

U.S. STEM EDUCATION

Educators, Lawmakers Question Proposed Reorganization

The status quo is a powerful force in Washington, D.C. And that resistance to change could be good news for Tufts University neuroscientist Karina Meiri and other science educators battling to derail a White House proposal to revamp the federal government's \$3 billion investment in STEM (science, technology, engineering, and mathematics) education.

Last week, Republican and Democratic legislators used a House of Representatives science committee hearing to lambaste the administration's plan, calling it "rushed" and "not well thought out." That bipartisan push-back could turn what has been a Sisyphean challenge for Meiri and other critics into a possibly winnable fight.

At issue is a proposal to shrink by more than one-half the 226 STEM programs now funded by a dozen agencies (*Science*, 19 April, p. 258). It would concentrate resources at three agencies: the Department of Education for elementary and secondary school programs, the National Science Foundation (NSF) for undergraduate and graduate programs, and the Smithsonian Institution for informal and public science activities. Administration officials say that eliminating 78 programs and merging 48 others would save an estimated \$176 million and enable them to redistribute the money to the three lead agencies. They also want to create 10 programs and boost overall STEM spending by \$195 million.

The reorganization, part of the president's 2014 budget request to Congress, is essential "to free up resources for the administration's highest [STEM education] priorities," John Holdren, the president's science adviser, testified at the 4 June hearing. And while lawmakers on the science committee, the first to examine the plan in depth, generally agreed that federal STEM education programs are not well coordinated and that 226 programs is probably too many, they didn't like how the White House wants to reshuffle the deck.

Several lawmakers reported that their constituents are upset about proposed cuts of as much as 33% in STEM education budgets at so-called mission agencies. These agencies, including NASA, the National Institutes of Health (NIH), the Department of Energy, and the National Oceanic and Atmospheric Administration, exist for purposes other than

to prepare STEM workers. But over the years, they have tapped their scientific expertise to develop education programs for students, teachers, and the general public.

"I hope our witnesses can tell us what was wrong with the programs the administration wants to cut or consolidate," said committee chairman Representative Lamar Smith (R-TX) at the start of the hearing. Committee members then spent 2.5 hours peppering Holdren, NSF's Joan Ferrini-Mundy, and NASA's Leland Melvin with questions about how the White House decided to eliminate programs, whether it had consulted outside

cer, infectious diseases, and diabetes. But the White House has marked for extinction both the Science Education Partnership Award (SEPA) program that funds her and dozens of other projects as well as NIH's Office of Science Education, which manages SEPA.

Meiri admits that she's a novice when it comes to working the corridors of power in Washington. But after hearing about the realignment, she decided to register her concerns by going straight to the top—or at least as close as she could get. In two e-mails and one phone conversation last month with the White House Office of Public Engagement, Meiri aimed for what she hoped was the plan's Achilles' heel.

"The decision to drop health science from the national education agenda could be politically embarrassing to the president," she argued. Efforts to curb spending under the nation's new health care law, known as Obamacare, require an informed citizenry, she explained. And SEPA is the only federal program that funds academic scientists sharing the latest health science results with the public.

Holdren's answer to a question from Representative Suzanne Bonamici (D-OR) about the impact of ending SEPA suggests that Meiri's concern about the fate of health science education is well-founded. "We are determined to figure it out in a manner that would not lose the effectiveness of the engagement programs that already exist," Holdren said.

Eliminating NIH's STEM programs will reduce incentives for biomedical scientists to work on education, warns J. Michael Wyss, chair of the American Physiological Society's education committee and a neurobiologist at the University of Alabama, Birmingham. "Right now, the country is gaining access to tremendous scientific resources for free," says Wyss, a former SEPA grantee. "And I'm not sure the average PI [principal investigator] would be interested if the money came from the Department of Education rather than from NIH." He also questions the wisdom of a strategy based on "moving the mission but without the money."

Theresa Schwerin, who manages education programs for the Institute for Global Environmental Strategies, a NASA contractor, sees the same thing happening in the space sciences if NASA cancels the education and



Endangered species. An exhibit on the connection between health and evolution, now at the New York Hall of Science, was funded by an NIH program targeted for elimination.

STEM experts, and whether the lead agencies were up to the job.

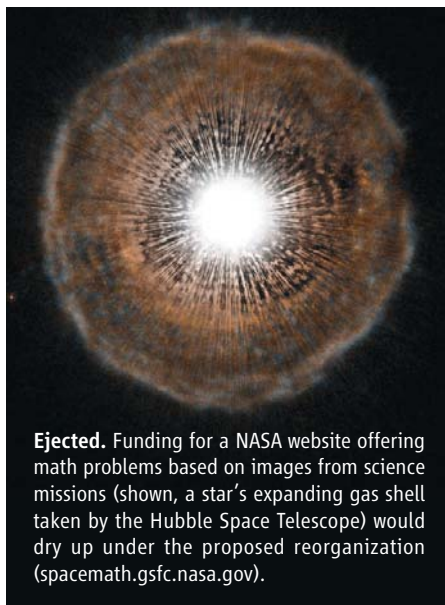
On 31 May, an interagency committee reporting to Holdren's Office of Science and Technology Policy unveiled a 5-year strategic plan for federal STEM education. The science panel's top Democrat, Representative Eddie Bernice Johnson of Texas, suggested that the reorganization take a back seat to the strategic plan, which doesn't mention any cuts. "My hope is that the strategic plan can serve as a new starting point for more sensible and well thought out implementation steps in 2015 and beyond," Johnson said.

Such comments are sure to bolster efforts by Meiri and other science educators to rally support for existing programs. Meiri runs an NIH-funded project that exposes high school students in the Boston area to the latest research on health scourges such as can-

outreach components of its scientific activities. “How will scientists from the science mission directorate be engaged in education and public outreach if there are no, or very little, resources available for this?” she asks. “Are they expected to be volunteers? This is just not a realistic or effective approach.”

Putting all of NASA’s education eggs in one basket—the education office that Melvin runs—will still leave sufficient resources “to make sure we can bring forward the best [STEM education] programs,” Melvin told Representative Donna Edwards (D-MD). But he confirmed her supposition that he did not propose the reshuffling at NASA and had not provided his federal colleagues with a list of what should be axed.

The reorganization’s critics hope that Congress will decide to stop the White House plan in its tracks. They’ll need more than the House science committee on their side, however, because spending falls under



Ejected. Funding for a NASA website offering math problems based on images from science missions (shown, a star’s expanding gas shell taken by the Hubble Space Telescope) would dry up under the proposed reorganization (spacemath.gsfc.nasa.gov).

the purview of the powerful appropriations panels.

NIH-funded science educators face an even tougher challenge, namely, avoiding the dismantling of the agency’s science edu-

cation infrastructure. Lawrence Tabak, principal deputy NIH director, acknowledges that NIH is the only federal agency that supports health science education. And he says that his colleagues at other agencies are trying to figure out “how NIH can provide the technical expertise that is needed to support programs of this type under the reorganization.” He agrees that such uncertainty “is hard on the community.” But every NIH program is undergoing similar intense scrutiny, he notes, after this spring’s government-wide budget cuts known as sequestration amplified the impact of years of flat budgets.

Tabak says that “no decision has been made” about the fate of the Office of Science Education, and the office’s longtime director, Bruce Fuchs, declined to comment. But most scientist-educators believe Fuchs’s position will disappear on 30 September, the last day of the 2013 fiscal year.

—JEFFREY MERVIS

U.S. SCIENCE POLICY

NSF Cedes Little Ground on Political Science Reviews

Facing a controversial congressional directive to fund only political science research that promotes national security or economic development, the U.S. National Science Foundation (NSF) has decided that it can follow those orders without deviating too much from its traditional peer-review process.

The new NSF policy, announced on 7 June, means that reviewers meeting this month to evaluate roughly 200 proposals in political science will still use the agency’s two long-standing criteria—intellectual merit and broader impacts. However, those proposals will receive a second review by another panel, which will apply the two criteria that Senator Tom Coburn (R-OK) added to a government-wide spending bill for 2013 (*Science*, 29 March, p. 1510). NSF program officers will consider both sets of reviews in deciding which proposals to fund.

“We take the congressional language very seriously,” says Myron Gutmann, head of the social, behavioral, and economic sciences directorate that includes the \$10-million-a-year political science portfolio. “We’ve thought long and hard about the new language, and we want to make sure that reviewers have the same chance.”

Adopted by voice vote without debate, Coburn’s amendment was meant to address the concerns of several legislators, who have asserted that NSF occasionally funds frivolous or trivial research that wastes taxpayer

dollars. Accordingly, the language requires the NSF director to issue a public explanation of each grant awarded.

Gutmann says that summaries posted on NSF’s website of every funded project already serve that purpose and that there’s no need for a statement from the director. Everything at NSF is done under the authority of the director, he adds, although much of the actual work is carried out by the agency’s 1250 employees. “Our goal is to operate within the law,” he explains. The extra layer of review could delay decisions normally made this summer until the fall, Gutmann notes.

Asked for a reaction, Coburn issued this statement through his press secretary: “Political scientists, of all people, should understand Congress’ responsibility to set priorities and make hard decisions. ... [W]e need to make sure we adequately invest in truly transformative research ahead of important but lower-priority research. I will continue to monitor NSF’s Political Science Program to ensure all funded programs meet the standards Congress passed in March.”

Many social scientists initially feared that NSF might scrap its entire political science portfolio this year after deciding that separating out proposals meeting Coburn’s narrow language would be impossible. NSF’s response has allayed some of those concerns. But it leaves open the question of how well peer reviewers can spot research that would

foster national security and economic development and whether NSF should adopt such criteria at all.

“This is a recipe for chaos via the imposition of ad-hoc, subjective, and incoherent opinion. How does that promote social science?” asks political scientist Jim Granato, a former NSF program manager now at the University of Houston in Texas.

Greg Koger, a political scientist at the University of Miami in Florida, shares Granato’s anger toward Congress, calling it “outrageous and disturbing that political science has been singled out for extra scrutiny and scorn.” But he hopes that NSF will use “a broad interpretation of national security and economic interests” in making funding choices.

NSF’s response to Coburn could also have implications for a proposal from the chairman of the House of Representatives science committee to apply similar language to NSF’s entire research portfolio (*Science*, 24 May, p. 911). The plan, floated by Representative Lamar Smith (R-TX), would require the NSF director to certify that all research that the agency funds is groundbreaking, not duplicative, and vital to U.S. interests. The language has roiled the scientific community, which sees it as an attack on the peer-review process. So NSF’s response to Coburn may also be a signal to Smith that it sees little reason to make any fundamental change to its peer-review process.

—JEFFREY MERVIS