National Science Foundation
Directorate for Education and Human Resources (EHR)
Division of Undergraduate Education (DUE)

STEP 2012

Sustaining Excellence in STEM Undergraduate Education: Toward a Community Of Practice

Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP)
2012 Grantees Meeting

March 15-16, 2012
Crystal Gateway Hotel
Arlington, VA

Meeting Agenda

Wednesday, March 14, 2012

6:30 – 9:00 p.m.	**Pre-Conference STEP Leadership Session**	**Salon H**
7:00 – 10:00 p.m.	**Registration**	**Arlington Registration Desk**
	Poster Setup	**Salons I, II & III**
	(See meeting folder for poster locations)	

Thursday, March 15, 2012 **(Breakfast on your own)**

7:00 a.m. – 8:30 a.m.	**Poster Setup**	**Salons I, II & III**
	(See meeting folder for poster locations)	
7:00 a.m. – 10:00 a.m.	**Registration**	**Arlington Registration Desk**
8:00 a.m. – 8:30 a.m.	**Mentorship Meetings**	**Meet at Arlington Registration Desk**
11:30 a.m. – 7:00 p.m.	**Macro International Inc. Staff Available**	**Grand Registration Desk**
8:30 a.m. – 10:15 a.m.	**Opening Session**	**Salons IV, V & VI**

Welcoming Remarks and Meeting Information:
Katherine J. Denniston, Acting Division Director, DUE
Barbara M. Olds, Acting Deputy Assistant Director, EHR
Lee Zia, STEP Lead Program Director, DUE
Daniel Udovic, University of Oregon, Meeting Organizer

Introduction of Speaker: *José Herrera,* Program Director, DUE

Speaker: ***Saundra McGuire****,* Professor of Chemistry and Assistant Vice Chancellor for Learning, Teaching & Retention, Louisiana State University

Title: **Teach STEM Students *How* to Learn: Metacognition is the Key!!**

Abstract: Today's STEM students come to college with widely varying academic preparation, interests, and motivation levels. Faculty often lament that students are focused on achieving high grades, but do not want to spend time learning. Most students think that memorizing information just before an examination is tantamount to learning the material, and spend considerably less time studying than is commensurate with their grade expectations. This interactive session will introduce participants to cognitive science findings that can be used to improve teaching and learning, and will provide a variety of strategies that can be used to help all students experience meaningful, transferable learning. Data demonstrating the impact of teaching students metacognitive learning strategies will be presented, and factors impacting student success and persistence will be discussed.

Thursday, March 15, 2012 (continued)

10:15 a.m. – 10:45 a.m.	**Break** *(assorted beverages)*	**Arlington Ballroom Foyer**
10:45a.m. – 12:15 p.m.	**Breakout Session I** **See *Breakout Session & Workshop Locations***	
12:15 p.m. – 2:00 p.m.	**Lunch and Networking**	**Salons IV, V & VI**
	Lunch Speaker: *Daniel Udovic*, University of Oregon	
	Title: **Toward a STEP Community of Practice**	
2:00 p.m. – 3:30 p.m.	**Breakout Session II** **See *Breakout Session & Workshop Locations Special Sessions on Building Communities of Practice***	
3:30 p.m. – 3:45 p.m.	**Break**	
3:45 p.m. – 4:15 p.m.	**Poster Session A**	**Salons I, II & III**
4:15 p.m. – 4:45 p.m.	**Poster Session B**	**Salons I, II & III**
4:45 p.m. – 5:15 p.m.	**Poster Session C**	**Salons I, II & III**
	Refreshments Available during Poster Sessions	

Friday, March 16, 2012 **(Breakfast on your own)**

8:30 a.m. – Noon	**Macro International Inc. Staff Available**	**Grand Registration Desk**
8:30 a.m. – 10:00 a.m.	**Breakout Session III** **See *Breakout Session & Workshop Locations***	
10:00 a.m. – 10:30 a.m.	**Break** *(assorted beverages)*	**Arlington Ballroom Foyer**
10:30 a.m. – 11:45 a.m.	**Plenary Session**	**Salons IV, V & VI**

Introduction of Speaker: *Maura Borrego,* Program Director, DUE

Speaker: ***Nicole Smith****, Senior Economist, Center for Education and the Workforce, Georgetown University*

Title: **STEM- Still the driving force of American innovation.**

Abstract: Science, Technology, Engineering, and Mathematics (STEM) occupations are critical to our continued economic competitiveness because of their direct ties to innovation, economic growth, and productivity, even though they will only be 5 percent of all jobs in the U.S. economy by 2018.1 The disproportionate influence of STEM raises a persistent concern that we are not producing enough STEM workers to compete successfully in the global economy. We find that this concern is warranted—but not for the reasons traditionally claimed.

Growth of demand for STEM competencies is especially strong in occupations in fast-growing industries like Professional and Business Services and Healthcare Services. At the same time, technology change in industries like Manufacturing, Mining, and Utilities and Transportation is reducing overall employment but increasing demand for STEM competencies among the more highly skilled workers who remain. As a result, we find that the demand for traditional STEM workers will only grow. In our projections, STEM is second only to Healthcare as the fastest growing occupational category in the economy. But we also find that the occupations competing for STEM workers are growing rapidly, too. In fact, the occupations that poach top STEM talent are also among the fastest-growing and highest-paid in the economy. The intensifying demand for STEM competencies contributes to a process that we call diversion. We define diversion as a process through which both students and workers steer away from STEM degrees and STEM careers for numerous reasons. Diversion is both voluntary and involuntary and students and workers divert at various points throughout K-12 and postsecondary education as well as in the workforce.

11:45 a.m. - Noon	**Closing Remarks**	**Salons IV, V & VI**
Noon	**Meeting Adjourns**	

Meeting Support

Arlington Registration Desk

Biographies of Plenary Speakers

Dr. Saundra Yancy McGuire is Professor of Chemistry and Assistant Vice Chancellor for Learning, Teaching and Retention at Louisiana State University. She served as the director of LSU's nationally recognized campus-wide learning center, The Center for Academic Success, from 1999 to 2009. Prior to joining LSU in August, 1999, McGuire spent eleven years at Cornell University, where she served as Acting Director of the Center for Learning and Teaching and Senior Lecturer in the Department of Chemistry. While at Cornell she received the highly coveted Clark Distinguished Teaching Award.

Dr. McGuire has been teaching chemistry and working in the area of learning support for over 40 years. She has worked actively with university faculty and students to increase their understanding of the application of cognitive science and learning theory to studying science. Her current interests include improving learning strategies used by university students, reform of pre-college science and college science teaching methods, and increasing the number of African-American students who are interested in and prepared to pursue careers in science, technology, engineering, and mathematics. She has presented her widely praised workshop, "Teaching Students *How* to Learn," at over 100 colleges and universities, to thousands of faculty and students from diverse economic backgrounds, at different developmental levels, and with widely varying learning styles. Both faculty and students alike have reported increased professional and academic success after implementing the strategies she presents.

In 2011 Dr. McGuire was named a Fellow of the American Association for the Advancement of Science (AAAS) and received the College Reading and Learning Association (CRLA) Distinguished Teaching Award. In 2010, she was named a Fellow of the American Chemical Society, and also became one of only seven individuals in the Nation to achieve Level Four Lifetime Learning Center Leadership Certification through the National College Learning Center Association (NCLCA). In November 2007 the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring (PAESMEM) was presented to her in a White House Oval Office Ceremony. Because of her civic contributions she was designated a 2003 YWCA Woman of Achievement in the City of Baton Rouge, Louisiana.

Dr. McGuire received her B.S. degree, *magna cum laude*, from Southern University in Baton Rouge, LA, where she was designated a 2008 Distinguished Alumna by the Department of Chemistry. She received her Master's degree from Cornell University, and her Ph.D. from the University of Tennessee at Knoxville, where she received the Chancellor's Citation for Exceptional Professional Promise.

She is married to Dr. Stephen C. McGuire, and they are the parents of Dr. Carla McGuire Davis and Dr. Stephanie McGuire, and the grandparents of Joshua, Ruth, Daniel, and Joseph Davis.

Nicole Smith is a Senior Economist at the Georgetown University Center on Education and the Workforce where she leads the Center's econometric and methodological work. Dr. Smith has developed a framework for restructuring long-term occupational and educational projections.

This framework forms the underlying methodology for Help Wanted, a report that projects education demand for occupations in the U.S. economy through 2020. She is part of a team of economists working on a project to map, forecast and monitor human capital development and career pathways.

Dr. Smith was born in Trinidad and Tobago and graduated with honors in Economics and Mathematics from the University of the West Indies (U.W.I.), St. Augustine campus. She was the recipient of the Sir Arthur Lewis Memorial Prize for outstanding research at the Master's level at the U.W.I. and is co-recipient of the 2007 Arrow Prize for Junior Economists for educational mobility research. She received her Ph.D. in Economics from American University in Washington, D.C. Prior to joining the Center, Dr. Smith was a faculty member in Economics at Gettysburg College in Pennsylvania, and the University of the West Indies, St. Augustine Campus. Dr. Smith taught Classical and Modern Econometrics, introductory and advanced level courses in Microeconomics, Macroeconomics, Statistics, Mathematics for Economists, and Latin American Economic Development.

Her previous macroeconomic research focused on the political economy of exchange rates and exchange rate volatility in the Commonwealth Caribbean, the motivation for her M.Sc. thesis and a joint-publication at the Inter-American Development Bank. Her current research investigates the role of education and socioeconomic factors in intergenerational mobility. She is a co-author of "The Inheritance of Educational Inequality: International Comparisons and Fifty-Year Trends," published in 2007 by the B.E. Journal of Economic Analysis & Policy.

Breakout Session Locations
March 15 - 16, 2012

Breakout Session I - 10:45 a.m. – 12:15 p.m. March 15		Type	Room
I-01	Building Strong Two-Year/Four-Year Partnerships	Panel	Salon F
I-02	Improving Student Success in Foundational Courses in the Sciences	Panel	Salon J
I-03	Using Career Awareness Activities to Recruit and Retain Students	Panel	Rosslyn II
I-04	Encouraging Student Participation in Project Activities	Panel	Rosslyn I
I-05	Leveraging Your STEP Project	Panel	Salon A
I-06	Improving Retention and Student Success through Cohort-Building and Social Networking	Workshop	Salon K
I-07	Models for Undergraduate Research Involving Community College Students	Workshop	Salon G
I-08	Data Management and Analysis for Large STEP Projects	Workshop	Salon B
I-09	A Freshman STEP Curriculum: A Project-Based Approach to STEM Student Success	Workshop	Madison
I-10	The Dynamics of Real Time Course Correction in the Management of STEP Projects	Workshop	Jackson
I-11	Faculty Development for STEM Student Success: Generating a Campus Culture of Best Practice	Workshop	Salon C
I-12	Helping STEM majors succeed in Mathematics	Workshop	Salon H
I-13	Role of metacognition in student development (follow-up with Saundra McGuire)	Open Discussion	Jefferson

Breakout Session II - 2:00 p.m. – 3:30 p.m. March 15		Type	Room
II-01	Type 2 Round-table	Roundtable; SIG	Salon G
II-02	Two-Year/ Four-Year Partnerships	SIG	Rosslyn II
II-03	Foundational Courses	SIG	Salon F
II-04	Early UG Research & Internships	SIG	Salon B
II-05	Learning Communities & Bridge Programs	SIG	Salon C
II-06	Project Sustainability	SIG	Salon H
II-07	Recruiting, Retaining Women & Minority Students	SIG	Salon J
II-08	Collecting & Organizing Data	SIG	Salon K
II-09	Community College Issues	SIG	Rosslyn I
II-10	Issues at Large Universities	SIG	Salon A
II-11	Project Coordinator Network	SIG	Madison
II-12	Project Evaluator Network	SIG	Jefferson

Breakout Session III - 8:30 a.m. – 10:00 a.m. March 16		Type	Room
III-01	Improving Student Success in Foundational Courses in Mathematics	Panel	Salon B
III-02	Implementing Early Undergraduate Research & Internships	Panel	Salon K
III-03	Improving Retention & Success via Cohort- Building and Social Networking	Panel	Salon C
III-04	Constructing Environments for Student Success	Panel	Salon F
III-05	Strategies for Effective Evaluation	Panel	Salon H
III-06	Strategies for Sustainability	Panel	Salon I
III-07	What Counts? Articulation Agreements and Transfer Students	Workshop	Salon G
III-08	Data Collection, Publishing, and Dissemination of Results	Workshop	Salon II
III-09	Strategies for Promoting Faculty Engagement with Early STEM Students	Workshop	Salon III
III-10	Increasing Student Achievement in Mathematics and Science through Peer-Led Team Learning	Workshop	Rosslyn II
III-11	A National Model for Engineering Mathematics Education: Uncorking the Bottleneck at Your Institution	Workshop	Salon A
III-12	A Learning Culture of Success: A Cultural Approach for Increasing Diversity and Inclusion in STEM	Workshop	Salon J

Luncheon Roundtable Topics
March 15, 2012

Topics	Tables
Project Sustainability	1-4
Preparing Type 1B proposals	5-8
Early Warning Systems to Identify At-Risk Students	9-10
Community College Projects	11-12
Peer-Led Team Learning (PLTL)	13-14
Recruiting and Retaining Women Students	15-16
Sustaining 2-year/4-year Collaborations	17-18
STEPcentral.net	19
Intrusive Advising	21
Project Evaluators	22-23
Project Coordinators	20 & 24
Projects from Minority & Hispanic-Serving Institutions	25
Projects from Liberal Arts Colleges	26