

STEM* WORKFORCE DEVELOPMENT – *FUELING THE PIPELINE*

*** Science, Technology, Engineering and Math**

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**Kate Rubin, Minnesota High Tech
Association (MHTA)**

KRubin@mhta.org

**Joyce Plotkin, Massachusetts
Technology Leadership Council**

Joyce@masstic.org

STEM Workforce Development

Fueling the Pipeline

- What is STEM workforce development?
- What is the Issue?
 - Facts, Figures, Future
 - Studies and Findings
- Balancing Programs and Policies
 - The ECC Trilogy (Engagement, Capacity, Continuity)
- Programs and Policies Examples
 - Minnesota
 - Massachusetts
- What can or should we work on collectively?

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STEM Workforce Development Definition

- STEM workforce development encompasses policies, programs and/or activities that help encourage and develop an adequate supply of trained workers to keep our collective technology – based economies globally competitive.
- Categories of workforce development are:
 - Pre-K/ early childhood education
 - K-12 Education
 - Community College/ Skill-based post-secondary education
 - Higher Education (undergrad through Ph.D.)
 - Retooling – re-skilling
 - Lifelong Learning

What is the Issue?

Facts, Figures, Future

- Job growth in professional, high tech industries will require an additional 10,500 college graduates a year by 2010*
- College graduates entering retirement rises from 9,000 to 25,000 per year by 2010*
- The number of high school graduates will decrease by 10% between 2003 and 2013; only 11% of 8th graduates and 21% of high school sophomores are interested in STEM careers*
- 2/3 of new jobs created by 2010 will require education beyond high school*
- 7 of 10 parents think their kids have enough or too much math
- Children who take 2 years of math (Algebra II) in high school more than double their likelihood of completing college – in any discipline – within four years

* These are Minnesota examples, but similar nationwide

What is the Issue?

Studies and Findings

- Rising Above the Gathering Storm ([website](#))
 - Published by National Academy of Sciences, 2005
 - Follow up survey ([Full text](#))
 - Recommendations
- “Losing the Competitive Advantage”
 - Published by AeA, 2005 ([Full Document](#))
 - Update status, 2007 ([Full Document](#))

Balancing Programs and Policy

The ECC Trilogy

Engagement, Capacity and Continuity: A Trilogy for Student Success

- ***Engagement*** – an awareness, interest or motivation (the spark)
- ***Capacity*** – the knowledge and skills to advance in increasingly rigorous subject matter (the skills)
- ***Continuity*** – opportunities, resources and guidance to support advancement (the pathways)

Program and Policy Examples

Minnesota

- Math/Science Standards and Requirements 2006
- TIMMS Funding - 2006
- STEM Summit – Fall, 2006
- STEM Forums ([Full Report](#)) – Fall 2006
- STEM Summits – Fall, 2007
- Qwest Mini-grants – 2007
- Sally Ride Event – Fall, 2007
- STEM Clearinghouse, Fall 2007-2008
- North Star STEM Alliance (Louis Stokes & NSF)
- Minnesota MentorNet
- Tekne Silent Auction, Scholarships
- ACE Leadership Program

The logo for the Minnesota High Tech Association (MHTA) features the letters 'MHTA' in a bold, serif font. A diagonal line cuts through the letters from the bottom left to the top right.

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Program and Policy Examples

Massachusetts

- **Council's current/recent STEM Initiatives**
 - Updating Technology Standards (K-12)*
 - Education Foundation (K-12)
 - Boston University Design Project (HE)
- **Council as Key Partner/Spokesperson**
 - Commonwealth IT Initiative (PHE)*
 - Study population for first NSF grant on men/women in IT workplace
- **Council's Involvement in Broader Community STEM Projects**
 - Participant in 2 other local NSF-funded STEM projects*
 - Involvement in 2 ed tech committees relating to Boston Public Schools
 - Represented on new, statewide advisory group that will establish STEM priorities for the Legislature*
 - Member of numerous STEM committees (BATEC, BEST, ETAC, STEM Summit, TechBoston)

*Policy

What Can and Should we Do Collectively?

- Policy, Curriculum, Programs, or all?
 - Regional, state or federal level policy?
 - Regional, state or federal curriculum?
- Joint programs or similar initiatives executed at state or regional levels?
- What is the biggest need in your state/region?
- What is the best STEM Program you have been involved with and why?
- What important policy areas have you recently addressed, or want/ need to address?

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Additional Information

- Seagren/Rubin Presentation – January, 2007 ([Full Document](#))
- ACE Leadership Program ([Full Document](#))

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Websites and links

- National Academy of Sciences:
<http://www.nationalacademies.org/gatheringstorm/>
- Survey “Rising above the Gathering Storm”:
http://www.surveymonkey.com/s.aspx?sm=2D1xaAYJR09GmrDcddkC5g_3d_3d
- Losing the Competitive Advantage?: The Challenge for Science and Technology in the United States
http://www.aeanet.org/publications/idjg_CompetitivenessMain0205.asp
- We Are Still Losing the Competitive Advantage: Now Is the Time To Act
http://www.aeanet.org/Publications/idjg_CompetitivenessMain2007.asp
- 2006 STEM forums Full Report
<http://www.mhta.org/ittrium/visit?path=A1x66x1y1xa70x1y1xa71x1>
- Engagement, Capacity and Continuity
<http://www.smm.org/ecc/>