

DAY ONE PROJECT

Strengthening the U.S. STEM Talent Pipeline Through a National Youth Innovation Showcase

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Summary

The next administration should institute a national White House Youth Innovation Showcase similar to the discontinued White House Science Fair (WHSF) to promote and provide new opportunities for increased K–12 participation in science, technology, engineering, and math (STEM). As a national platform to amplify and inspire scientific accomplishments by students of all backgrounds, the Showcase will help the next administration strengthen the U.S. STEM talent pipeline and pave the way for future growth in American science and technology industries. The Showcase will also provide an opportunity for the White House Office of Science and Technology Policy (OSTP) to facilitate public-private collaborations that provide resources for participating students and support regional initiatives to increasing diversity in STEM fields. The next administration can use announcement of the Showcase to reveal its STEM agenda, outlining its policies to support STEM education and a diverse STEM workforce while articulating how its STEM goals will support emerging technology industries and overall economic development.

Challenge and Opportunity

The COVID-19 pandemic has emphasized the pivotal role science should have in shaping policy at the federal level. Adequate scientific representation throughout the government and various economic sectors is essential to achieving technological advancement and high quality of life nationwide. In order to meet growing demand for a trained STEM workforce, and to address uneven availability of STEM resources across school districts, localities, and states, the federal government should strive to support K–12 STEM education and community-based experiences nationwide.

Yet, there is no major federal showcase or initiative aimed at promoting and identifying K-12 participation in STEM fields. While there are several private and civil-sector analogs (such as the Google Science Fair, the Regeneron Science Talent Search, and the Regeneron International Science and Engineering Fair), these leave something to be desired. Existing STEM showcases for youth provide limited opportunities for collaboration among students. Existing showcases also lack concerted efforts to address unequal resource allocation in order to encourage broader representation for young people of all backgrounds and STEM interests, including those interested in engineering and innovation-focused careers.

The WHSF illustrated the value of what a STEM showcase event can do to inspire and signal the importance of STEM for the next generation. To further promote and catalyze youth engagement in STEM and innovation, the next administration should organize the K–12 “White House Youth Innovation Showcase”. The Showcase would be similar to the White House Science Fair (WHSF) developed during the Obama administration, but would go even further in encouraging and supporting inclusive STEM participation nationwide. The national platform provided by the Showcase would amplify the efforts of organizations dedicated to promoting racial, gender and geographical minorities in STEM, foster public-private partnerships to increase availability of

STEM resources to underserved populations and provide an avenue for student voices to be heard on scientific legislation. Combining the national Showcase with a series of regional showcases will recognize even greater numbers of students who are discovering, designing, and developing societal solutions using approaches across the entire spectrum of STEM disciplines, thereby stimulating local and regional support for national policy dedicated to technological and scientific development.

Plan of Action

In the outset of the next administration, OSTP should organize and launch the White House Youth Innovation Showcase. OSTP should issue a press release announcing the Showcase within the first 30 days of the new term, using the opportunity to also announce its priorities for STEM education and STEM workforce development. In the press release, OSTP should include the showcase date and open registration for participants. The date should be a minimum of six months out to allow students time to develop and submit projects (~4 months) and for a team to evaluate projects for inclusion (~2 months), and to give time for third parties to sign-on and meaningfully participate. A series of actions should follow the announcement:

- (1) **Issue a call to action for private-sector partners.** Leveraging the White House platform, OSTP should announce a call to action that encourages private-sector companies to demonstrate their support to building a diverse, equitable, and inclusive STEM pipeline. Following the announcement, the administration should organize a national STEM education roundtable with private-sector representatives to help generate commitments in response to the call to action.
- (2) **Establish a multi-stakeholder group to support Showcase organization and coordinate related national activities.** OSTP should stand up a committee comprised of representatives from federal agencies, universities, corporations, and STEM-engagement organizations. The committee should be charged with:
 - (a) Reaching out to existing STEM organizations aimed at increasing participation amongst gender or racial minorities to integrate their programs, students, and/or resources into the Showcase's challenge design and participation.
 - (b) Determining what societal and legislative issues can be framed into priority challenges requiring innovative, scientific solutions that could be their own independent submission categories in the Showcase.
 - (c) Organizing resources for students to use in addressing these challenges. Resources could range from datasets and software tools to mentor talks and past studies.
 - (d) Designing curriculum-based supplements that K–12 teachers can use in the classroom to encourage participation in independent and collaborative investigation.
 - (e) Developing initiatives and collaborations aligned with Showcase goals. For instance, corporations could pledge that underrepresented populations will comprise a certain percentage of new employees over the next 10 years.

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- (f) Providing advocates and representatives to help evaluate project submissions to the Showcase.

As these efforts progress, OSTP can coordinate with state and local governments to host regional showcase events that provide additional opportunities for students to be involved in the Showcase initiative. OSTP can also facilitate local publicity for students participating in the national Showcase and in complementary regional events. Finally, OSTP should work with third parties to develop both in-person and remote activities that are aligned with Showcase goals and help maximize Showcase impact.

Frequently Asked Questions

How would the White House Youth Innovation Showcase build on the White House Science Fair (WHSF)?

The initiative would build on the progress made during the six WHSFs hosted by the Obama administration to encourage K-12 participation in STEM, especially among underrepresented groups. The Obama administration used the national platform of the WHSF to encourage the public and private sectors to develop and share their own plans for supporting K–12 STEM education. Though the WHSF is no longer ongoing, many of these plans remain active. Ongoing activity suggests that federal leadership, accompanied by an inspiring White House-led event, can bolster sustained STEM education and inclusion in the United States. The White House Youth Innovation Showcase would carry over many best practices from the WHSF, but with a renewed focus on inclusivity and regional engagement that would increase the effort’s impact.

What is the current state of the WHSF?

The WHSF has not been held since President Obama left office in 2017. Although there were talks in 2017 about continuing the WHSF under President Trump, the fair has not yet returned—in large part because of the drastic cuts made to OSTP, the executive office primarily responsible for bringing the WHSF to life. An in-person event like the WHSF will likely be impossible to carry out for the duration of the COVID-19 pandemic, although virtual options could be developed.

What would make the Showcase distinct from the original WHSF? Why propose a new model instead of simply bringing the WHSF back?

The WHSF focused exclusively on science projects. The Showcase would expand opportunities for engagement by including and featuring other types of STEM-related projects focused on solving social, environmental, economic and scientific challenges. Including inventions, innovations, and engineering projects would increase the pool of potential participants and encourage broader participation from diverse young people. The Showcase would aim for broader, more diverse engagement than the WHSF, starting with a suggested target of 10,000 students (including participants in the national Showcase as well as complementary regional and local events) in its first year and scaling each year thereafter. The Showcase would also place additional emphasis on using partnerships to increase representation of submissions from students located in rural areas, as well as from gender and racial minorities. Working with partners at the state and local levels to decentralize promotion of the Showcase will enable more direct, effective outreach to underrepresented populations.

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Would the Showcase compete with other national science fairs hosted by the private sector? Why would students want to participate in the Showcase?

The Showcase would be complementary to—not competitive with—efforts hosted by the private sector. Students who entered their projects in any such science fair would not be precluded from entering the same project in the Showcase. We hope students would especially want to participate in the Showcase because the Showcase would provide a broader platform for students who do not want to be limited to a traditional research project, who want to submit a collaborative project, or who want to interact with lawmakers to discuss their project if it relates to a particular legislative concern.

How will the Showcase be funded?

Staff time at the White House Office of Science and Technology Policy (OSTP) should be dedicated to planning and managing the Showcase. A small part of the OSTP budget should be used to cover the costs of the Showcase itself. Partner resources from other federal agencies and the private sector should be leveraged to cover costs of hosting regional showcases, satellite events, and scaling participation. Third parties can also be engaged to provide resources for students to use in developing and completing a project for the Showcase. Resources could include freely available talks from STEM leaders, mentorship programs with experts in industry and academia, and supplementary, exploratory lesson plans for classroom use. The Showcase will provide both encouragement and an incentive for students to use these resources to delve into an intriguing area of science or engineering. In doing so, the Showcase will help bridge the gap between STEM classroom learning and active research and development.

How long would it take to initiate the Showcase, and where would it happen?

The Showcase date should be announced and established within the first 30 days of the next administration. The Showcase should occur roughly six months later, allowing sufficient time for setup and planning (both at the White House and at the regional level) without losing the momentum of a new administration. Selection of regional and satellite locations should focus on geographic diversity. The number of possible locations should not be limited—any individual or institution interested in hosting a satellite event should be welcomed. Given the logistics of identifying and coordinating collaborators (e.g., local nonprofits, schools, and community groups) to support satellite events, we expect that some satellite events may take longer than six months to organize.

What would the submission and evaluation process look like for the Showcase?

Some Showcase projects would be selected from those already recognized in a select set of national competitions (e.g., the Google Science Fair). Others would be selected through an independent judging process against projects in the same category and/or challenge, and/or

age level. The level of recognition will be based on a holistic evaluation by volunteer judges from across the nation representing a diversity of STEM disciplines in industry and academia.

Why should the announcement of the Showcase coincide with the unveiling of the next administration's STEM education and workforce development plans?

Aligning the Showcase's introduction with the announcement of the next administration's STEM development plans will allow the Showcase's goals for curriculum design and third-party involvement in drafting diversity initiatives to be integrated with and thus facilitated by the other development programs.

How would the Showcase benefit students?

Previous WHSF iterations generated grants from and partnerships with third parties (such as STEM organizations, other federal agencies, and local commitments) that created valuable opportunities for students nationwide. We expect that the Showcase would deliver similar benefits, but for a broader group of students: students engaged not just in science *per se*, but also in engineering, invention, and innovation. The Showcase would increase youth interest in a scientific or technological career to boost growth and diversify our future STEM workforce.

What would the Showcase's call to action yield from the private sector, and what might be some anticipated short- and long-term outcomes?

A call to action would be a formal method of engaging private organizations to form a diverse committee responsible for designing priority challenges that the Showcase would be organized around, marshaling resources for students to use in developing solutions to these challenges, and recruiting evaluators to select projects for Showcase inclusion. In the long term, private-sector support for the Showcase would increase support for STEM education and workforce development, as well as for federally funded research.

What else would the Showcase accomplish?

We expect that the Showcase would grow STEM talent and inspire the next generation to pursue STEM education and careers. Specifically, we expect the Showcase to:

- Grow youth interest in a scientific or technological career, expanding and diversifying our nation's future STEM workforce.
- Showcase the breadth and need for science and engineering at a national level, thereby increasing awareness of and investment in STEM.
- Empower young people to tackle societal challenges such as healthcare, the environment, and youth education.
- Illustrate the value of STEM research and education, thereby growing support for legislation supporting STEM education, research, training, and workforce development.



About the Author

Mrunali Manjrekar is a rising sophomore at the University of California, Berkeley, studying Bioengineering and Electrical Engineering and Computer Sciences. She is an avid advocate who champions science policy and promotes gender and minority representation in areas of STEM.



About the Day One Project

The Day One Project is dedicated to democratizing the policymaking process by working with new and expert voices across the science and technology community, helping to develop actionable policies that can improve the lives of all Americans, and readying them for Day One of a future presidential term. For more about the Day One Project, visit dayoneproject.org.