

Strategic Vision Papers Project
for the EHR Advisory Committee
November 2010

Overview

The Directorate for Education and Human Resources faces a key moment that can help shape its future, and the EHR Advisory Committee is crucial to helping to shape the directions and next steps for the directorate. The November meeting will be used to develop a series of three strategic vision papers for EHR.

Some important developments make the timing of this project propitious:

- The NSF Task Force on Innovation and Learning in Education completed its report, “Connecting Learning and Education for a Knowledge Society” (which is posted at the meeting Web site along with other readings), and the conceptual framework illustrated in that report has been widely circulated and well received.
- EHR is poised to engage in serious collaboration with other directorates across the Foundation. It is assuming a more visible and proactive leadership role in the cross-agency programs in which it is involved (e.g., IGERT, ADVANCE, GRF) and embarking on new collaborations in such key areas as broadening participation, cyberlearning, and evaluation.
- Several recent major reports are available to help guide the directions for EHR — e.g., *Prepare and Inspire: K-12 Education in Science, Technology, Engineering, and Math (STEM) for America’s Future* (President’s Council of Advisors on Science and Technology, September 2010); *Expanding Underrepresented Minority Participation: America’s Science and Technology Talent at the Crossroads* (National Academies Press, 2010); *Rising Above the Gathering Storm, Revisited: Rapidly Approaching Category 5* (National Academies Press, 2010) — and President Obama has embraced STEM education as a key priority (“Change the Equation,” “Educate to Innovate,” etc.).
- In K-12, the Common Core State Standards movement has the potential to change the STEM education landscape.
- EHR is actively engaged in collaborations with the U.S. Department of Education, NOAA, and the U.S. Department of Energy.

Some assumptions:

- EHR must take a leadership role in identifying “grand challenges” in STEM learning and workforce development.
- EHR must take full advantage of opportunities for collaboration — for example, working with the Department of Education on implementation of the “Change the Equation” initiative and strengthening our interactions with the R&RA directorates. EHR cannot address “scaling up” on its own.

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- EHR programs must become even more dynamic and forward-looking to keep pace with change and opportunity.
- EHR's programs are *primarily* meant to create tomorrow's innovations, not to sustain yesterday's innovations.
- Research and evaluation must be central in all EHR investments, because building knowledge is our main contribution.

The topics and questions for the three strategic vision papers, as well as the composition of the working groups that will produce them, are presented in an accompanying document. The three topics are:

1. Putting the "STEM" in STEM Education (connecting the disciplines and the emerging nature and practice of science with EHR investments and programs)
2. Preparing and Sustaining K-12 STEM Educators
3. Preparing and Shaping the STEM Workforce

All of the papers should address a uniform set of three questions with respect to their topic:

1. What are the "grand challenges" in *[Topic]* – those major problems or hurdles that, if overcome, would transform the enterprise?
2. What critical needs (for leadership, expertise, financial support, etc.) in *[Topic]* are important to the community but not adequately addressed or supported by EHR or elsewhere in NSF?
3. How can EHR make the most of its unique positioning and capacity to integrate education throughout NSF and the external STEM community?

And in addressing those questions, the discussion should consider three "cross-cutting" themes, which intersect all of the topics:

- Broadening participation in STEM
- Strengthening and leveraging STEM education research
- Cyberlearning as a transformative force in education

To develop the papers at the meeting, the Advisory Committee will be divided into three working groups. A chair for each group has been designated. Several EHR staff members, including a "scribe" to help with writing and typing, have been assigned to support each group. Each group will develop a preliminary draft of its paper at the meeting, and the designated chair for the group should e-mail the final version of its paper to Joan Ferrini-Mundy (jferrini@nsf.gov) by December 15.

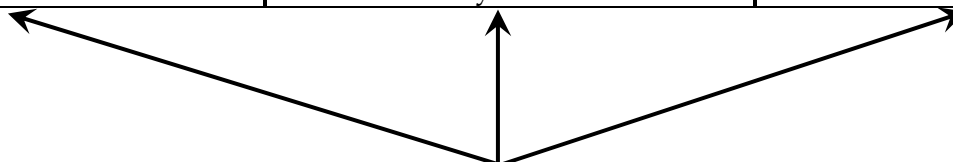
The advice that the committee will provide in these papers will enable the directorate to take advantage of the current convergence of opportunity and vibrant thinking about the future.

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Details

Working Groups

<i>Topic 1: Putting the “STEM” in STEM Education</i>	<i>Topic 2: Preparing and Sustaining K-12 STEM Educators</i>	<i>Topic 3: Preparing and Shaping the STEM Workforce</i>
Members: Cathleen Barton Richelle Blair Tom George (Chair) Susan Singer Bryant York	Members: Evelynn Hammonds Maria Lopez-Freeman Carlo Parravano Mary Ann Rankin (Chair)	Members: Myra Burnett Cinda-Sue Davis Ira Harkavy Eric Jolly Willie Pearson (Chair) Jim Renick
NSF staff: Caesar Jackson Rebecca Sanders-Demott (Scribe) Sheryl Tucker (Lead) Darryl Williams	NSF staff: Kathleen Bergin (Co-Lead) Bethany Holm (Scribe) Mark Leddy Joan Prival (Co-Lead)	NSF staff: Gabrielle Hrycyshyn (Scribe) Sylvia James Victor Santiago (Lead) Carol Van Hartesveldt
Readings (see Web site): [1a] <i>Preparing the Next Generation of STEM Innovators</i> (NSB), Executive Summary [1b] <i>Engineering in K-12 Education</i> (NAE/NRC), Executive Summary	Readings (see Web site): [2a] <i>Prepare and Inspire</i> (PCAST), Executive Report [2b] <i>Preparing Teachers: Building Evidence for Sound Policy</i> (NRC), Summary [2c] <i>Taking Science to School</i> (NRC), Executive Summary	Readings (see Web site): [3a] White House Press Release and President’s Remarks Announcing the “Change the Equation” Initiative [3b] <i>Rising Above the Gathering Storm, Revisited</i> (NAS/NAE/IOM), Executive Summary



Cross-Cutting Themes

Each group should consider these themes in conjunction with its topic:

- Broadening participation in STEM
- Strengthening and leveraging STEM education research
- Cyberlearning as a transformative force in education

Readings for everyone (see Web site):

- [Xa] “New Directions for Broadening Participation in MPS” (MPSAC BP Working Group)
- [Xb] *Expanding Underrepresented Minority Participation* (NAS/NAE/IOM), Prepublication Summary
- [Xc] “Linking Evidence and Promising Practices in STEM Undergraduate Education,” James Fairweather
- [Xd] “Connecting Learning and Education for a Knowledge Society” (draft) (NSF Task Force on Innovation in Learning and Education)
- [Xe] *Fostering Learning in the Networked World* (NSF), Executive Summary

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Questions for All Working Groups

1. What are the “grand challenges” in *Topic #* – those major problems or hurdles that, if overcome, would transform the enterprise?
2. What critical needs (for leadership, expertise, financial support, etc.) in *Topic #* are important to the community but not adequately addressed or supported by EHR or elsewhere in NSF?
3. How can EHR make the most of its unique positioning and capacity to integrate education throughout NSF and the external STEM community?

Your group’s answers to these questions constitute the “meat” of your group’s Vision Paper, the final version of which should be submitted to Joan Ferrini-Mundy (jferrini@nsf.gov) by December 15. An MS Word document on the laptop computer in your meeting room provides the template in which your group should draft answers to the questions during the meeting. An NSF staff member is assigned as the “scribe” to assist with the writing and typing during the meeting. At the report-back plenary session at the end of the meeting, each group will summarize its discussion of the questions. You should incorporate feedback that you receive there in the final version of your group’s Vision Paper.

All readings are posted at the following Web site:

http://www.nsf.gov/events/event_summ.jsp?cntn_id=117803