

## *April 26<sup>th</sup> STEM Conference Preparation*

The list of issues below is a compilation of the seven Roundtable Discussions conducted at the STEM Talent Development Forum held in June 2006 and found in the *Forum Proceedings* publication. Several of the Roundtables identified parallel issues and, to avoid duplication these have been reduced to a single key statement wherever possible. The complete Proceedings may be found on the Web at [www.mspgp.org](http://www.mspgp.org). The issues have been numbered only for ease of identification and no priority is implied. Please use this list to help identify those programs or initiatives that you or your organizations have developed to address any of the Overarching Issues. Do not limit yourself to the list if you are aware of other issues or solutions. Please use the attached form to record the information about those activities in which you have been or are presently involved.

	<b>OVERARCHING ISSUES</b>	<b>SUGGESTED SOLUTIONS</b>
<b>1</b>	Create a coherent vision of what constitutes critical STEM education and develop pathways to integrate critical content and process skills into the K-12 program.	Encourage K-12 and postsecondary systems to build and certify pathways from high school through community colleges and/or four year colleges and universities for students majoring in STEM courses.
<b>2</b>	Many students, parents, teachers, counselors and administrators are not familiar with the level of job growth in their communities or with the STEM skill needs of local industry, especially smaller high-growth companies.	<p>Conduct briefings at MS and HS for students, parents, educators, board members and community members to address the benefits and opportunities of strong STEM education programs.</p> <p>Increase the number of Junior Achievement and STEM related competitions to encourage young innovators.</p> <p>Create a STEM magnet school in each major school district or urban county.</p> <p>Promote regional dual-enrollment opportunities permitting HS students to earn credits for STEM courses taken at Community Colleges and 4-year colleges and universities.</p>
<b>3</b>	Regional businesses must invest in raising parental awareness of the importance of STEM related careers and career opportunities for their children and grandchildren.	<p>Utilize regional business-education collaboratives to help shape STEM related curricula at the secondary level so it correlates with STEM related career opportunities in the job market.</p> <p>Under 30 engineers, scientists, and technology experts should periodically visit MSs and HSs to introduce students to the opportunities and challenges of STEM related careers and to serve as mentors.</p> <p>Create a regional collaborative to engage industry in articulating a clear statement of needs and considering how it can help shape K-12 curriculum and course development at the MS and HS levels.</p> <p>Ask industry to provide scholarships to high achieving high school graduates interested in STEM related careers and internships for STEM majors at post-secondary level.</p> <p>Support STEM curriculum and course-ready schools with state of the art equipment and resources to create authentic learning experiences for students as well as inviting students / classes to have learning experiences on-site.</p>
<b>4</b>	STEM teacher professional development programs should be designed to reflect the continuous changes taking place outside the classroom in science, technology, engineering and mathematics	<p>Increase the number of and diversity of summer institutes to introduce teachers to STEM topics, issues, and workplace applications</p> <p>Encourage math and science professionals from industry to serve as adjunct STEM teacher in MS and HS.</p>

	OVERARCHING ISSUES	SUGGESTED SOLUTIONS
5	Work with industry to develop programs that will keep teachers current in STEM career opportunities and choices and how they can be integrated into courses in MS and HS.	Create a mechanism for organizing business and industry for participation in teacher professional development opportunities: courses, internships and externships
6	Regional business-education collaboratives must build stronger links between career preparation & certification programs and job opportunities i.e. align educational and career pathways. Career paths and "K-Gray" pipeline	Ensuring that certifications are portable across industries.  Increase the number of internships available to students at local businesses and research institutions.
7	Students entering engineering schools must come in as engineering generalists and specialize later as they obtain more information about specific engineering careers.	Better define "engineering generalist" and how that educational pathway would look and be developed.
8	Too many high school students forego majoring in engineering because they hear that "it is too hard."	Inform students of available incentives for majors.  Request the federal government to provide financial incentives to students registering as engineering majors. Fund engineering internships for high school counselors and teachers of math and science.
9	Increase and strengthen linkages between academia and industry to help students better understand what engineers must learn and what they do when they enter the world of work.	Promote collaboration to raise awareness of engineering school requirements, sponsor engineering-related projects for K-16 students, and promote post-secondary engineering majors.  Urge engineering schools to assign faculty to increase awareness of programs and careers.
10	Policy makers at all levels must give greater attention to supporting and strengthening STEM education at the K-20 levels.	Ask government to provide scholarships to high achieving high school graduates interested in STEM related careers and internships for STEM majors at post-secondary level.  Develop a state supported "best practices" clearinghouse to share information with educators about model STEM programs and pedagogy, and prevent duplication of effort.  Request that the state set higher standards for STEM teacher education and require more rigorous training of teacher candidates at the college and university level.  Work with Schools of Education to improve and strengthen STEM related undergraduate, graduate and post-graduate programs to produce more and better STEM teachers.  State Departments of Education should mandate that all MS and HS students take STEM courses to better understand the need for increasingly technical knowledge and skills in an ever-changing world.