



STEM Education Advisory Panel COMMITTEE MEETING

Monday, August 2, 2021

Location: Virtual only via ZoomGov

Members of the public registered in advance at:

https://nsf.zoomgov.com/webinar/register/WN_7MNHMAvyRjm0kzmS7G9eIQ

Advisory Committee Members Present: Gabriela (Gaby) González (Panel Chair), Lizanne DeStefano (Panel Vice Chair), Steven Barbato, Vince Bertram, Doug Clements, Arthur Eisenkraft, Jacqueline Huntoon, Robert Mathieu, Ray Mellado, Tiffany Neill, Larry Robinson, Francisco Rodriguez, Robert Semper, William Yslas Velez, Bruce Wellman, Darryl Williams

Advisory Committee Members Not Present: K. Renae Pullen, Laurie Leshin

11:00 AM – 11:30 AM WELCOMING REMARKS

STEM Education Advisory Panel Leadership

The meeting of the STEM Education Advisory Panel Committee was called to order by Dr. Gabriela González, STEM Education Advisory Panel Chair. Dr. González reminded panelists of the objectives of the panel, as laid out in the American Innovation and Competitiveness Act. The panel's primary charge is to provide recommendations to the Committee on Science, Technology, Engineering and Mathematics Education (CoSTEM) for accomplishing the 2018 Federal STEM Education Strategic Plan.

11:30 AM – 12:00 PM SESSION 1: NSTC and CoSTEM

CoSTEM Leadership

Dr. Gonzalez welcomed and introduced Dr. Alondra Nelson, the Deputy Director for Science and Society at the White House Office of Science and Technology Policy (OSTP), and Co-Chair of the Committee on STEM Education (CoSTEM). Dr. Nelson made a few brief welcoming remarks and then Dr. Gonzalez opened the session for questions. Dr. Nelson answered questions about the importance of informal education efforts to CoSTEM and FC-STEM's work, and the effects of mental health on education, particularly in the context of the pandemic, and the intersectionality of diversity related issues on STEM education.

Dr. Gonzalez then welcomed and introduced Dr. Karen Marrongelle, the Chief Operating Officer of the National Science Foundation. Dr. Marrongelle provided a general welcome and shared information regarding the President's comprehensive approach to addressing racial and poverty related inequities. Dr. Marrongelle also spoke to the NSF Director Dr. Panchanathan's initiation of NSF's Racial Equity Task Force charged with exploring the intersectionality of workforce related challenges and diversity, equity, and inclusion. NSF is partnering with other federal agencies in the diversity, equity, and inclusion space (e.g., [the collaboration between NASA and NSF to broaden participation in engineering](#)). The foundation also collaborates with the NSA through the CyberCorps Scholarship for Service program ([NSF 21-580](#)) to increase diversity in cyber careers. Dr. Marrongelle asked the panel to assist with determining where NSF needs to direct attention and next steps for CoSTEM's efforts.

Dr. Marrongelle answered questions about evaluating diversity, equity, and inclusion (DEI) efforts, such as NSF INCLUDES, and including DEI more broadly in the NSF merit review process. A question from the public asked if there is an administrative push to incentivized STEM skills for the high

school/community college/workforce pathway and Dr. Marrongelle replied that NSF has long recognized the importance of the transition from high school to community college along with the transition from community colleges to the workforce. Dr. Marrongelle also addressed questions about partnerships across the federal government, higher education, and workforce initiatives to unite behind a common goal and the new NSF [Technology, Innovation, and Partnerships Directorate](#) which will leverage partnerships at speed and scale and engage in new collaborations in new ways.

12:00 PM – 12:15 PM SESSION 2: REPORT RECAP

STEM Education Advisory Panel Leadership

Dr. Gonzalez led discussions of the Panel's report that assesses CoSTEM's progress in carrying out its responsibilities under section 101 of the America COMPETES Reauthorization Act of 2010. Last summer, the Panel subcommittees met with five interagency working groups to hear updates of their work. In December, the Panel met to review CoSTEM's progress. The report was written based on these updates. All Panel members had an opportunity to review the report and provide feedback to the Chair and Vice Chair. The report will be submitted to NSF and NSF will assist the Panel in providing the report to CoSTEM and Congress.

The Panel had a brief discussion about the report's findings. Overall, panelists saw gains in interagency coordination, and they were thankful for the responsiveness of the agencies to information requests and panelist suggestions. The panelists indicated the report reads well and communicates the interconnectivity among IWGs. Panelists expressed some reservations about the data available and the evidence presented of interagency coordination and the impact of that coordination, and this is reflected in the report. The panelists expressed hope that the report will affect activities over the coming years to strengthen collaborative efforts across the Federal government. The Panel held a vote and members unanimously favored the Report's submission.

Dr. DeStefano thanked the panel for their efforts, Dr. Gonzalez for her writing, and Dr. Nafeesa Owens and Ms. Cindy Hasselbring, the STEM Education Advisory Panel executive secretary, for their assistance.

12:15 PM – 1:00 PM SESSION 3: FC-STEM

FC-STEM Leadership

Dr. DeStefano introduced the three co-chairs of the Federal Coordination in STEM Education (FC-STEM) Subcommittee for an update: Mr. Mike Kincaid, Associate Administrator, Office of STEM Engagement, NASA, Dr. Nafeesa Owens, Assistant Director for STEM Education, OSTP, and Dr. Sylvia Butterfield, Acting Assistant Director, Education and Human Resources, NSF. The FC-STEM Subcommittee serves as the forum for discussion and policy coordination to facilitate the implementation of the Federal STEM Education Strategic Plan and advises the Committee on STEM Education (CoSTEM) on the progress of interagency work in STEM education.

Mr. Kincaid explained the many mechanisms the CoSTEM community uses for collaboration and provided an overview of the six Interagency Working Groups and the various special projects and communities of practice that make up the Federal effort. He then asked the panel for their recommendations of the three or four most critical things FC-STEM should prioritize.

Mr. Kincaid turned the session over to Dr. Owens who shared Administration priorities and an analysis of the Federal STEM Education Request For Information (RFI). Dr. Owens reviewed a few the new Administration's activities:

1. [Executive order on racial equity across government](#)
2. [Letter to the nominated Director of OSTP](#) sharing the importance of technology, reaching communities, education, and partnering.

3. An additional [executive order on diversity, equity, and inclusion](#).

Dr. Owens also shared a brief overview of the STEM Request for Information (RFI) that was sent to the states. The RFI responses may be found here:

<https://www.nsf.gov/ehp/Materials/STEMEDRFIResponses.pdf>. Responses were received from a wide array of organizations and individuals. The overarching themes of RFI responses include:

- (1) COVID has had a significant impact, including on technology needs and students' experiences with lack of technology access.
- (2) STEM needs to be more inclusive, and resources are needed for teachers and educators to enable inclusivity.
- (3) More funding is needed for STEM education.

The Panel discussed how states and others are implementing the Strategic Plan. The RFI asked about teacher training changes in school systems, ways that states are connecting to the Strategic Plan, interdisciplinary and transdisciplinary approaches, and use of evidence to inform next steps of educational improvements.

Dr. Butterfield led a discussion about Administration priorities vis-à-vis STEM and STEM education, potential new efforts, and panel contributions to Federal government STEM education goals. The panelists' praised CoSTEM leadership's awareness of the STEM Education Advisory Panel's report to Congress and for the centrality of DEI in FC-STEM/CoSTEM's work. There appears to be a purposeful vision, intentional operationalization, and clear guidance on DEI and STEM coming from the administration. Panelists were also heartened by the potential expansion of the NSF's broader impacts merit review criterion to include more DEI considerations.

Specific to FC-STEM's work, panelists recommended that FC-STEM consider producing a companion guidelines document to increase states' usage of the Federal STEM Education Strategic Plan. They suggested more work be done to create clearer metrics across the different STEM fields. Additionally, the panelists pointed out a continued need for less compartmentalization across the federal agencies, an intentional DEI overlay to coordinated efforts, and more interdisciplinarity.

The panelists had several suggestions of topics FC-STEM should pay attention to as the work continues. Panelists would like to see STEM included in PreK-12 assessments and an elevation of science within the broader education field, demonstrated by the greater centering of STEM in education and the inclusion of STEM curricula at every grade level. In addition, panelists would like more focus on PreK-12 STEM teacher training and a greater valuing of the work of science teachers. Panelists recommended some consideration of year-round education to slow summer learning losses and more intentional work to motivate students to pursue STEM education and work. Panelists advocated for added investment in high-needs communities, more attention paid to transition points along the STEM education pathway, and a highlighting of sub-baccalaureate micro-credentialing in STEM. Overall, the panelists charged FC-STEM to think more strategically and broadly about STEM education.

1:15 PM – 3:00 PM SESSION 4: INTERAGENCY WORKING GROUPS (IWGs) FC-STEM IWG Presentations

Dr. Owens, who also served as a co-chair to the six Interagency Working Groups (IWGs), provided a brief overview of the six IWGs under FC-STEM/CoSTEM. She noted that the sixth IWG, the Veterans and Military Spouses in STEM, was created in 2020 and would not provide an update during the meeting.

Transparency & Accountability IWG

Dr. Christina Chhin, IES Education Research Analyst, Teaching and Learning Division, NCER, U.S. Department of Education, and co-chair of the Transparency & Accountability IWG (T&A IWG), provided an updated on the IWG's completed and planned activities. Dr. Chhin emphasized the IWG is in the process of learning the types of activities each agency implements, the audiences they are reaching, and the data currently collected. This work will help the IWG identify the metrics already being collected and what metrics agencies may collect going forward. Following the presentation, panel members suggested the creation of a rating system for STEM education activities based on the amount of data collected for a given activity. Panel members also asked about the timeframe for implementing the common reporting guidelines and how the T&A IWG will draw on the broader body of research looking at how to measure inclusivity.

IWG on Inclusion in STEM

Dr. Eleanor Snow, Manager of Youth and Education Programs, U.S. Geological Survey, U.S. Department of the Interior, and co-chair for the Interagency Working Group on Inclusion in STEM (IWGIS), provided an update on the IWG's completed and planned activities. Panelists asked questions about the definition of the federal STEM workforce and the use of the terms "underserved" and "underrepresented."

Convergence IWG

Dr. Jorge Valdes, Program Advisor on STEM Education and Intellectual Property, U.S. Patent and Trademark Office and Mr. Louie Lopez, Director DoD STEM, U.S. Department of Defense, co-chairs of the Convergence Interagency Working Group, provided an update on the completed and planned activities of the IWG. Following the presentation, panelists expressed some concern that a recommendation from the Federal government for convergent STEM education would result in less effective learning for younger students. Panelists urged the IWG to consider this and take precautions when communicating recommendations for convergence in education.

Strategic Partnerships IWG

Mr. Albert Palacios, Education Program Specialist, U.S. Department of Education, and Dr. Marlene Kaplan, Deputy Director, Office of Education, National Oceanic and Atmospheric Administration, co-chairs of the Strategic Partnerships Interagency Working Group (SP-IWG), provided an update for the completed and planned activities of SP-IWG. Following the presentation, panelists inquired whether the IWG had considered promoting the STEM education ecosystem model to scale available internships and increase accessibility to more high school students.

Computational Literacy IWG

Dr. Davina Pruitt-Mentle, Lead for Academic Engagement for the National Initiative for Cybersecurity Education (NICE), National Institute of Standards and Technology, and co-chair of the Interagency Working Group on Computational Literacy, provided an update on the completed and planned activities of the IWG. Following the presentation, panelists asked about the place of ethics in the IWG's considerations of computational literacy and education and if broadband accessibility is being considered by the working group. Dr. Pruitt-Mentle noted that both computational ethics and broadband accessibility are being considered in the IWG's efforts.

3:15 PM – 3:45 PM SESSION 5: PANEL DISCUSSION

Drs. Gonzales and DeStefano led the group in an open discussion about the IWG presentations, what they heard that was promising, what the panelists are seeing in their own work that might help inform IWG work, and how FC-STEM might leverage other sector investments in education.

The broad ranging discussion highlighted the need to focus on pandemic-related issues, such as greater parental support, the sudden shift to online teaching and learning, and the need to pay more attention to STEM literacy rather than just STEM careers. Panelists suggested making teaching resources developed with federal funding more available to teachers and then executing better tracking of resource use and additional teacher professional development. They also recommended further research into the intersections between STEM, culture, and identity, and an effort to manage pushback on DEI priorities. Some suggested reframing conversations about the STEM pipeline from underprepared students or under-resourced communities to assessing how colleges and other organizations could better prepare themselves for the students who come through their doors.

In terms of IWG emphases, the panelists were impressed with data collection efforts across the agencies. Panelists suggested the need to pilot data collection, especially qualitative data collection, in a select number of agencies first and to pay more attention to the technical details as well as compliance. Panelists also challenged the IWGs to have a process by which changes suggested in IWG reports will be disseminated to the agencies, and how suggested adaptations will be implemented and assessed.

3:45 PM – 4:00 PM CLOSING REMARKS

STEM Education Advisory Panel Leadership FC-STEM Leadership

Dr. Gonzalez thanked panelists for their insights and thoughtful discussion, remarks, and suggestions. She acknowledged the significant contributions of Panel member, Dr. Laurie Leshin, who is stepping down from the Panel. Dr. Gonzalez also recognized NSF Chief Operating Officer, Dr. Karen Marrongelle, who has worked closely with this Panel for the last few years in her former role as co-chair of FC-STEM. Dr. DeStefano provided a review of the meeting topics and action items. Dr. Butterfield thanked Drs. Gonzalez and DeStefano for their leadership, meeting planning, and support of the STEM Education Advisory Panel Report. Dr. Butterfield also thanked the Federal planning team members for their time preparing for the meeting.

The meeting adjourned at 4:03PM.