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Understanding and Measuring Intrapersonal and Interpersonal Competencies for Learning and Work

Gül Kremer

With Evan Heit, Jolene Jesse, Teri Murphy, Dawn Rickey, Singer Singer, Gregg Solomon, & Heather Watson



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Why is this important?

- The topic
 - Impact on learning and broadening participation in STEM
 - 21st Century skills, 21st Century science, and 21st Century education
- The synthesis
 - Leverage the NSF investment
 - Identify NSF's role



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National Science Foundation

Advisory Committee for Education and Human Resources (EHR)

Schedule and Agenda

Tuesday, May 19, 2015 and Wednesday, May 20, 2015

Arlington, VA

Panel Discussion: Developing New Measures for Non-cognitive Skills

Moderator: Ángel Cabrera, President, George Mason University, EHR AC Member

Art Graesser, Professor, Department of Psychology and the Institute of Intelligent Systems, University of Memphis

Rory Cooper, Director Human Engineering Research Laboratories and Distinguished Professor, Department of Rehabilitation Science and Technology, University of Pittsburgh, EHR AC Member

Evan Heit, Division Director, EHR Division of Research on Learning in Formal and Informal Settings

Discussant: Gül Kremer, Program Director, EHR Division of Undergraduate Education



Related efforts

- Pellegrino, J.W., & Hilton, M.L. (Eds.). (2013). Education for Life and Work: Developing Transferable Knowledge and Skills in the 21st Century. NRC.
- Stecher, B.M. & Hamilton, L.S. (2014) Measuring Hard-to-Measure Student Competencies. RAND.
- A Compendium of Social-Behavioral Research Funded by NCER and NCSER (2016). IES.
- Assessing Intrapersonal and Interpersonal Competencies, NRC Board on Testing and Assessment. Funded by NSF/EHR/DUE.



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What is the distinct NSF/EHR role?

- Connected to STEM learning
- Across age groups and settings
- Range of contributions: theoretical/conceptual, assessment, intervention



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Research Sampler

- Optimizing Student Team Skill Development using Evidence-Based Strategies (NSF 1431694, Ohland, Purdue)
- Modeling Social Interaction and STEM Learning (NSF 1418378, McNamara, Arizona State)
- Expanding STEM Talent Through Upward Transfer: Factors Influencing Transfer in STEM Fields of Study from Two-year to Four-year Institutions (NSF 1461878, Wang, University of Wisconsin)
- CareerWise II: Enhanced Resilience Training for STEM Women in an Interactive, Multimodal Web-Based Environment (NSF 0910384, Bernstein, Arizona State)



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6

Investments in Measurements

- Validating a Rapid Measure of Student Motivation: Using the Expectancy-Value Theory of Motivation to Understand Student Achievement and Interest in STEM Classrooms (NSF 1228661, Getty, BSCS)
- Collaboration in the 21st Century (C2C): Measuring Essential Skills for the STEM Workforce (NSF 1335883, Frances Lawrenz, University of Minnesota)



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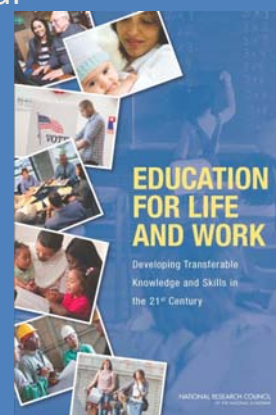
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Investments in Measurements

Assessing Intrapersonal and Interpersonal Competencies, NRC Board on Testing and Assessment (NSF 1460028, Heidi Schweingruber)

Will determine best available methods to assess student skills in:

- Teamwork
- Communication
- Self-regulation of behavior
- Academic tenacity
- Grit



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8

Investments Focused on Undergraduates

Synthesis: a comprehensive examination of the literature related to research findings from awarded projects

- Cross-program, cross-Division
- Time span: 2000 to 2015
- Publications available in the public domain
- Includes publications that are disseminated after completion of an award



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9

Investments Focused on Undergraduates

Process for the Synthesis

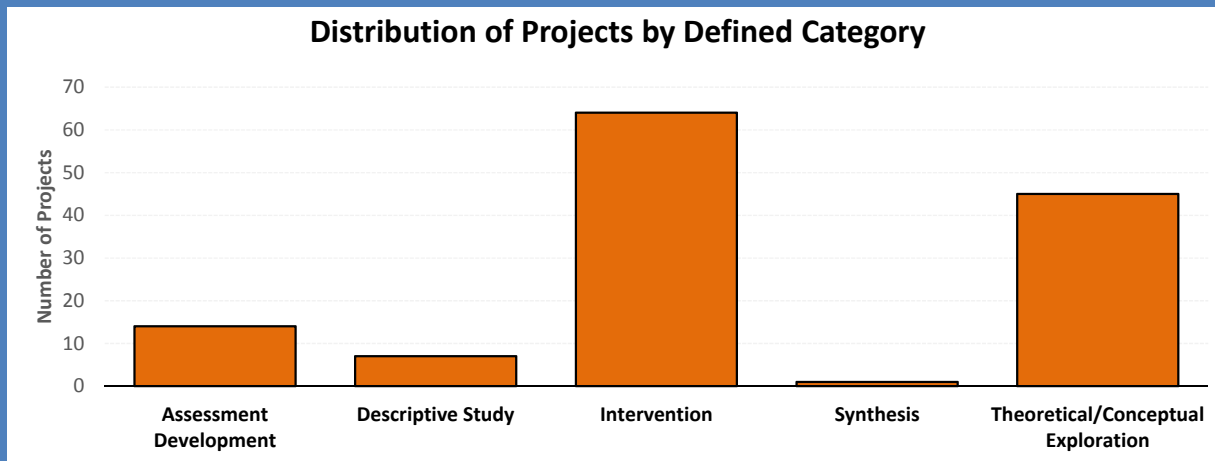
- I. Search EHR Portfolio for Relevant Awards**
- II. Characterize the Awards**
- III. Obtain Publications Associated with the Awards**
- IV. Code the Publications and Synthesize the Results**
- V. Present Information in Symposium at the 2016 AERA Annual Meeting, April 8-12 in Washington DC**



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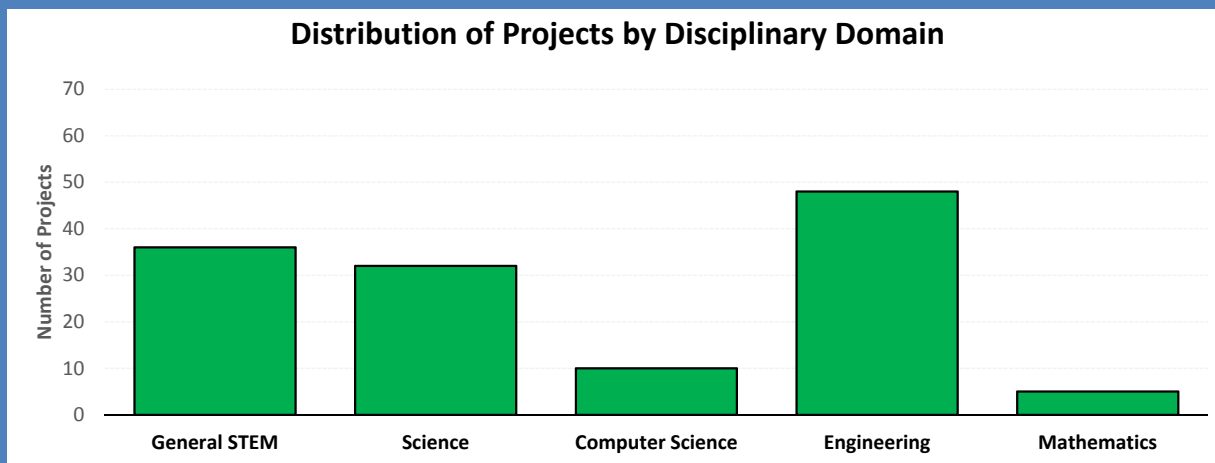
10

Investments Focused on Undergraduates



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