. innovation system.

Congressional and business leaders spoke with President Bush about the forthcoming report and urged him to support its anticipated conclusions. The result: in his 2006 State of the Union Address, President Bush broadly endorsed an emphasis on increased funding for physical research and strengthening mathematics and science education at all levels. In 2007, the National Academies issued the Augustine Commission report, *Rising Above the Gathering Storm* that formally endorsed increased funding for basic research with special attention to the physical sciences and strengthening mathematics and science education. Bart Gordon, chair of the House Committee on Science and Technology working with strong bi-partisan support, turned the report into the America Competes Act that was eventually signed by President Bush. Funding was stalled due to congressional differences over the broader budget but was included in the American Recovery and Reinvestment Act of 2009 (often referred to as the stimulus bill). The House has passed a reauthorization of the America Competes Act and the bill is awaiting Senate floor action.

Parallel to the America Competes Act, forty-eight states, two territories, and the District of Columbia came together to work on national standards for mathematics and English-language arts. They reported in June 2010 and by August 2010 thirty-three states and the District of Columbia had adopted the standards. They do not prescribe a curriculum or a specific education philosophy. Rather the standards spell out what students should know at different points in their development.

The Common Core State Standards Initiative is a state-led effort coordinated by the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO). The NGA Center and the CCSSO received tens of thousands of comments on the standards during two public comment periods. Comments, many of which helped shape the final version of the standards, came from teachers, parents, school administrators and other citizens concerned with education policy. An advisory group also provided advice and guidance to shape the initiative. Members of this group include experts from Achieve, Inc., ACT, the College Board, the National Association of State Boards of Education, and the State Higher Education Executive Officers.

While always active at a state or local level, business is also taking another step toward a more concerted effort in education. In 2010, an alliance of business

associations established the Business and Industry STEM Education Coalition, which aims to boost American competitiveness by promoting STEM education. The coalition is headed by Rick Stephens, Senior Vice President, Human Resources and Administration, The Boeing Company.

EINSTEIN FELLOWS

Since the program's founding in 1990, the Einstein Fellows have been involved in education reform in the classroom, during their time in Washington, and after they leave the teaching profession. Support to initiate an Albert Einstein Congressional Fellowship program in 1990 was provided through a grant to the Triangle Coalition from the John D. and Catherine T. MacArthur Foundation with partial matching funds from other sources. In the spring of 1990, invitations to apply for the Congressional Fellowships were sent to outstanding teachers, primarily those who had received Presidential Awards for Excellence in Mathematics or Science Teaching. Beginning in September 1990 and every year since, teachers have been selected to leave their classrooms to come to Washington, D.C. to contribute to the education dialogue and education policy through their work with congressional committees, congressional offices, and federal agencies.

In October 1994 President Clinton signed into law a bill establishing an expanded Albert Einstein Distinguished Educator Fellowship program to be administered by the Department of Energy. The program expanded to include twelve fellows per year. Four of them were to serve in the Congress and the remaining eight in several government agencies. Since 1994, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, the National Institutes of Health, the National Science Foundation, the Department of Education, and the National Institute of Standards and Technology have helped fund fellows for their own agencies. The Triangle Coalition for Science and Technology Education continues to provide administrative support for the program.

The Einstein Fellows have been effective partners providing the Congress and federal agencies a classroom, school, and state perspective regarding the impact of federal STEM education policies and programs on K–12 students.

The fellows have been identified as outstanding teachers, but there is so much more that invests their classroom experiences with a caring dedication not only to their profession, but to their charges. They focus on the classroom with a wide variety of instructional strategies, but also are concerned about systemic strengths and weaknesses. They are significant leaders in their profession and play active roles in professional associations, with many serving as mentors for new staff either in formal or informal settings.

For several years, the Wilson Center has met with different cohorts of Einstein Fellows. The Center's Program on America and the Global Economy does extensive work on education and training as part of its work on the long-run economic future of the country. The Einstein Fellows have been an invaluable source of ideas, proposals for conferences, and what initiatives we should pursue.

They play that same role on the Hill and in the Executive branch — being a source of deep experience that can be brought to bear on current or newly proposed programs. At the same time, they gain a deeper understanding of how the national government, and more broadly, how Washington works. Many go home to be even more effective in their local and/or state school systems. Some stay in Washington and help political leaders and policy analysts understand the in-the-trenches reality of education. One is running for Congress.

THE 20TH ANNIVERSARY

It was a pleasure to have welcomed the Einstein Fellows to their 20th anniversary. Beyond the inherent celebratory nature of reunions, the two-day conference focused on key issues in education with a goal of developing specific recommendations for a Congress that is actively engaged in re-writing the ESEA and the America Competes Act. Like old Washington hands, they put their key recommendations on a single page.

We know we can look forward to working with and learning from the Einstein Fellows as we continue our own work on education.

CONFERENCE REPORT

On June 28–29, the Program for America and the Global Economy (PAGE) hosted the 20th Anniversary for the Einstein Fellowship at the Woodrow Wilson International Center for Scholars. The two-day session consisted of a series of panel and breakout discussions. The agenda was as follows:

DAY 1 — JUNE 27, 2010

6:30 – 9:00 PM
Einstein Fellowship 20th Anniversary Welcome Reception

DAY 2 — JUNE 28, 2010

Breakfast
Wilson Center: 6th Floor

9:00 – 10:30 AM
Introductory Session
Wilson Center: The Joseph H. and Claire Flom Auditorium (6th Floor)

Break
10:45 AM – 12:15 PM

STEM Education Policy Panel Discussion
Wilson Center: The Joseph H. and Claire Flom Auditorium (6th Floor)

Lunch
Wilson Center: 6th Floor Dining Room

1:30 – 3:00 PM
1st Block of Breakout Sessions:

National Standards and STEM Education
Wilson Center: 4th Floor Conference Room

Post-Fellowship Experiences
Wilson Center: 5th Floor Conference Room

The Einstein Effect: How Fellows Impact Educational Programs
Wilson Center: Moynihan Boardroom (6th Floor)

6:00 – 9:00 PM
Albert Einstein 20th Anniversary Congressional Reception
2168 Rayburn House Office Building, U.S. Capitol

DAY 3 — JUNE 29, 2010

Breakfast
Wilson Center: 6th Floor

9:00 – 10:30 AM

2nd Block of Breakout Sessions:

STEM Education and Equity: Improving Access and Success for Underrepresented Students
Wilson Center: 5th Floor Conference Room

Realizing the Power of the Einstein Fellowship Network
Wilson Center: 4th Floor Conference Room

The Educator in the Albert Einstein Distinguished Educator Fellow
Wilson Center: Moynihan Boardroom (6th Floor)

Break

10:45 AM – 12:15 PM
STEM Education and the Reauthorization of ESEA
Wilson Center: The Joseph H. and Claire Flom Auditorium (6th Floor)

Lunch
Wilson Center: 6th Floor Dining Room

1:30 – 3:00 PM **Closing Session**
Wilson Center: The Joseph H. and Claire Flom Auditorium (6th Floor)

3:15 PM **Group Photo**

DAY 4 — JUNE 30, 2010

Capitol Hill and Agency Visits

INTRODUCTORY SESSION

MODERATOR:
Kathleen M. Gorski, 2007–2008 Einstein Fellow, National Science Foundation

PANELISTS:
Vance Ablott, Executive Director, Triangle Coalition for Science and Technology Education

Kent Hughes, Director, Program on America and the Global Economy Woodrow Wilson International Center for Scholars

Luke Laurie, 2006–2007 Einstein Fellow, Office of Congressman Michael Honda

Art Lebofsky, 1990–1991 Einstein Fellow, Office of Senator Jeff Bingaman

Brian O'Donnell, Program Manager, Office of Workforce Development for Teachers and Scientists, U.S. Department of Energy

Ed Potosnak, 2007–2009 Einstein Fellow, Office of Congressman Michael Honda

The Introductory Session for this summit was held on the morning of June 28 and was facilitated by 2007–2008 fellow, **Kathleen M. Gorski**.

Vance Ablott, of the Triangle Coalition, expressed gratitude to the E20 Planning Committee for coordinating the Anniversary Summit and to the Department of Energy, the managing agency for the Einstein Fellowship program for its consistently strong investment in the Einstein Fellows. Strong thanks were also given to **Kent Hughes** and the Wilson Center for providing the Einstein Fellows the opportunity to share their experiences with a broader audience and for providing a platform from which to make a public statement about the nature and the future of STEM education issues.

Brian O'Donnell, of the U.S. Department of Energy, credited the fellows with their commitment and contribution to education. He also hoped that the conference would capitalize on the power and energy of the fellows and work to extend the power of the fellowship.

Many of the panelists highlighted the qualities that make Einstein teachers unique, special and united. **Ed Potosnak**, 2007–2009 fellow, noted that Einstein Fellows are generally not only frustrated with the status quo and curious about how to effectively cause change, but also committed to taking concrete action to improve education. **Luke Laurie**, 2006–2007 fellow, commented that the fellows shared the characteristics of being highly educated, experienced, and also full of useful opinions. Laurie stated that the fellows are all effective leaders who have made real changes in the classroom, contributed to legislation, and influenced policymakers and agency STEM initiatives.

Many of the panelists recognized that the nation needs teachers with experience influencing policy. **Art Lebofsky**, 1990–1991 fellow, illustrated this point with a colorful, hands-on demonstration. Standing on the conference table with a bright orange slinky, Lebofsky asked the audience to predict what would happen if he let the slinky fall to the floor. Given the different background experiences in the audience, there were a wide variety of opinions about how the slinky would fall. After allowing the slinky to fall, he drew an analogy to the experience of the Einstein Fellows, Lebofsky noted that the experience of teaching in the classroom allows one to better predict which types of new policies can most effectively improve education.

The panelists also emphasized the importance of leveraging this opportunity to achieve maximum concrete change. After outlining the amazing opportunity presented by having so many educational leaders together contemplating similar issues, Laurie stressed the importance of not forgetting great ideas by letting them fall through the cracks.

Q. *What will happen with the one page of policy suggestions?*

A. Laurie stated that the suggestions will be distributed when the fellows go to Capitol Hill on Wednesday. The policy suggestions will be given to the appropriate staffers in both Member offices and committees.

Ed Potosnak

STEM EDUCATION POLICY PANEL DISCUSSION

MODERATOR:
Art Lebofsky, 1990–1991 Einstein Fellow, Office of Senator Jeff Bingaman

PANELISTS:
Mike Lach, 1999–2000 Einstein Fellow, Office of Congressman Vernon Ehlers

Kristina Peterson, 2009–2010 Einstein Fellow, House Committee on Education and Labor

Vance Ablott, Executive Director, Triangle Coalition for Science and Technology Education

Luke Laurie, 2006–2007 Einstein Fellow, Office of Congressman Michael Honda

Jodi Peterson, Assistant Executive Director, Legislative and Public Affairs, National Science Teachers Association, and Co-Chair, STEM Education Coalition

Lynne Campbell, 2007–2008 Einstein Fellow, House Committee on Education and Labor

Einstein Fellows discussed current Science, Technology, Engineering and Mathematics (STEM) education policy developments and proposals, including changes implemented and proposed by the Obama administration, legislation pending in the House and Senate, and new ideas for improving STEM education. The session looked at how substantive STEM recommendations could be made applicable from a policy stand point. **Art Lebofsky**, 1990–1991 fellow, moderated the panel and noted that now is the time for STEM education. Math is a language, English is a language, he asserted, and science gives us something to talk about.

Mike Lach, 1999–2000 fellow, noted that it is important to articulate how various agencies and departments can work together on STEM education. In general STEM education reform has not been driven by teachers and school systems, but rather by outside entities such as universities and businesses. Although it is helpful to have the outside pressure to improve STEM education, it is imperative to include what is happening at the school level.

Kristina Peterson, 2009–2010 fellow, noted that there are over 60 million students in the United States, allowing for plenty of sustainable classroom, and non-classroom careers in STEM education. The pressing problem of the achievement gap is also an issue of utmost concern, currently some statistics point to a 30-point gap between working class students, and

more affluent students — STEM can be used to close this achievement gap. The United States has stagnated in recent years compared to foreign nations who have been closing the gap and raising the bar, focusing on teachers and STEM education.

The public mood on STEM, and the progress of passing substantive education reform in Congress was also a topic of discussion. **Vance Ablott**, of the Triangle Coalition, pointed out that in light of several non-education issues on the national stage such as immigration and energy, immediate STEM education reform is not likely. The prospect of a long term shift in the nation's thought process on education depends on a STEM literate population. This change in the nation's perception of STEM depends on how the public message can be crafted, and demonstrating the economic benefits of reform.

Luke Laurie, 2006–2007 fellow, expressed concern that if national science curriculum standards and K–6 science assessments are implemented, teachers will need sufficient resources and significant preparation and planning time to effectively make this transition. Laurie called for a bold, clear national policy, rather than piecemeal grants to improve science instruction. Many of the participants concurred that, while there has been a nationwide increase in emphasis on mathematics and reading in the elementary grades, there has been a concomitant reduction in emphasis on science instruction, impacting both student preparation and success in STEM subjects in middle and high school, and beyond.

The No Child Left Behind initiative's focus at the elementary level on mathematics and language arts, while reducing time spent on science instruction, is arguably being currently addressed by congressional action and administration efforts. **Jodi Peterson**, of the STEM Education Coalition, noted that the current administration's "Educate to Innovate" program emphasizes math and science education as a priority. She stressed that this is an exciting time for science education.

Lynne Campbell, 2007–2008 fellow, suggested that everyone should be involved in the policy process. Community involvement was also argued as key, "with the intent being how to take classroom knowledge into the policy and broader community."

Q: *Has there ever been a discussion on adjusting the school year?*

A: Panelists stated that there have been discussions and it has been considered, and it was noted that the administration has also looked into extending learning time. In terms of STEM, one panelist noted that this has not been a topic for serious discussion. One panelist argued that the economic condition of many school districts makes extending the school day or year problematic.

Q: *How often do those making education policy in Washington, D.C. visit the schools, especially troubled ones?*

A: One panelist noted that the fellows themselves take part in visiting local schools, and education staffers in the congress take part in those school visits as well. The D.C. school system is the most visited in the nation. This is due to its proximity to those who make policy decisions on education and in addition it is the only school district in the United States that answers to Congress.

From left: Art Lebofsky, Lynne Campbell, Vance Ablott, and Mike Lach

LUNCH REMARKS BY CONGRESSMAN RALPH REGULA

Former Congressman **Ralph Regula** centered his remarks on the theme that the future is dependent upon today's education. He pointed to Thomas Friedman's book "The World is Flat" that stresses how education is necessary for American progress as well as *Fortune* magazine's feature on Warren Buffet and Bill Gates who agree that education is a number one goal.

Regula referenced the 2010 Census as a reason to prioritize education; with a diverse population, education is an equalizer. A good education is also necessary to provide leadership. He suggested that some of the defense budget should eventually go to education, which is just as important to national defense as arms spending.

Regula noted that during his time as a Public Policy Scholar at the Wilson Center in 2009, he was able to evaluate roughly twenty-four reports on education reform; the results showed that the structure is not as important as the teachers working within it. He also highlighted the need for teachers to get involved in the legislative process. It is absolutely necessary for educators to know their congressman, senator, and school board. He reminded the participants that the education system is a product of the legislative process and that it is just as important to influence the process at the local level as it is at the state or federal level.

Regula closed with highlighting the need for good administrators as well as good teachers. He emphasized that more programs are needed for effective administrators who ultimately set the attitude of the school.

Former Congressman Ralph Regula

Q. *One Fellow asked how do you get reform in such a complex political system?*

A. Regula addressed the teachers' concerns from a congressional perspective; he reminded participants that Congress is a circuitous yet still beautiful system, which receives input from many diverse sources, and takes time to make a consensus driven decision

NATIONAL STANDARDS AND STEM EDUCATION

FACILITATORS:
Tiah E. McKinney, 2006–2007 Einstein Fellow, National Science Foundation
David Kapolka, 2004–2005 Einstein Fellow, National Science Foundation

PANELISTS:
Kichoon Yang, Executive Director, National Council of Teachers of Mathematics (NCTM)

Thomas Keller, Senior Program Office, Board on Science Education, National Academy of Science

This break-out session, led by **Tiah E. McKinney**, 2006–2007 fellow, and **David Kapolka**, 2004–2005 fellow, tackled the issue of national standards and STEM education. It dealt with some of the important questions surrounding the topic, including the characteristics of a strong school, the role of international competitions, and the necessity of national standards.

Dr. Kichoon Yang, of the National Council of Teachers of Mathematics (NCTM), noted four key observations. First was the historical (and continuing) role of NCTM in the discussion surrounding a K–12 national curriculum. For example, a set of NCTM publications in 1989 are said to be one of the driving forces behind the movement for standards.

Yang's next observation addressed the obstacles that are posed by the tenth amendment, and whether the power to drive changes in instruction lies with the federal or state government. Although decisions regarding schools and education generally fall to the states, the federal government has been playing a more significant role, i.e. No Child Left Behind, and could potentially play an even greater one.

Third, he described the current decentralization of the K–12 system. There are over 15,000 independent school districts in the US each controlling their own curricula as well as the hiring and firing of teachers as they see fit. Moreover, academic requirements vary greatly; for example, only half of the states require three years of math education.

Lastly, he noted the role of international competition. The United States was ranked eleventh (out of 48 countries) in the Trends in International Math and Science Study (TIMSS) for grade four in 2007, and the Programme for International Student Assessment (PISA) ranked the United States twenty-fifth out of thirty countries. Dr. Yang suggested that the poor results could be linked to the absence of a national curriculum. In his opinion, equity and excellence, two notions that America normally sees as being at odds, must come together in order for the United States to make real progress in the twenty-first century.

The second expert, **Dr. Thomas Keller** of the National Academy of Science (NAS), outlined what is being done on the Conceptual Framework for New Science Education standards.. The project, which began in January 2010, uses the diverse expertise of an 18-person committee comprised of NAS members, national policymakers, and science educators, among others. The project is non-federal, apolitical, and is set to be released to the National Science Teachers Association (NSTA) in February or March of 2011.

In closing, each of the two experts offered a final comment. Yang stressed the point that national standards (especially for math education) are a necessary step but not a sufficient step. Keller ended by reminding the participants that beyond the federal level, each state will have to adapt the conceptual frameworks in science to fit the local conditions.

Q. *When talking about curriculum and national standards, why does the United States separate math and science?*

A. Yang and Keller acknowledged the inefficiencies of siloing the two subjects rather than integrating science and math as well as the necessity for students to understand the connections between the two. Specifically, Yang stated that NCTM and NSTA are contemplating a joint conference for a science and math integrated curriculum, and Keller pointed out the baby steps taken by NAS of including engineering and technology in the science standards conceptual framework.

Q. *What are the potential constraints of a national science curriculum?*

A. An audience member stressed that diverse thinkers offer better solutions and that a national curriculum for science may not be the best idea. For example, science must offer creative solutions to new problems. In turn, a framework (rather than specific national standards) may be better suited for teachers to use to create an innovative curriculum. Keller added that a framework is more effective since it allows different geographic areas to combine core ideas with the literacy and numeracy levels of their respective regions. Yang also agreed that science is less homogeneous than math, subsequently making it harder to create a national science curriculum.

Q. *How can American math and science education be more competitive on the world stage?*

A: Many countries, including South Korea, Japan, and Singapore utilize an integrated approach in teaching science and math. For example, students will take

multiple math and science courses simultaneously. The current linear sequence appears to be too compartmentalized; Carnegie units, better known as credit hours for colleges and universities, are no longer effective or telling enough. Another participant emphasized the need to learn from the Programme for International Student Assessment (PISA) results and consider what works outside of the United States; limited standards affect how good an education can be.

POST-FELLOWSHIP EXPERIENCES

FACILITATOR:
John Jackson, 2000–2002 and 2004–2006 Einstein Fellow, Division of Graduate Education and Division of Elementary, Secondary, and Informal Education, National Science Foundation

PANELISTS:
Cherlyn Anderson, 2007–2008 Einstein Fellow, Division of Research on Learning in Formal and Informal Settings, National Science Foundation

Barbara Houtz, 2005–2006 Einstein Fellow, National Institutes of Health

Melvina Jones, 2007–2008 Einstein Fellow, Education and Human Resources Directorate, National Science Foundation

Caryn Long, 2002–2003 Einstein Fellow, National Aeronautics and Space Administration

Mimi McClure, 2003–2005 Einstein Fellow, Division of Graduate Education, National Science Foundation

Ruth McDonald, 2007–2008 Einstein Fellow, Office of International Science and Engineering, National Science Foundation

Rhonda Spidell, 2005–2006 Einstein Fellow, Division of Earth Sciences, Directorate of Geosciences, National Science Foundation

Stephen Scannell, 2008–2009 Einstein Fellow, National Science Foundation

The Einstein Fellowship offers participants a unique, intellectual, and practical experience to become a more effective future leader. This session was led by **John Jackson**, 2000–2002 and 2004–2006 fellow. At a local level, many of the panelists described the increased attention they have given to influencing policy and procedures within individual schools and districts. **Cherlyn Anderson**, 2007–2008 fellow, noted that the conversation on education has not changed since her fellowship. However, she noted the emphasis on science education by the current administration shows promise for changing the conversation.

Ruth McDonald, 2007–2008 fellow, stressed the importance of putting localized pressure on principals to allow teachers to teach science. **Barbara Houtz**, 2005–2006 Einstein Fellow, recommended providing students and teachers with statistics that explain precisely how much more students with STEM backgrounds earn on average to more effectively encourage schools to adopt a more science-intensive education. **Mimi McClure**, 2003–2005 fellow, noted that before her fellowship, she often looked at science education from the middle school perspective; after her time in Washington she noted that we must look at it in much broader terms.

Caryn Long, 2002–2003 fellow, thought it was important for students to understand the cool and interesting side of science, as well as its real world application, by learning about recent discoveries at NASA, etc. She also encouraged fellow Einstein colleagues not to feel pressured to follow an administrative career path. She advised participants that teaching will always be extremely important and, if you want to teach, continue teaching.

Houtz agreed that it was important for Einstein Fellows to bring their newfound knowledge and expertise to local schools, but was frustrated that this process was sometimes hindered by resistant administrators. Houtz said that an unknown secret of the Einstein Fellowship is that often, when Einstein Fellows return to their communities, they are not always well received. She attributes this partly to the fact that Einstein Fellows tend to challenge the status quo, pushing people out of their comfort zones. On the other hand **Stephen Scannell**, 2008–2009 fellow, noted that some are warmly welcomed back and that their colleagues were highly receptive to advice.

The panelists also discussed their experiences with and the importance of influencing policy on the state and national level. While **Rhonda Spidell**, 2005–2006 fellow, has remained in the classroom, she also strives to leverage her experience in Washington to push through progressive policies. Houtz stressed the importance for experienced, influential individuals such as Einstein Fellows to also look beyond the local level to influence what happens in Washington.

Several panelists also noted that they had a more acute awareness of the importance of funding after having done the fellowship. Scannell noted that his primary struggle since finishing the fellowship has been securing adequate funding for the STEM initiatives he advocates. He recently had to turn down a generous grant because it was mainly focused on English and Math, while he thought the focus should be more on STEM. McDonald also acknowledged the importance of funding: since policy drives the funding from a federal level, the only way she has been able to increase funding for science has been through grants. Spidell agreed that funding was critical, and therefore stressed the importance of having a good assessment process to demonstrate which techniques and policies work so that money is spent most effectively.

Q: *Based on your post-fellowship experiences, how does your Einstein experience influence your current position?*

A: One panelist noted the importance of networking while a fellow and how beneficial that was as a bridge between her fellowship and her current position. Another noted that their superintendent planned strategically how the fellowship experience could benefit the district upon her return. However, some panelists stated that upon returning to either their old or a new position, they felt stereotyped by peers and supervisors. Because of their previous experience, many felt that by challenging the status-quo it made their peers from their local schools or departments flinch and feel uncomfortable, while others welcomed their experience and knowledge.

Q: *What approach and decision making process did you use regarding what to do after the fellowship ended?*

A: One panelist reflected on how they managed different offers while contemplating how to best use their fellowship experience. Many agreed that because of their advanced knowledge, especially in STEM education, they were asked to transition from educator to administrative positions where they were asked to formulate new models and techniques.

THE EINSTEIN EFFECT: HOW FELLOWS IMPACT EDUCATIONAL PROGRAMS

FACILITATORS:
Julie Angle, 2008–2009 Einstein Fellow, Office of Cyberinfrastructure, National Science Foundation
Jenelle Hopkins, 2004–2005 Einstein Fellow, Directorate for Geosciences, National Science Foundation

Since 1990, the Einstein Fellowship has placed many distinguished teachers in various positions across federal agencies and congressional offices. The discussion touched on what fellows can take from their experiences; consider what skills they adopted in their respective offices and agencies, and how they can best apply this learning in new opportunities, in policy development, and other educational development. Also discussed was advice from past fellows on their experiences and how future Einstein Fellows can best prepare for a fellowship.

The first issue discussed was how infrastructure and policy often fail to be applicable for the actual classroom. One fellow brought up the idea of facilitating a

re-think of teacher outreach through better professional development programs for teacher enrichment and the empowerment of teachers.

One of the facilitators discussed the issue of pre-Einstein Fellowship preparation, stressing that many fellows start the fellowship with little knowledge of their pending work. The idea of an "Einstein Fellows boot-camp" was proposed, allowing appropriate training for the fellowship; the two examples of how NSF and congressional fellowships could orient their new fellows were outlined. With regard to NSF fellowships, such a "boot-camp" would entail, how the NSF works on a day-to-day basis, and how one should work with grants. With regard to congressional fellowships, a new fellow should be briefed on the fast-pace of Capitol Hill, and how to best understand the legislative and policy process.

During the discussion, a number of past fellows revealed they were now at university level teaching, and compared the individualism of working in this academic environment to that of K–12 schooling. They went on to discuss the idea of how a teacher, turned professor, would best adapt to this new role.

Another aspect of the post-fellowship experience was how Einstein graduates could best influence public policy, on a local, state, or federal level. Ideally the school or the district office would highlight the Einstein Fellow, but, it may be necessary for past-fellows to market themselves and inform their district of how their experience can contribute to strengthening district schools. Fellows should educate their district as to what their fellowship entailed and how ideas gained from their time in Washington can best serve the local community's educational system.

It was unanimously agreed by those in attendance, that the Einstein Fellow's experience is invaluable, and such an experience should be put to use, and not wasted after the year or two is completed. The three core values—serve, learn, grow— as affirmed by all in the discussion, should remain of utmost importance before, during, and after the fellowship to best support the education reforms needed by both the local community and the nation at large.

Q. *How can former fellows remain involved in the education policy discussion?*

A. One panelist noted how important it is that all fellows know who their Representatives and Senators are, and to have conversations with these policy-makers. It is important to carry what we learn in Washington, back to our districts and use it to make progress.

STEM EDUCATION AND EQUITY: IMPROVING ACCESS AND SUCCESS FOR UNDERREPRESENTED STUDENTS

FACILITATORS:
Art Lebofsky, 1990–1991 Einstein Fellow, Office of Senator Jeff Bingaman
Tiah E. McKinney, 2006–2007 Einstein Fellow, National Science Foundation

PANELISTS:
Jerry Blow, former Senior Vice President, Global Payments Risk, Bank of America
Jason D. Lee, Executive Director, Detroit Area Pre-College Engineering Program
Jose Rico, Deputy Director, White House Initiative on Educational Excellence for Hispanic Americans
Andresse St. Rose, Research Associate, American Association of University Women
Cecelia Wright Brown, Assistant Professor, School of Information Arts & Technology, University of Baltimore and President, BEE Engineering Consulting, LLC

Minority and underrepresented students in the United States continue to have limited access to STEM education. For the United States to remain globally competitive, it is increasingly necessary to provide STEM education to those living in poverty and to minorities. **Jose Rico**, from the White House Initiative on Educational Excellence for Hispanic Americans, pointed out that for the United States to remain competitive, the number of students who have some kind of post high school degree will have to increase from 40 to 60 percent.

The panel which was led by **Art Lebofsky**, 1990–1991 fellow, and **Tiah E. McKinney**, 2006–2007 fellow, discussed pathways to improvement. It was widely agreed that increased funding for underrepresented groups is necessary. Several panelists discussed important funding grants and mechanisms that have been used to assist STEM projects. The panelists also concurred that it was crucial to get below the surface by engaging parents. **Dr. Cecelia Wright Brown**, from the University of Baltimore, advocated a type of all encompassing, 360 degree plan that simultaneously handled many deeper issues related to community, non-STEM subjects, parents, and the interconnections among these elements.

Jerry Blow, formerly of Bank of America, and one of Dr. Lebofsky's former pupils, stressed the importance of students having mentors. Identifying a key

individual who stays with the child through different phases of development can help overcome difficult obstacles, such as frequent moving. Mentors with a background similar to those of their students can also help these students overcome barriers to success by demonstrating that success with the perceived "disability" is a distinct possibility.

Jason D. Lee, from the Detroit Area Pre-College Engineering Program, encouraged helping students acquire more hands-on experiences to understand the real world importance of what they are learning. He described a particularly affective program that he is affiliated with, the Detroit Area Pre-College Engineering Program (DAPCEP), that strives to offer more hands-on, engaging exercises to its students. This particularly rigorous program that is 90 percent African-American, 5 percent Hispanic-American, and 50 percent female, offers high achieving underrepresented students opportunities to engage in high performance classes with low student-teacher ratios.

The panelists also discussed barriers to improvement. **Andresse St. Rose,** from the American Association of University Women, felt that identity issues can be a major problem for women and minorities. It is often the case, for example, that there is only one woman or minority student in STEM focused classes. St. Rose stressed the importance of helping these individuals overcome the feeling of being singled out and/or out of place.

Another barrier to success identified by several panelists was a lack of active and engaged school principals and administrations. Lee identified this, for example, as perhaps the primary obstacle to achieving DAPCEP initiatives.

The requirement of providing traceable data, by tracking and charting each student's progress from year to year, was also an important point of discision. While traceable data can be useful in determining which programs and policies are effective and should be funded and expanded, it is also highly expensive and time consuming. Lee described this dilemma as a choice between investing in accurate, traceable data, versus using limited resources to help improve the academic achievement of students. Wright noted that tracking students' progress can be particularly difficult when the students come from an urban environment in which they frequently move from one school or district to another.

Finally, the panelists discussed the issue of additional STEM requirements for STEM teachers. Because STEM teachers require more training than other teachers to be allowed to teach, it is more expensive to hire and train these teachers. Rico suggested replacing this requirement, for example, by hiring individuals with relevant professional field experience. This would not only reduce training costs, but also expose students to individuals with real world, applicable experiences.

Q: *What is the percentage of Latino's with a college degree?*

A: Thirteen percent, lowest percentage of any group. In thirty years, Latino's went from nine to thirteen percent. Furthermore only fifty percent of Latinos graduate from high school, with 11.5 million not graduating. The percentage of Latino teachers in public schools is seven percent, and lastly, if 4,000 male Latino teachers graduate and enter the world of education, it would double the current number.

Q: *Are there any recommendations regarding policy associated with students with disabilities?*

A: One panelist noted that new technologies can benefit students with disabilites. One panelist recommended having more help in the classroom, noting that teachers are often overwhelmed and have difficulties focusing on those with disabilities. A mentor or extra helper in the class can go a long way in benefiting both the teacher and student. Furthermore, creating effective partnerships with colleges to help bridge the gap between students with disabilities and overwhelmed teachers will benefit both sides.

REALIZING THE POWER OF THE EINSTEIN FELLOWSHIP NETWORK

FACILITATORS:
Kathleen Gorski, 2007–08 Einstein Fellow, National Science Foundation
Elizabeth Burck, 2006–07 Einstein Fellow, National Aeronautics and Space Administration

PANELISTS:
Della Cronin, Vice-President, Legislative and Public Affairs, Washington Partners, LLC.
Jay Labov, Advisor, Education and Communications, National Research Council's Center for Education, National Academy of Sciences
Jodi Peterson, Assistant Executive Director, Legislative and Public Affairs, National Science Teachers Association, and Co-Chair, STEM Education Coalition

The portfolio of a typical Einstein Fellow includes exceptional teaching credentials, documented classrooms successes, demonstrated leadership skills and

involvement with education on a local, state or national level. Those skills and talents, combined with the experience of the Einstein Fellowship, create a powerful educational resource that could be turned into a powerful association. That is the premise behind this session: sculpting the power of the fellowship network into an official Einstein Fellowship Alumni Association.

The goals of the Einstein Fellowship Alumni Association (EFAA) are to strengthen professional ties, not only within the fellowship, but also to STEM organizations, federal government agencies, and among the schools, districts and states represented by fellows. In addition, the EFAA would serve as a resource for professional STEM organizations, Triangle Coalition personnel, and incoming fellows. Promoting communication among and between fellows, recognizing the professional accomplishments of individual fellows, building loyalty to the program and generally promoting the Einstein Fellowship program are other goals of the proposed organization.

This session opened the discussion for organizing and utilizing such an association. To begin, the three panelists offered their insights and guidance. Labov stressed that with STEM education, it is necessary to anticipate the future of policy; the association would be a good way to stay current with national and state politics and policies. He also offered the National Academies Teacher Advisory Council (TAC) as an organization to which the EFAA could look for inspiration. The TAC essentially connects teachers to policymakers; the TAC model would be one to examine and possibly emulate. Peterson underscored the need for teachers to take an active role in policymaking, and pointed out that the EFAA would be a venue to voice the opinions of fellows and other teachers. The importance of collaborating with other groups was emphasized. Peterson pointed to the success of the STEM Education Coalition. Working as a collaboration of many organizations, the coalition has had significant impact on many areas of STEM education. Cronin advised the group that a specific focus and specific expertise would be essential to success. She stressed that the relatively small size of the alumni association, compared to other STEM-focused or teacher focused organizations, could be advantageous in serving as a resource for congress.

Those in attendance offered many suggestions for EFAA involvement. It was recommended that the EFAA take on the role as a liaison between teachers and other organizations, such as governmental agencies and offices, local and state schools boards, and state departments of education. Participants in the session also pointed out that it was important to think of connections beyond the government, such as business roundtables and foundations. Additionally, valuable contributions could be made to pre-service teacher programs. The EFAA could also help in-service teachers understand that their voices can be heard, and could assist in making that happen. It was also suggested that outreach to administrators would be vital in campaigning for effective STEM education.

The strength of the Einstein Fellowship Alumni Association will be its reliance on teacher voice. The voice in this case would be that of outstanding STEM educators from across the United States whose professional credentials also include contributing to education on the federal level.

The session concluded with the call for a volunteer committee to be formed within the next few months to begin the organizational process

THE EDUCATOR IN THE ALBERT EINSTEIN DISTINGUISHED EDUCATOR FELLOW

FACILITATORS:
Jenelle Hopkins, 2004–2005 Einstein Fellow, Directorate for Geosciences, National Science Foundation
David Kapolka, 2004–2005 Einstein Fellow, Elementary, Secondary, and Informal Education, National Science Foundation
Nicole LaDue, 2007–2009 Einstein Fellow, Directorate for Geosciences, National Science Foundation

Fellows utilized this session to discuss their ideas and experiences gained from their fellowship and how that can best improve and enlighten the national dialogue about STEM education. The diverse teaching backgrounds of the fellows, with experience with elementary and secondary students in science, technology, engineering, and mathematics, provided them with the wealth of experience to successfully complete their fellowship. The discussion session was divided into three sub-groups, focusing on student learning, the teaching environment, and teacher professional growth.

The student learning sub-group, lead by **Jenelle Hopkins**, 2004–2005 fellow, outlined the methods used to insure quality student learning. The group endorsed the importance of the 'affective' domain, and the belief that teachers should encourage eager students, allowing them to develop an intrinsic motivation for learning. Creative student learning can be aided with available grants and the fellows encouraged teachers to seek support from organizations like the Center for the Improvement of Student Learning, the NEA Foundation, and the Course Student Learning Outcomes Grant. 'Brain-based' research focuses on the 'cognitive' domain and can help teachers know when students are developmentally ready for concepts. Unfortunately scientific misconceptions are often introduced early. Attention to the 'behavioral' domain encourages the active engagement of students. This can be achieved through problem-based learning, service learning, inquiry, and differentiated instruction. The fellows discussed having students teach

students by bringing older children into classrooms, or science laboratories, and demonstrating their knowledge to younger pupils.

The teaching environment sub-group organized by **Nicole LaDue**, 2007–2009 fellow, focused on important aspects of the teaching environment that should be in place for teachers to do their best work. Treating teachers as experts was the first theme of the discussion. While legislation is often well intentioned, there often is not much thought given to the process of how reform would be implemented. As reaffirmed by a fellow, teachers are uniquely skilled in how to go about building programs, including the use of mini-grant programs offered through local educational foundations. This is often an overlooked resource.

The group also emphasized empowering teachers to determine what kind of professional development they need to support student learning. A positive learning environment is hard to achieve, without a solid teaching environment. One fellow noted that good teaching involves an active, hands-on environment, however this is often overlooked by administrators. Another stressed that a positive learning environment and other quality factors cannot be legislated, but also noted that policies do impact how teachers can work to create a learning environment. The fellows suggested that recorded models for state and school administrators may help them recognize best teaching practices. For example, the use of National Council of Teachers of Mathematics videos on teacher training has been an asset to administrator training. One fundamental issue raised was that there is no picture of what a "good" classroom looks like. The reliance on test scores was raised as a problem within the teaching environment. It was argued that when there is a lot of stress around testing, the nervousness of the students can skew the testing results. Focus on scores and grades that are not reliably reflective of student ability often leads to muddled teaching methods.

David Kapolka, 2004–2005 fellow, moderated the discussion for the teacher professional growth sub-group, primarily looking at appropriate, proven methods (and programs) that best compliment professional development. One fellow stressed the importance of sustaining institutions that have proven successful, such as the National Science Foundation. Another noted that good professional development materials are out there but not published where teachers are likely to read them. The need for shared databases for various institutes and programs was proposed, where past Einstein Fellows, and presidential awardees could share professional ideas. One proposal was to focus on the entire school as the basis for professional development and seeing how both administrators and teachers could be working on professional development together.

Q: *What is a common barrier to professional development for teachers?*

A: Panelists argued that teachers often lack a coherent research-based pedagogy and stressed that the National Academy of Sciences handbook often becomes

the go-to tool in for strategies on education and professional development because it is easy to access. However, there is a disconnect between the research and getting the research to the ground-level for middle and high school teachers as a crucial resource in developing classroom plans.

STEM EDUCATION AND THE REAUTHORIZATION OF ESEA

MODERATOR:
Luke Laurie, 2006–2007 Einstein Fellow, Office of Congressman Michael Honda

PANELISTS:
Lynne Campbell, 2007–2008 Einstein Fellow, House Committee on Education and Labor
Mark Davids, 2002–2003 Einstein Fellow, Office of Senator Maria Cantwell
Amy Elverum, 2006–2007 Einstein Fellow, House Committee on Education and Labor
Denise Forte, Director of Education Policy, House Committee on Education and Labor
Sandra Geisbush, 2003–2004 Einstein Fellow, Division of Research, Evaluation, and Communication, National Science Foundation
Eduardo Guevara, 2009–2010 Einstein Fellow, Office of Congressman Michael Honda
Arundhati Jayarao, 2009–2011 Einstein Fellow, Office of Senator Kristen E. Gillibrand
Steve Robinson, Special Assistant, Office of Elementary and Secondary Education, Office of the Deputy Secretary, U.S. Department of Education

The panel discussion focused on the impact of the Elementary and Secondary Education Act (ESEA) on STEM education, and innovative proposals for ensuring that the next reauthorization of ESEA does not leave STEM education behind. Other topics of discussion included the impact of standardized testing, the inclusion of science test scores in school accountability measures, and ways to improve STEM education for elementary students, including preparation and training for teachers, and funding for science labs and materials.

The panel started by noting that to achieve substantive STEM policy in the ESEA reauthorization bill, educators and activists must, rise above the "gathering storm" to ensure even a little STEM progress.

The last major education reform under the Bush administration, No Child Left Behind (NCLB) was sharply criticized by STEM advocates, as lacking both direction and funding. However, **Amy Elverum**, 2006–2007 fellow, pointed out that NCLB did raise the bar and highlighted the fact that all students can learn. Other areas of success of NCLB included, targeted funds — especially in reading, mathematics, and special education — problem learning emphasis, the disaggregation of data, a minimum standard, and student loan availability. Most importantly, NCLB raised awareness across the country, and sparked a conversation about education. **Sandra Geisbush**, 2003–2004 fellow, noted that the funding in NCLB opened up opportunities for those who are generally underrepresented.

Luke Laurie, 2006–2007 fellow, moderator of the panel, asked which policies of NCLB should not be repeated. **Mark Davids**, 2002–2003 fellow, responded that the one size fits all model does not work and that there is too great of an emphasis on test scores. The United States is a very transient society making it difficult to measure students from one year to the next.

Arundhati Jayarao, 2009–2011 fellow, noted the difficulty in testing science. It should be hands-on and inquiry based. The need for qualified teachers was also raised, ensuring that science teachers actually have science degrees. Another issue discussed was the weakness of snap-shot evaluations of teachers; the panel criticized the failure of the federal government to appropriately assess a teacher's competence, and stressed the need for sustainable, effective evaluations of teaching staff, perhaps on a more local level. **Steve Robinson**, from the U.S.

From left: Sandra Geisbush, Mark Davids, and Amy Elverum

Department of Education, noted that one important piece of the reauthorization is moving toward college and career ready standards for everyone. The country needs to address how to be sure teachers are prepared and ensure that students have good, supportive, and effective teachers.

The conversation then turned to competitiveness in the global community, with the panel stressing that critical thinking, with STEM at the heart, could best prepare the United States to be competitive amongst other nations in K–12 education. Suggested policies to best prepare the United States to be competitive included an evaluation of the school year length, perhaps lengthening it, extended school days (an option for after school classes), engagement in summer education, and overall enrichment for poorer students. **Denise Forte** from the House Committee on Education and Labor, noted that the push around common standards will make a difference for students who learn differently. The common standards will show that no matter your zip code or social background, this is what you should know. **Lynne Campbell**, 2007–2008 fellow, noted the importance of knowing where students are when they enter a grade and measuring relative success.

Topics also included a focus on STEM education for K–6, and how to ensure high quality science teaching through these early years. The panel also raised the critical issue of legislating education reform. While education experts may have pragmatic ideas for improvement, it is essential that they can be adopted in legislative terms. Substantive ideas for improvement in K–6 STEM education (emphasis on science) included, well-equipped laboratories, quality teaching, parental involvement in child's education, and weekend school activities.

Eduardo Guevara, 2009–2010 fellow, noted the importance of parent involvement in the student's education. He went on to emphasize that while federal investment in these areas may be currently limited, the country needs to make investments in STEM education as a key element in achieving equity. Partnerships with business and the philanthropic community were identified as key ways in which STEM can be brought to every community.

Q: *What is the focus on the goal of standards on science and how will it be assessed on a national scale?*

A: Panelists explained that an assessment system on a national scale regarding science is on the agenda but has had setbacks. Currently there is a focus on college and career ready standards in math and English because states have agreed to common standards in those fields. In the subject of science, there is less of a focus among states and there is still no common agreement on standards. In terms of assessments, it should be part of the accountability system, but should be thoroughly thought through before it becomes a requirement.

Q: *Will there be a change in the fundamental delivery system between school subjects, and is there any funding looking into changing traditional styles of teaching?*

A: Forte began answering the question by saying that while she was not able to talk about specifics regarding funding, there is tremendous amount of support to explore new methods and that current models of teaching are passé. The Committee on Education and Labor is constantly looking into the issue and analyzing delivery systems and how teachers today should be expanding the reach of schooling with the incorporation of new media and technology. Other panelists argued that there is funding for professional development for STEM teachers, specifically including high quality curriculum, assessment, instructional materials, and lesson plans and innovative strategies. Guevara urged an increase in communication amongst schools but also between countries to learn from each other and to use the internet as a tool for innovation.

CLOSING SESSION WITH CONGRESSMAN MICHAEL HONDA

Congressman **Michael Honda** (CA-15), opened by stressing the importance for all congressmen and policymakers to have someone from inside the classroom advising them on education policy. The congressman felt this was critical for policymakers to understand how the educational policies they support actually play out in a classroom setting.

He then compared American institutions to those abroad. While education has traditionally been one of the most basic and original American institutions, he was displeased that the United States has failed in recent years to provide sufficient investment in our education facilities. The congressman compared U.S. education institutions to those in Japan, highlighting the longer school hours, after school initiatives, weekend and summer programs in Japan. Increased Japanese schooling achievement is also partly a function of Japanese parents spending relatively more on their children with an eye to their becoming more internationally competitive. Yet Honda also greatly praised the American system, noting that there is a reason why people from all over the world strive to study at the post-secondary level in the United States.

The issue of equity was also addressed. Since the founding of the country, the educational system was set up such that the duty of public education was a task of individual states rather than the federal government. As such, educational systems and policies grew within states independently and differently. Honda noted that throughout U.S. history, there has been pressure on these disparate parts to standardize. However, as it stands, educational standards and focus vary from

state to state. As a result, many students do not receive the educational attention that they should, which is a major issue of our time.

Honda emphasized that part of the problem with equity in the education system today is related to zoning procedures. Many zoning enclaves that are poverty stricken have substandard school districts that receive unfair treatment. People, often primarily minorities and immigrants, move into these sub par sections of the community with lower quality schools because of the low cost of living. This inequality is partly an infrastructural problem and needs to be addressed through policies that provide a more equitable distribution of resources.

He called on the Einstein Fellows to continue fighting for improvements in education. Honda recognized the awesome duty and battles ahead of these leaders to continue standing up for what they believe in, even in the face of colleagues who think they are "crazy."

Congressman Michael Honda (CA-15)

APPENDIX 1: POLICY RECOMMENDATIONS ON THE 20TH ANNIVERSARY OF THE EINSTEIN FELLOWSHIP

The Albert Einstein Distinguished Educator Fellows, some of the nation's leading educators, gathered in Washington, DC on June 28–29, 2010, for a 20th Anniversary Summit. Hosted by the Woodrow Wilson International Center for Scholars, the Summit brought together more than 80 current and former Einstein Fellows along with distinguished guest speakers from the White House, Federal agencies, national education organizations, and the U.S. Congress. The goal of the Summit was to generate recommendations to inform and improve science, technology, engineering and mathematics (STEM) education. The Summit covered a variety of educational issues, including national curriculum standards, the Elementary and Secondary Education Act, and educational equity.

RECOMMENDATIONS OF THE EINSTEIN FELLOWS

- Support initiatives to enable school systems to implement innovative teaching practices in science, technology, engineering, and mathematics (STEM).
- Increase funding for Pre-K–12 education, especially programs that impact each child as opposed to competitive grants. Federal funding is vital to the maintenance and development of STEM programs in states and districts.
- Establish national standards for science education and support provisions in the reauthorization of ESEA that give equal treatment to science as to mathematics and language arts. Science knowledge and skills, as part of a comprehensive STEM approach, are vital for all students and provide 21st Century workforce skills, promote national security and global competitiveness.
- Include K–12 teachers, such as Einstein Fellows, in the formulation of professional development or curriculum. The real world experience of classroom teachers is an overlooked asset when new programs are developed.
- Base school and student assessment on multiple measures and formative assessments.
- Create and fund a program to place science specialists to teach and coach in elementary schools. Elementary schools can benefit from the presence of competent STEM teachers who also have skills in working with K–12 students. They can teach STEM and also model effective strategies as instructional coaches.

- Support legislation that encourages research-based instruction and teacher training.
- Support federal programs to purchase science equipment and provide STEM training to teachers at the K–6 grade levels. This will enable the delivery of inquiry-based, hands-on science experiences.
- Establish guidelines to ensure all administrators are competent and knowledgeable in STEM education. Student success and instructional quality depends on strong school leadership.
- Support initiatives and funding to enable states and districts to lengthen the school day or school year.

APPENDIX 2: H. RES. 1322 — CELEBRATING EINSTEIN FELLOWS 20TH ANNIVERSARY

H. RES. 1322 was introduced in the House of Representatives by Congressman Mike Honda in the 111th Congress, and passed a House vote on June 15, 2010.

This legislation was cosponsored by the following Members of Congress: Baca, Joe [CA-43], Bordallo, Madeleine Z. [GU], Cao, Anh "Joseph" [LA-2], Capps, Lois [CA-23], Conyers, John, Jr. [MI-14], Courtney, Joe [CT-2], Filner, Bob [CA-51], Fudge, Marcia L. [OH-11], Green, Al [TX-9], Grijalva, Raul M. [AZ-7], Hinchey, Maurice D. [NY-22], Hinojosa, Ruben [TX-15], Holt, Rush D. [NJ-12], Johnson, Henry C. "Hank," Jr. [GA-4] , Lee, Barbara [CA-9], McDermott, Jim [WA-7], Miller, George [CA-7], Moore, Gwen [WI-4], Norton, Eleanor Holmes [DC], Petri, Thomas E. [WI-6], Price, David E. [NC-4], Richardson, Laura [CA-37], Sablan, Gregorio Kilili Camacho [MP], Sanchez, Linda T. [CA-39], Sires, Albio [NJ-13], Stark, Fortney Pete [CA-13], Watson, Diane E. [CA-33], Wu, David [OR-1], Young, Don [AK]

RESOLUTION

Celebrating the 20th anniversary of the Albert Einstein Distinguished Educator Fellowship Program and recognizing the significant contributions of Albert Einstein Fellows.

Whereas the Albert Einstein Distinguished Educator Fellowship Program was established in 1990, and formalized by law in 1994;

Whereas Einstein Fellows are selected through a highly competitive process from among the best science, technology, engineering, and mathematics teachers in the field, and represent diverse geographic regions and communities;

Whereas the Albert Einstein Distinguished Educator Fellowship Program places these exceptional teachers in positions within Federal agencies and on Capitol Hill where they contribute to advancing the fields of education, science, technology, engineering, mathematics, and public policy;

Whereas the Department of Energy through its Office of Workforce Development for Teachers and Scientists, and the Triangle Coalition for Science and Technology Education have nurtured and grown the Einstein Fellowship Program;

Whereas over 190 Einstein Fellows have served professionally at the Department of Education, the Department of Energy, the National Aeronautics and Space Administration (NASA), the National Institutes of Health (NIH), the National

Institute of Standards and Technology (NIST), the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation (NSF), the President's Office of Science and Technology Policy (OSTP), the U.S. Senate, and the U.S. House of Representatives;

Whereas the Einstein Fellowship Program fosters a spirit of cooperation between Federal agencies by placing a network of fellows at these different agencies;

Whereas Einstein Fellows provide practical perspectives on the application and impact of education policy;

Whereas Einstein Fellows have made invaluable contributions to the formulation of educational policy with their advice to Members of Congress and officials in Federal agencies, by developing legislation, and by creating innovative educational programs and interventions;

Whereas Einstein Fellows have experienced unique opportunities for professional growth and development, expanding their skills and knowledge;

Whereas Einstein Fellows learn valuable leadership skills to advance the fields of education, science, technology, engineering, mathematics, and public policy; and

Whereas the contributions of the Einstein Fellows during their service and later upon the continuation of their professional careers, serve as role models and examples of dedication and commitment for past, current, and future generations of educators and public servants: Now, therefore, be it

Resolved, That the House of Representatives —

(1) recognizes the significance of the 20th anniversary of the Albert Einstein Distinguished Educator Fellowship Program;

(2) recognizes the value of having current science, technology, engineering, and mathematics teachers directly engaged in the policymaking process;

(3) recognizes the sacrifices made by teachers who interrupt their careers to serve as Einstein Fellows;

(4) supports continuation of the Einstein Fellowship program;

(5) encourages Federal Agencies and congressional offices to host Einstein Fellows, and to leverage the expertise of former Einstein Fellows; and

(6) recognizes the contributions of Einstein Fellows, past, present, and future.

APPENDIX 3: PANELISTS AND FEATURED GUESTS

Vance Ablott, Executive Director, Triangle Coalition for Science and Technology Education

Jerry Blow, Former Senior Vice President, Global Payments Risk, Bank of America

Charles Britt, Founder and Executive Director, Center for Minority Achievement in Science and Technology

Elizabeth Byers, Program Assistant Wilson Center on the Hill, and Program on America and the Global Economy, Woodrow Wilson International Center for Scholars

Della Cronin, Vice President, Legislative and Public Affairs, Washington Partners, LLC.

Kathryn Culbertson, Program Manager, Albert Einstein Distinguished Educator Fellowship Program, Triangle Coalition for Science and Technology Education

Denise Forte, Director of Education Policy, Committee on Education and Labor, U.S. House of Representatives

Kent Hughes, LL.B, Ph.D., Director, Program on America and the Global Economy, Woodrow Wilson International Center for Scholars

Thomas E. Keller, Ed.D. Senior Program Officer, National Academy of Sciences, Board on Science Education

Jay Labov, Ph.D., Senior Advisor, Education and Communications, National Research Council's Center for Education, National Academy of Sciences

Jason D. Lee, Executive Director, Detroit Area Pre-College Engineering Program

Debbie Murray, Director of Administration, Triangle Coalition for Science and Technology Education

Brian O'Donnell, Program Manager, Office of Workforce Development for Teachers and Scientists, U.S. Department of Energy

Jodi Peterson, Assistant Executive Director, Legislative and Public Affairs, National Science Teachers Association, Co-Chair, STEM Education Coalition

Ralph Regula, Former Member of Congress and elementary school principal

Jose Rico, Deputy Director, White House Initiative on Educational Excellence for Hispanic Americans.

Steve Robinson, Special Assistant, Office of Elementary and Secondary Education, Office of the Deputy Secretary, U.S. Department of Education

Andresse St. Rose, Ed.D., Research Associate, American Association of University Women.

Kichoon Yang Ph.D., Executive Director, National Council of Teachers of Mathematics

APPENDIX 4: ALBERT EINSTEIN DISTINGUISHED EDUCATOR FELLOWS

*Asterisks indicate fellows in attendance at the Summit

Erma Anderson, 1990–1991, Office of Senator Arlen Specter (R-PA)

***Arthur Lebofsky**, 1990–1991, Office of Senator Jeff Bingaman, (D-NM)

William Philips, 1990–1991, Office of Representative Howard Wolpe (D-3rd MI)

***June Yamashita**, 1990–1991, Office of Senator Mark Hatfield (R-OR)

Steve Boyarsky, 1991–1992, House Education and Labor Committee

Elizabeth Gasque, 1991–1992, Office of Senator Jeff Bingaman (D-NM)

Della McCaughan, 1991–1992, Office of Senator Thad Cochran (R-MS)

Althea Pearlman, 1991–1992, Office of Representative Howard Wolpe (D-3rd MI)

Geri Anderson–Nielsen, 1992–1993, Senate Labor and Human Resources Committee

Bill Brent, 1992–1993, Office of Senator Mark Hatfield (R-OR)

Patrick Canan, 1992–1993, Office of Senator Mark Hatfield (R-OR)

Bonnie Leitch, 1993–1994 Senate Labor and Human Resources Committee

Jennifer Grogg, 1994–1995, Office of Senator Robert Kerrey (D-NE)

LaRon Smith, 1994–1995, Office of Senator Mark Hatfield (R-OR)

Arlene Vidaurri Cain, 1996–1997, Office of Science U.S. Department of Energy

Gregory Coppa, 1996–1997 Office of Representative Zoe Lofgren (D-16th CA)

George Dewey, 1996–1997, Office of Science Education, National Institutes of Health

Pam Newberry, 1996–1997, Office of Education, National Aeronautics and Space Administration

***Linda Stroud**, 1996–1997, President's Office of Science and Technology Policy and the Office of Senator Jeff Bingaman (D-NM)

Patrick White, 1996–1998, Office of Senator Jim Jeffords (R-VT)

Joel Albright, 1997–1998, National Aeronautics and Space Administration

JoAnne Dombrowski (Mowczko), 1997–1998, Office of Science Education, National Institutes of Health

***Donald Hoff**, 1997–1998, National Aeronautics and Space Administration

Betsy Mabry, 1997–1998, U.S. Department of Education

Deborah Patonai, 1997–1998 U.S. Department of Education

Tonia Thompson, 1997–1998, Division of Elementary, Secondary, and Informal Education, National Science Foundation

Patricia Colbert-Cormier, 1998–1999, National Aeronautics and Space Administration

Danita Guarino, 1998–1999, National Aeronautics and Space Administration

Judy Sink, 1998–1999, Office of Education, National Aeronautics and Space Administration

Karol Yeatts, 1998–1999, Office of Education, National Aeronautics and Space Administration

Kathryn Hilts, 1998–2000, Office of Science, U.S. Department of Energy, and Office of Senator Robert Byrd (D-WV)

***Katylee Hoover-McInerney**, 1998–2000, Division of Undergraduate Education, National Science Foundation

***Joseph McInerney**, 1998–2002, Division of Research, Evaluation, and Communication, National Science Foundation

***Sonja Godeken**, 1999–2000, Office of Education, National Aeronautics and Space Administration

Paula Hendry, 1999–2000, Office of Representative Sherwood Boehlert (R-23rd NY)

Ann Ifekwunigwe, 1999–2000, Office of Senator Patty Murray (D-WA)

Michael Lach, 1999–2000, Office of Representative Vernon Ehlers (R-3rd MI)

Donna Osborn, 1999–2000, Office of Representative Peter J. Visclosky (D-1st IN)

***Ruth Rand**, 1999–2000, Office of Science Education, National Institutes of Health

Peter Faletra, 1999–2001, Office of Science, U.S. Department of Energy

***Anne M. Holbrook**, 1999–2001, Office of Education, National Aeronautics and Space Administration

Wendy Beavis, 2000–2001 Office of Science, U.S. Department of Energy

Robert Blakely, 2000–2001, Office of Senator Patty Murray (D-WA)

Frances Coleman, 2000–2001, Senate Health, Education, Labor and Pensions Committee

John A. Kounas, 2000–2001, Office of Senator Charles E. Grassley (R-IA)

Wanda G. Shaffer, 2000–2001, Division of Elementary, Secondary, and Informal Education, National Science Foundation

Robert W. Taylor, 2000–2001, Office of Representative Sherwood Boehlert (R-23rd NY)

Kerry R. Venegas, 2000–2001, Division of Educational Systems Reform, National Science Foundation

***John Jackson**, 2000–2002, 2004–2006, Division of Graduate Education and Division of Elementary, Secondary, and Informal Education, National Science Foundation

Peggy Steffen, 2000–2002, Office of Education, National Aeronautics and Space Administration

Nick Cabot, 2001–2001, Division of Undergraduate Education, National Science Foundation

Cathy Barthelemy, 2001–2002, Division of Elementary, Secondary and Informal Education, National Science Foundation

Jess Todd Clark, 2001–2002, Office of Science, U.S. Department of Energy

Celani Dominguez, 2001–2002, National Institute of Standards and Technology

***Kathleen House**, 2001–2002, Division of Elementary, Secondary and Informal Education, National Science Foundation

Norma Howell, 2001–2002, Representative Tony P. Hall (D-3rd OH)

Kevin Manning, 2001–2002, House Education and the Workforce Committee

Kathleen McGarvey (Clark), 2001–2002, Senate Health, Education, Labor and Pensions Committee, Office of Senator Judd Gregg (R-NH)

Stephanie Toney, 2001–2002, Office of Representative Rubén Hinojosa (D-15th TX)

***Mark Davids**, 2002–2003, Office of Senator Maria Cantwell (D-WA)

Charlene Dindo, 2002–2003, Teacher Enhancement Program, National Science Foundation

Linda Ewing, 2002–2003, Division of Graduate Education, National Science Foundation

Anne Pfitzner Gatling, 2002–2003, Senator Joseph Lieberman (D-CT)

Leesa Hubbard, 2002–2003, National Aeronautics and Space Administration

Richard Jones, 2002–2003 Office of Science, U.S. Department of Energy

Kaye Kamp, 2002–2003, Office of Science, U.S. Department of Energy

***Caryn Long**, 2002–2003, National Aeronautics and Space Administration

Jaime Malwitz, 2002–2003, Division of Research, Evaluation, and Communication, National Science Foundation

***Bradley Neu**, 2002–2003, Representative Rubén Hinojosa (D-15th TX)

***Nancy Pejouhy**, 2002–2003, Division of Research, Evaluation, and Communication, National Science Foundation

Laurie Pines, 2002–2003 Senator Jeff Bingaman (D-NM) and Representative Bart Gordon (D-6th TN)

Linda Selvig, 2002–2003, National Institute of Standards and Technology

***James Cherry**, 2003–2004, Office of Senator Norm Coleman (R-MN)

Peggy Deichstetter, 2003–2004, Office of Science Education, National Institutes of Health

***Sandra Geisbush**, 2003–2004, Division of Research, Evaluation, and Communication, National Science Foundation

Robert Hickey, 2003–2004, Office of Senator Joseph Lieberman (D-CT)

Letitia Hoaas, 2003–2004, Explorer Schools (NES) Program, National Aeronautics and Space Administration

Fé MacLean, 2003–2004, PAEMST, Division of Elementary, Secondary and Informal Education, National Science Foundation

Richard Pieper, 2003–2004, Teacher Professional Continuum, National Science Foundation

***Daniel Schab**, 2003–2004, Senate Committee on Health, Education, Labor, and Pensions

Aaron Schuetz, 2003–2004, Office of Science, U.S. Department of Energy

Carolyn Schwennsen, 2003–2004, National Institute of Standards and Technology

Jamalee Stone, 2003–2004, National Aeronautics and Space Administration

Dorothy Ringer Sumner, 2003–2004, Office of Senator Michael D. Crapo

***Mimi McClure**, 2003–2005, Division of Graduate Education, National Science Foundation

Al Bird, 2004–2005, Office of Senator Daniel Akaka (D-HI)

Diane Cherkerzian, 2004–2005, Office of Senator Maria Cantwell (D-WA) and U.S. Department of Energy

***Rob Culbertson**, 2004–2005, Office of Senator Joseph Lieberman (D-CT)

Carol Engelmann, 2004–2005, Division of Elementary, Secondary, and Informal Education, National Science Foundation

Mickie Flores, 2004–2005, Office of Senator Richard Durbin (D-IL)

John Henry, 2004–2005, Explorer Schools Program, National Aeronautics and Space Administration

***Jenelle Hopkins**, 2004–2005, Division of Earth Sciences, Directorate of Geosciences, National Science Foundation

***David Kapolka**, 2004–2005, Division of Elementary, Secondary, and Informal Education, National Science Foundation

Mark Klawiter, 2004–2005, Division of Research, Evaluation, and Communication, National Science Foundation

Joyce Stark, 2004–2005 National Oceanic and Atmospheric Administration, U.S. Department of Commerce

Naveen Cunha, 2004–2006, Educator Astronaut Program, National Aeronautics and Space Administration

***Pam Abreu**, 2005–2006, Division of Elementary, Secondary, and Informal Education, National Science Foundation

Daniel Carpenter, 2005–2006, Division of Graduate Education, National Science Foundation

***Rene Carson**, 2005–2006, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

Heidi Coleman, 2005–2006 Office of Science Education National Institutes of Health

Jennifer Coughlin, 2005–2006 Office of Science, U.S. Department of Energy

***Barbara Houtz**, 2005–2006 Office of Science Education National Institutes of Health

Beth Jewell, 2005–2006, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

Deborah Koolbeck, 2005–2006, Office of Representative Rush Holt (D-12th NJ)

Egda Morales, 2005–2006 Division of Molecular and Cellular Biosciences, National Science Foundation

Steven Robinson, 2005–2006, Office of Senator Barack Obama (D-IL)

Lisa Schunk, 2005–2006, Senate Committee on Health, Education, Labor, and Pensions, Office of Senator Michael Enzi (R-WY)

***Cassandra Soeffing**, 2005–2006, Earth-Sun Systems Division, Science Mission Directorate, National Aeronautics and Space Administration

***Rhonda Spidell**, 2005–2006, Division of Earth Sciences, Directorate of Geosciences, National Science Foundation

***Ann Swain**, 2005–2006, Chemical Science & Technology Laboratory, National Institute of Standards and Technology

***Tyson Tuchscherer**, 2005–2006, Explorer Schools Program, National Aeronautics and Space Administration

Margaret Merrill, 2005–2006, Office of Senator Joseph Lieberman (D-CT)

***Liz Burck**, 2006–2007, Earth-Sun Systems Division, Science Mission Directorate, National Aeronautics and Space Administration

Carrie Chiappetta, 2006–2007, Division of Graduate Education, National Science Foundation

Jeff Dilks, 2006–2007, Office of Science, U.S. Department of Energy

***Amy Elverum**, 2006–2007, House Committee on Education and the Workforce, Representative George Miller (D-7th CA)

Docia Generette, 2006–2007, Division of Elementary, Secondary, and Informal Education, National Science Foundation

Kevin Hartmann, 2006–2007, Office of Science, U.S. Department of Energy

***Luke Laurie**, 2006–2007, Office of Representative Michael Honda (D-15th CA)

***Tiah McKinney**, 2006–2007, Geosciences Directorate, Office of the Assistant Director, National Science Foundation

Allan Miller, 2006–2007, Office of International Science and Engineering, Office of the Director, National Science Foundation

Erin Peters, 2006–2007, Office of Education, Exploration Systems Mission Directorate, National Aeronautics and Space Administration

***Judy Reeves**, 2006–2007, Office of Education, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

Joe Shewmaker, 2006–2007, Office of Education, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

LeRoy Wenstrom, 2006–2007, Office of Senator Trent Lott (R-MS)

***Brenda Wright**, 2006–2007, Health, Education, Labor and Pensions Committee, Office of Senator Edward Kennedy (D-MA)

***Cherlyn Anderson**, 2007–2008, Division of Research on Learning in Formal and Informal Settings, National Science Foundation

Sam Barlow, 2007–2008, Office of Representative Silvestre Reyes (D-16th TX)

Jennifer Berry, 2007–2008, Office of Senator Bernie Sanders (I-VT)

Susan Brown, 2007–2008, Division of Graduate Education, National Science Foundation

***Lynne Campbell**, 2007–2008, House Committee on Education and Labor, Representative George Miller (D-7th CA)

***Ann Coren**, 2007–2008, Office of Earth Sciences, National Aeronautics and Space Administration

***Chris Donovan**, 2007–2008, Office of Education, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

***Kent Franklin**, 2007–2008, Division of Graduate Education, National Science Foundation

***Kathleen Gorski**, 2007–2008, Office of Polar Programs Office of the Director, National Science Foundation

***Stephan Graham**, 2007–2008, Office of Science, Germantown, U.S. Department of Energy

Mel Jones, 2007–2008 PAEMST Program, Division of Undergraduate Education National Science Foundation

***Ruth McDonald**, 2007–2008, Office of International Science and Engineering, Office of the Director, National Science Foundation

Kevin Swanson, 2007–2008, Division of Graduate Education, National Science Foundation

***Mubina Khan-Schroeder** 2007–2009, Office of Science, Germantown, U.S. Department of Energy

***Nicole LaDue**, 2007–2009, Directorate for Geosciences, National Science Foundation

***Ed Potosnak**, 2007–2009, Office of Representative Michael Honda (D-15th CA)

***Karen Stiner**, 2007–2009, Office of Science, U.S. Department of Energy

Diedre Adams, 2008–2009, Office of Education, National Aeronautics and Space Administration

***Julie Angle**, 2008–2009, Office of Cyberinfrastructure, National Science Foundation

Kitchka Petrova, 2008–2009, Division of Graduate Education, National Science Foundation

***Stephen Scannell**, 2008–2009, Division of Research on Learning in Formal and Informal Settings, National Science Foundation

Jennifer Thompson, 2008–2009, Office of Polar Programs Office of the Director, National Science Foundation

Lorna Vazquez, 2008–2009 Office of Science, U.S. Department of Energy

***Kirk Beckendorf**, 2008–2010, Office of Education, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

***Mark Hannum**, 2008–2010, Division of Graduate Education, National Science Foundation

***Kera Johnson**, 2008–2010, PAEMST, Division of Research on Learning in Formal and Informal Settings, National Science Foundation

***Anthonette Pena**, 2008–2010, PAEMST, Division of Research on Learning in Formal and Information Settings, National Science Foundation

Sarah Yue, 2008–2010, Office of International Science and Engineering, Office of the Director, National Science Foundation

***Martha Canipe**, 2009–2010, Office of Polar Programs Office of the Director, National Science Foundation

***Jonathan Davies**, 2009–2010, Office of Energy Efficiency/ Renewable Energy, U.S. Department of Energy

Tracey Edou, 2009–2010, Office of Science, U.S. Department of Energy

***Kirk Janowiak**, 2009–2010 Office of Science, U.S. Department of Energy

***Dennis Newell,** 2009–2010, Division of Research on Learning in Formal and Informal Settings, National Science Foundation

Steve Obenhaus, 2009–2010, Office of Senator Joseph Lieberman (I-CT).

***Heather Pacheco**, 2009–2010, Directorate for Geosciences, National Science Foundation

***Kristina Peterson**, 2009–2010, House Committee on Education and Labor

Chris Tolbert, 2009–2010, Office of Cyberinfrastructure, National Science Foundation

***Ben Van Dusen**, 2009–2010, Directorate for Engineering, National Science Foundation

***Kristen Edwards**, 2009–2011, Office of Education, National Aeronautics and Space Administration

***Mark Greenman**, 2009–2011, Division of Undergraduate Education, National Science Foundation

***Eduardo Guevara**, 2009–2011, Office of Representative Michael Honda (D-15th CA)

***Arundhati Jayarao**, 2009–2011, Office of Senator Kristen Gillibrand (D-NY)

***Camsie Matis,** 2009–2011, Directorate for Computer and Information Science and Engineering, National Science Foundation

***John Moore**, 2009–2011, Directorate for Geosciences, National Science Foundation

***Kevin Simmons**, 2009–2011, Directorate for Engineering, National Science Foundation

***Nancy Spillane**, 2009–2011, PAEMST, Division of Research on Learning in Formal and Informal Settings, National Science Foundation

***Susan Whitsett**, 2009–2011, Division of Molecular and Cellular Biosciences, Directorate of Biological Sciences, National Science Foundation

***Fredrick Belmont**, 2010–2011, Directorate for Computer and Information Science and Engineering, National Science Foundation

Buffy Cushman-Patz, 2010–2011, Office of Legislative and Public Affairs, Office of the Director, National Science Foundation

Kisha Davis-Caldwell, 2010–2011, PAEMST, Division of Research on Learning in Formal and Informal Settings, National Science Foundation

***Brenda Gardunia**, 2010–2011, Directorate for Computer and Information Science and Engineering, National Science Foundation

Matthew Inman, 2010–2011, Office of Energy Efficiency and Renewable Energy, U.S. Department of Energy

***Leigh Jenkins**, 2010–2011, Office of Vocational and Adult Education, U.S. Department of Education

Sheikisha Jenkins, 2010–2011 Capitol Hill

Mike Kennedy, 2010–2011 Office of Science, U.S. Department of Energy

Tina King, 2010–2011, Division on Research on Learning in Formal and Informal Settings, National Science Foundation

Lindsay Knippenberg, 2010–2011, Office of Education, National Oceanic and Atmospheric Administration, U.S. Department of Commerce

***Jenay Leach**, 2010–2011, Office of Education, National Aeronautics and Space Administration

***Laura Lukes**, 2010–2011, Office of Polar Programs, Office of the Director, National Science Foundation

***Daniel Menelly**, 2010–2011 Office of Cyberinfrastructure Office of the Director, National Science Foundation

Dave Oberbillig, 2010–2011 Office of Science, U.S. Department of Energy

Bernadine Okoro, 2010–2011, Division of Industrial Innovation and Partnerships, National Science Foundation

Jean Pennycook, 2010–2011, Division on Research on Learning in Formal and Informal Settings, National Science Foundation

Staci Richard, 2010–2011 Capitol Hill

***Geraldine Robbins**, 2010–2011, Goddard Space Flight Center, National Aeronautics and Space Administration

***Erik Russell**, 2010–2011, Directorate for Computer and Information Science and Engineering, National Science Foundation

***Terrie Rust**, 2010–2011, Division of Research on Learning in Formal and Informal Settings, National Science Foundation

Steve Schreiner, 2010–2011, Office of International Science and Engineering, Office of the Director, National Science Foundation

***Timothy Spuck**, 2010–2011, Division of Graduate Education, National Science Foundation

Mike Town, 2010–2011 National Science Board, National Science Foundation

APPENDIX 5: SPONSORS AND SUPPORTERS

The Albert Einstein Distinguished Educator Fellowship Summit was made possible with funding and support from the following agencies and organizations:

American Association for the Advancement of Science

Holbrook Travel Services

Key Curriculum Press

National Academy of Sciences

National Council of Teachers of Mathematics

National Education Association

National Marine Sanctuary Foundation

National Oceanic and Atmospheric Administration

National Science Foundation

National Science Teachers Association

South Carolina's Coalition for Mathematics and Science

Triangle Coalition for Science and Technology Education

U.S. Department of Energy

Woodrow Wilson International Center for Scholars

EINSTEIN FELLOWS FORM A SYMBOLIC E F

Program on America and the Global Economy
Woodrow Wilson Center
One Woodrow Wilson Plaza
1300 Pennsylvania Ave., N.W.
Washington, D.C. 20004-3027
Email: page@wilsoncenter.org
Tel: 202/691-4206