

Questions for the Record
Nomination of Jo Handelsman to be
Associate Director for Science, Office of Science and Technology Policy
Senate Committee on Commerce, Science, and Transportation
Hearing on September 19, 2013

STEM program streamlining

- 1) This April, the OSTP and the Office of Management and Budget proposed a federal STEM reorganization plan with the goal of eliminating redundant and ineffective STEM education programs. Members of Congress from both parties have raised concerns about this proposal, claiming that it would eliminate effective programs and that it ignores the expertise and tools that exist within mission agencies like NASA and NOAA.

Question: How would you work with Congress going forward to improve the coordination and efficiencies of these programs across the federal government?

Thank you, Senator Thune, for this question. As you know, STEM education programs are of particular interest to me and, if confirmed, I would look forward to working to make them as strong and efficient as possible. Since I think we all believe in the fundamental principles of efficiency and coordination that underpinned the reorganization, I would examine the programs, determine the rationale for choices, and work with the Congress to build the best constellation of programs we can. I have a collaborative leadership style and would enter into this process with a presumption of fostering collaborative relationships. If confirmed, I intend to address this issue with the kind of cooperation that Congress and the Administration proved possible when, under the leadership of this Senate committee, the America COMPETES Reauthorization Act of 2010 was enacted.

There is reason for optimism. The America COMPETES legislation led to the creation of the new National Science and Technology Council (NSTC) Committee on STEM Education (CoSTEM). CoSTEM recently released a 5-year Federal STEM Education strategic plan, which I understand has been well-received both inside and outside government. Already, CoSTEM member agencies are working together to implement the strategic plan's vision of a more effective, efficient, and coordinated Federal STEM education enterprise that sustains and builds upon agency capabilities and assets in STEM education.

If confirmed, I would look forward to working with you, CoSTEM member agencies, and the scientific community to implement that strategic plan in a manner that achieves our shared goals.

The principles I would strive to uphold are twofold: (1) we should protect programs that are supported by evidence; and (2) we should honor the unique features and capabilities of our Federal agencies to deliver the best STEM education programs to our students and institutions of education at all levels.

The “Scientific Teaching” Method

- 1) Dr. Handelsman, could you explain the “scientific teaching” method you have developed and written about, and discuss how that model could help improve U.S. STEM education?

Scientific teaching has a number of meanings. First, it is about using evidence in teaching, just as we do in scientific research. This means relying on scientific research about learning in making choices about classroom practice, and incorporating regular informal and formal assessment of learning into teaching, just as we include metrics for scientific phenomena in scientific research. Second, scientific teaching means treating the classroom more like a research lab. A key aspect of research labs is that they capitalize on the different talents and strengths of each member through hands-on lab work and creative problem-solving. This approach should be extended to the classroom such that teaching methods are adapted to further expand opportunities for students from diverse backgrounds to participate more fully in the learning process. Finally, scientific teaching is about scientific content. This means teaching the process of science and scientific thinking as well as the products of scientific investigation.

Scientific teaching can be a useful framework to apply to the Federal education agenda because it provides a roadmap to three key elements highlighted in the CoSTEM strategic plan: Our choices should be evidence-driven; we should foster diversity and use it to strengthen the teaching in STEM classrooms; and we should emphasize the process as well as the products of scientific investigation. If confirmed, I would look forward to working with you and this Committee to realize these goals.