

# EDUCATION DAILY

The education community's independent daily news service

## STEM education

### Leaders push for NSF to reclaim science ed role

The science community must take the lead in improving science and math education, and in developing teachers more than developing curriculum.

So argued experts at a **House Science Committee** hearing Wednesday as part of an ongoing debate over how best to improve science, technology, engineering and math education — and whether the **National Science Foundation** or **Education Department** should lead reforms.

“We don’t do a good enough job as scientists of selling our field to students or society as a whole,” said **Joseph Heppert**, education committee chairman for the **American Chemical Society**. He said NSF programs more directly connect educators to scientists.

#### Cuts proposed for NSF

Since the launch of the No Child Left Behind Act, the **Bush administration** repeatedly has proposed putting the Math and Science Partnerships and other STEM programs solely under ED. The president’s 2007 American Competitiveness Initiative would provide \$380 million for new ED-based programs, but the proposed budget would cut NSF’s K-16 education programs by 7 percent, to \$196.8 million.

NSF’s partnerships program already has been more than halved, from \$139 million in 2004 to \$63 million this year.

Each agency has a role in education, argued **Dennis Bartels**, director of **The Exploratorium** science museum in San Francisco. NSF should be to ED what the **National Institutes of Health** are to the **Food and Drug Administration**, he said, noting that one agency explores long-term research and building capacity while the other implements and evaluates programs based on that research.

NSF must do more to develop science education infrastructure, Bartels said. “Today we are living off technology in our classrooms that was invested in during the 1980s and early ‘90s.”

Yet educators must come before infrastructure,

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## Today’s Highlights

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- *Newsweek* releases annual top 1,000 high school rankings
- NGA applauds ED’s grant guidelines release

## Q&A: Jason Kamras

### Teacher of the Year: Recruit effective teachers

*Education Daily* sat down with **Jason Kamras**, a veteran of the **District of Columbia Public Schools** and the 2005 National Teacher of the Year, to discuss contract reform, performance evaluations and recruitment.

**Q: There is some question about screening teachers by beefing up certification systems or developing more effective on-the-ground evaluations. What’s your take on that?**

**A:** It doesn’t have to be an either-or proposition. I think there is some room for accommodating different approaches.

Regardless of how you get into the profession, though, we need to make sure that evaluations are based on performance while teachers are in the classroom, and not based on the input we typically measure quality by, like years of experience or possession of master’s degrees.

(See **KAMRAS** on page 6)

## College Board to redesign Advanced Placement courses

The **College Board**, the nonprofit organization that oversees the Advanced Placement program, is redesigning four of its science courses — biology, chemistry, physics and environmental science.

Funded by a \$1.8 million grant from the **National Science Foundation**, the reorganization is intended to teach in greater depth the key content and aspects of scientific inquiry and to facilitate linkages between scientific disciplines.

The redesign also could serve as a model for high school science curriculum reform, but stakeholders say the College Board will have to confront issues of equity, student access, professional development for teachers, and assessment format.

### Reform possibilities

The redesign work is scheduled to begin this summer and will be directed by commissions appointed for each of the four disciplines. Course design will be completed by December 2007, and the courses will be inaugurated in fall of 2009.

There is widespread criticism that high school science curricula facilitate only shallow mastery of increasingly broad state content standards.

To address that, the AP redesign will emphasize a greater depth of understanding of key scientific content, as well as the principles of scientific inquiry that ground college-level work.

The redesign also will promote cross-pollination among the scientific disciplines, especially in interdisciplinary fields such as nanotechnology and biotechnology, said **James Pellegrino**, professor of psychology and education at the **University of Illinois at Chicago**.

It's hoped the new courses will serve as a model for 9th- and 10th-grade course content and rigor. However, there will need to be a balance between course excellence and access for all students, including poor and minority students.

"You can't be dropped into AP without a fundamental science background," said **Shirley Malcom**, head of the **American Association for the Advancement of Science's** Directorate for Education. "My hope is this will lead to a more honest consideration of what is underneath the entire structure."

### New AP framework

The **National Science Foundation** funded a **College Board** review of the AP Biology program, released in 2005, that will serve as a template for an upcoming review of the four subject tests.

The report recommends a new conceptual framework for AP Biology that includes:

- **Three levels of organization for study:** Molecules and cells, organisms, and populations.
- **Five themes permeating biology study at all three levels:** Energy transfer, continuity and change, structure/function, regulations, and interdependence.
- **Two contexts in which biology content knowledge should be learned:** Understanding science as a process for gaining information, and how applying scientific knowledge affects society.

Pellegrino said the College Board will have to take into specific consideration the needs of black students, who have lower participation and success rates on AP exams.

Analysts also underscored the need for professional development, particularly for teachers of poor and minority students. However, there remains a dearth of science teachers and few pathways for educators to move into science teaching.

**Judith Wurtzel**, an **Aspen Institute** fellow, also noted that the small schools movement has resulted in more high schools with only one or two science teachers for all disciplines.

### New tests?

A greater focus on scientific inquiry means the College Board likely will integrate that into the actual AP assessments, but scientific inquiry has not easily lent itself to multiple choice or essay formats.

In response to an *Education Daily* query, Pellegrino suggested the new AP exams could use mixed media and might not follow the end-of-the-year exam format common to many AP courses.

"Everything's up for grabs," Pellegrino said. "We don't have to stay in a certain design box."

—**Stephen Sawchuk**



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## Global competition

# Lawmakers: Will competitiveness debate create change?

Despite several hearings on U.S. competitiveness and numerous proposals to improve the K-16 pipeline, it appears less likely that lawmakers will produce the kind of post-Sputnik initiative the business community has demanded.

At the **House Education and the Workforce Committee's** second hearing on the issue Wednesday, lawmakers started asking themselves if the discussion will result in legislative change or is simply a public relations campaign.

"The added attention is important," said **Rep. Chris Van Hollen**, D-Md., but "will there actually be resources to back it up?"

Noting that the No Child Left Behind Act isn't funded at the level authorized by **Congress**, Van Hollen doubted that lawmakers would appropriate funds for new math and science initiatives.

Democrats said lawmakers need to act now on the competitiveness issue. However, committee chairman **Rep. Howard "Buck" McKeon**, R-Calif., cautioned colleagues against "blindly throwing billions" of dollars at new programs until they "have a firm grasp of the federal government's current degree of success."

### ED reviews programs

The **Education Department** is leading an effort to review 208 math and science programs worth more than \$2.8 billion. According to the **Government Accountability Office**, the 13 agencies that operate the programs have only evaluated half of them to see if they work.

**Assistant Education Secretary Tom Luce** said the department is working with the **Office of Management and Budget** to evaluate each program using a common system. Now that policymakers have the tools to track students throughout their schooling, he said, they can determine how each program affects achievement outcomes.

### High-tech jobs available

Businesses are spending "an enormous amount of money" on school-based programs because they are concerned they won't be able to find enough qualified graduates to fill their demand for workers, **Bill Archey**, president and chief executive officer of the **American Electronics Association**, told the **House Education and the Workforce Committee** Wednesday.

Archey said that although businesses have in the past been able to rely on highly skilled foreign students to fill job positions, U.S. visa policies are restricting access to those candidates. The result is that thousands of high-tech job openings aren't being filled.

Archey expressed concern that while lawmakers recognize the need to improve the K-16 education pipeline, the issue "lies dormant" because **Congress** and the national media are too distracted by more immediate needs.

Luce also put to rest the notion that the review will lead to a consolidation of redundant initiatives. Instead, the information will help bring successful programs to scale, he said. "The focus is not on eliminating programs," Luce said, "the focus is on evaluating them using a common matrix."

The council is on target to complete its evaluation by February 2007, Luce said. In the meantime, he advised lawmakers against designing new pilot programs.

"I hope we don't end up with a thousand more flowers blooming," Luce said, noting that several congressional committees are working on the competitiveness issue in isolation. "It's very important that we somehow come together to accomplish what I think everyone knows we need to accomplish."

—**Patti Mohr**

## SCIENCE (continued from page 1)

science educators argued. They criticized the competitiveness initiative for dedicating 70 percent of its \$380 million budget to developing middle school math curriculums through Math Now.

A recent **National Academy of Sciences** report, *Rising Above the Gathering Storm*, found nearly 70 percent of 6th-graders learn science from a teacher without a science degree or certificate. The report recommended dedicating at least 70 percent of funding to teacher training and professional development.

"There are so few students majoring in education who are going into math that it's

scary," said **Judy Snyder**, math teacher at **Eastside High School** in Greenville, S.C. "It's a vicious cycle. We have few teachers, so fewer students grow up and go into math and sciences."

She praised NSF programs that pair veteran teachers with working scientists.

After some argument over whether teachers in high-priority subjects such as math and science should be paid more than other teachers, **Julie Owens**, math teacher at **Alva High School** in El Reno, Okla., agreed that more money would help everyone. However, she pointed out, there remained a question of fundamentals: "I can't teach math and they can't teach science if the kids can't read."

—**Sarah Sparks**

## Daily Briefing

### Education Department

#### Governors applaud grant guidelines release

The **National Governors Association** applauded the **Education Department's** release of student eligibility guidelines to implement Academic Competitiveness Grants and National SMART Grants for the 2006-07 school year.

In a March 21 letter to **Education Secretary Margaret Spellings**, governors asked that the grant guidelines be outlined in a timely manner, and that states and local school districts retain the authority to establish curricula, as **Congress** intended.

The NGA was concerned that the new grants be available by May 1, as students apply for financial assistance and make their college plans for next year. The programs were created in February as part of the Deficit Reduction Act.

ED announced rules Tuesday that included a two-year transition period for determining eligibility for the AC grants based on coursework. After two years, ED will push for more rigorous standards.

However, critics contend the legislation gives ED too much authority over local curricula and continue to call for further amendments.

### Across the Nation

#### Arizona

#### House strikes down AIMS bonus point plan

The state **House** rejected a plan that would have rewarded high school seniors with good grades in elective classes with bonus points on Arizona's Instrument to Measure Standards. Students already get AIMS bonus points for good grades in their core academic courses.

This year's graduating class is the first that must pass AIMS as a graduation requirement. The state **Senate** approved the new bill, which representatives said included the language for electives that was omitted last year, *The Arizona Republic* reported.

About 31 percent of Arizona seniors, or 19,500, still had not passed all three parts of the AIMS test going into the final round of testing this spring. The number of seniors not passing should decrease when the spring results are made available, while some of the remaining students will be helped by the bonus points for good grades in core classes.

#### Florida

#### State graduation exam failures often repeated

Many students who had to retake the state's graduation requirements exam because they failed it the first time failed it again. Students must pass both the reading and math portions of the Florida Comprehensive Assessment Test to earn a standard diploma,

and can continue retaking either or both exams until they pass.

About 8 percent of Florida's high school seniors will not get diplomas because of the exam, *The Miami Herald* reported. That is an increase of 1 percent from last year.

In Miami-Dade County, 12 percent of seniors and 14 percent of juniors passed the FCAT reading test, while 13 percent of seniors and 19 percent of juniors passed in Broward County.

Math results for south Florida as a whole were marginally better, with passing rates ranging from 20 percent to 35 percent.

The state has alternatives for those students — more FCAT retakes and classes to prepare them for the General Educational Development exam — but this was the last chance for seniors to pass the reading and math exams and graduate with their class.

#### Iowa

#### State to enact graduation requirements

The graduating class of 2011 will likely walk a more rigorous academic path than their predecessors now that **Gov. Tom Vilsack** and legislators agreed on high school graduation requirements.

Though not finalized, the preliminary plan created by state **House** Republicans would require students to complete four years of English, three years of mathematics, three years of science, and three years of social studies, *The Des Moines Register* reported. The change would take effect with the graduating class of 2010-11.

The specific courses — such as chemistry or calculus — that fulfill the graduation requirements would still be determined by school districts. Local school officials would be encouraged to follow a core curriculum developed by ACT, a college-entrance testing program, or the state might create its own version.

Iowa is the only state that does not have graduation standards.

The graduation requirements are part of a school improvement package awaiting the **Legislature's** approval during the final days of the 2006 session next week. The package also includes an extra \$35 million in next year's state budget for teacher salary increases and an additional \$15 million for expanding preschool access.

#### Washington

#### Seattle schools find arsenic in drinking water

Officials are turning off the taps in **Seattle Public Schools** after finding arsenic traces during tests at five elementary schools. The poisonous element first appeared after repairs were made at all five of the schools.

Neither school officials nor those from **Seattle**

## Daily Briefing

**Public Utilities** knew where the arsenic originated, but the findings were enough to prompt shutting off drinking fountains at all of the 100-plus schools in the district, *The Seattle Times* reported. All the school faucets that had unsafe levels of arsenic had recently been installed because of concerns about lead poisoning in the old ones. Those repairs were part of a \$13 million districtwide project.

The **Environmental Protection Agency** holds that up to 10 parts per billion of arsenic in water is safe for drinking. The amount found in the elementary schools ranged from 11 ppb to 18 ppb. Odorless and colorless, 60 ppb of arsenic could be fatal to adults.

Meanwhile, the district is distributing bottled water to all district schools.

The district will test every water fixture in every school. District spokeswoman **Patti Spencer** said the cost hadn't been determined.

### Newsmakers

#### Newsweek releases annual top 1,000 high school rankings

Texas and Florida lead *Newsweek's* annual high school rankings, with each state placing five schools in the list's top 25. **Dallas Independent School District** led all districts, with its **School for the Talented and Gifted** ranking first, the **School of Science and Engineering** placing eighth and **Highland Park High School** ranking 18th.

The magazine formulates its rankings based on the total number of Advanced Placement, International Baccalaureate or Cambridge tests given at a school in May, divided by the number of seniors graduating in May or June.

All public schools that achieved a ratio of at least 1,000, meaning they had given as many tests as they had graduates in 2005, are on the *Newsweek* Web site. The 100 schools with the highest ratios are named in the magazine.

The top 10 schools after Talented and Gifted are:

2. **Jefferson County IB School** (Irondale, Ala.)
3. **BASIS Charter** (Tucson, Ariz.)
4. **City Honors High School** (Buffalo, N.Y.)
5. **Stanton College Prep** (Jacksonville, Fla.)
6. **Eastside High School** (Gainesville, Fla.)
7. **Suncoast Community High School** (Riviera Beach, Fla.)
8. **Science/Engineering** (Dallas)
9. **International Academy** (Bloomfield Hills, Mich.)
10. **Academic Magnet High School** (North Charleston, S.C.)

#### Soft-drink makers agree to pull the sweet stuff from school vending

Rolling with the tide of anti-junk food and soft-drink legislation cropping up nationwide, the country's largest

soft-drink makers have agreed to pull their sugary products from school vending machines.

In a deal brokered by the **William J. Clinton Foundation**, **Coca-Cola**, **Cadbury Schweppes**, **PepsiCo**, and the **American Beverage Association** agreed to sell only low calorie, healthy drinks in schools.

Low calorie is defined as any drink with fewer than 100 calories, except when nutritional value outweighs the calories, as with some milk drinks.

### Resource

#### Board unveils certification for career changers

The **American Board for the Certification of Teacher Excellence**, a national alternative teacher certification program, has announced new content certifications in chemistry and in physics through its Passport to Teaching program.

The certification pathways, designed to help mid-career changers enter the teaching profession, comprise part of ABCTE's initiative to recruit 5,000 highly qualified math and science teachers throughout the country by 2009.

ABCTE candidates must pass examinations on teacher pedagogy and in core subject areas to receive their certification. Passport to Teaching is approved as a route to state certification in Florida, Pennsylvania, Idaho, New Hampshire and Utah.

*For more information, see [www.abcte.org](http://www.abcte.org).*

### Funding Notebook

#### NIH support for parenting, child development research

The **National Institutes of Child Health and Human Development** is seeking research proposals on the mechanisms through which social, economic, cultural, and community-level factors influence the early cognitive, neurobiological, socio-emotional and physical development of children. The deadline for grants of up to \$50,000 per year each is June 1.

NICHHD also is teaming with three other **National Institutes of Health** divisions to fund research aimed at improving parenting skills and capacities of parents and caregivers to improve the health of their young and adolescent children.

Examples of research include interventions focusing on modifying parent practices, improving diet and physical activity, studies of the effects and interrelationships of psychosocial and environmental factors, and the adoption of risky or healthy behaviors among youths. Applications are due June 1 and Oct. 1.

*For the announcements, see <http://grants1.nih.gov/grants/guide/pa-files> (search for PA-06-345 for child development; or PA-06-097 for parenting).*

**KAMRAS** (continued from page 1)**Q: How should evaluations be designed?**

**A:** A significant portion of any evaluation ought to be some standard measure of student achievement.

I know that's uncomfortable for some in the education community because they necessarily place a lot of weight on standardized tests, which could be more robust.

But it's important that we have a certain baseline standard measurement that correlates with teacher effectiveness. That should be combined with measures of teacher contributions to the school community and other less tangible factors.

The percentage ought to be closer to two-thirds of the evaluation based on student achievement data than one-third.

**Q: Do you think high-stakes decisions, as well as bonuses, should be made based on value-added performance evaluations?**

**A:** Most districts offer tenure as a matter of course as long as you've met some very minimal requirements, which rarely have anything to do with your actual effectiveness in terms of student achievement.

If you're in the bottom quartile of teacher effectiveness, the children in your classroom might even be regressing. In that case, it seems we might need to consider that those contracts shouldn't be renewed.

The bottom percentage of teachers should be dealt with by creating immediate interventions for those teachers.

If their poor performance is sustained over a greater period of time, they should be transitioned out of the profession.

**Q: Are there other elements of teacher contracts that need attention and reform?**

**A:** Many contracts are set up so that if a teacher is excessed from one school, he is at the top of the placement pool at other schools.

Excessing could mean the principal has decided to cut the position because of enrollment or program changes, but principals sometimes use those as excuses for poor performance.

Anecdotally, many principals hide their vacancies from the central office so they don't receive those excess people. Come fall, they are able to bring in people they prefer because all of the excess people have been placed.

**Q: Will on-the-ground evaluations make it easier to obtain certification?**

**A:** We do create a lot of barriers for people to come into the profession, and it would be less

troublesome if those barriers added value pedagogically to educators.

Unfortunately, I think most of them do not, and most of the coursework does not have direct relevance to the classroom.

The flip side is you have to have a very strong and swift evaluation process which is not going to tolerate ineffective teachers if you loosen certification.

**Q: What do you think is missing in policy debates about teachers and teacher quality right now?**

**A:** We talk a lot about bringing equity to children so they all have the same opportunities. One of the keys to retaining really quality people is to surround them with really quality people. Sometimes, that means removing people who are not effective.

I think it's more powerful than even financial incentives to know you're going into a situation where everyone has high expectations for students and is willing to put in long hours and make home visits. It's why you see certain schools are able to turn away applicants.

**Q: How do you aggressively recruit teachers?**

**A:** You have to have human resources departments that are very efficient.

I frequently meet people on the road who say they want to teach in a big city school system and they've sent in their materials and haven't heard anything after five months. If anyone shows interest, we should be answering the calls and getting them into interviews right away.

**Q: There's a lot of focus on rigor. What professional development needs to accompany that?**

**A:** Most professional development is really quite poor. It's usually a half-day session on the practice-of-the-month. We need targeted, embedded, long-term professional development to change practices.

Businesses change practices but don't do it in half-day sessions once a month. We shouldn't think teaching is any different.

It means having an intensive, long-term program, having master teachers model skills, setting clear objectives, and tracking student performance to see if PD is really having an impact.

We spend so much money on PD, and we don't know what effect it's having. State and local governments need to fund it at better levels with increased funds tied to program evaluations.

—Stephen Sawchuk