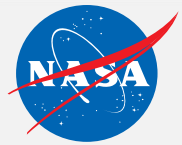


Workforce Coalition: Education Task Force

EDUCATION TO WORKFORCE CRISIS

EDUCATION

- Cultural and Structural Disconnects
  - Schools=Museums: I Phone World-Chalkboard Class
  - Lack of Real World Relevance and Perception that STEM is not Cool
- Shortage of Science and Math Proficient Teachers
  - Title I Schools: 1 in 4 Math Teachers are Highly Qualified
  - Projected Shortage of 280,000 Math and Science Teachers by 2015
- Students Lack Science and Math Proficiency
  - 2005 8th grade proficiency: 32% in science; 30% in math
  - 1996 24% 12th graders science proficient; 2005 20%

WORKFORCE

- Aging Workforce
  - In 10 years, 10 billion will exit the workforce
  - 25% of the STEM workforce eligible to retire in 5 years
- Fewer College Students Pursuing Engineering Degrees
  - In 2006 China produced 21%of the world's Engineering Graduates; the U.S. produced 6% (most foreign)
  - The European Union is producing 3x as many engineering graduates as the U.S.
- U. S. Losing Competitive Edge
  - By 2010, China will have the world's largest economy; U.S. will be ranked 6th
  - China is the largest holder of U.S. Bonds

INTEGRATION NEEDED for…

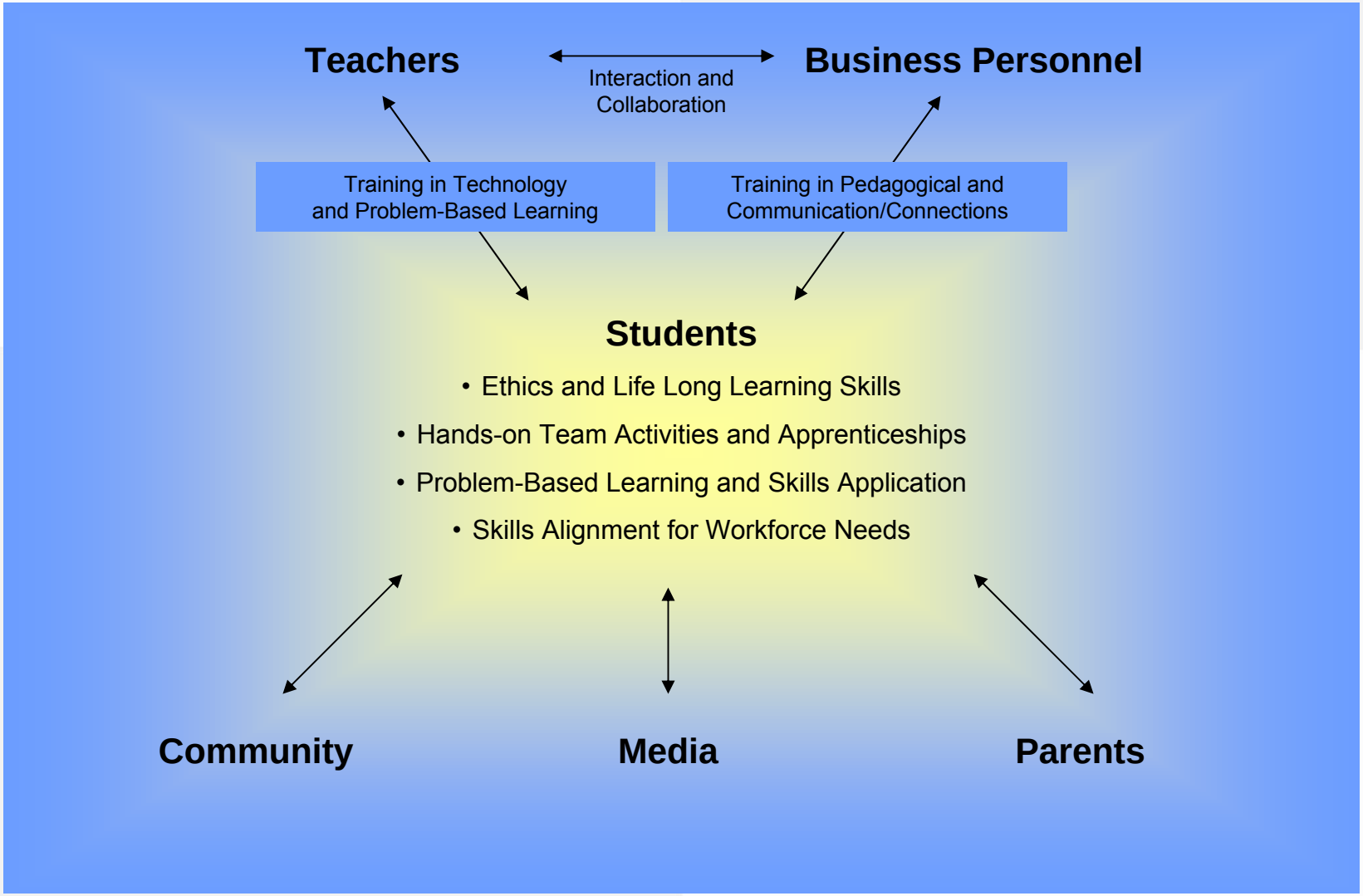
- Learning Culture for Workforce Connections
- Changed Perceptions to Increase Students Pursuing STEM Careers
- STEM Proficient Teachers, Students, Workers
- 21st Century Skill Sets to Compete in the Workplace
- U.S. Prosperity and National Security

EDUCATION TO WORKFORCE CRISIS

Sources

- **Cultural and Structural Disconnects**:
- Dr. Willard Daggett, *What Makes Successful Schools Work?*, 2007 Model Schools Conference, June 30-July 3, 2007, Washington D.C.
- **Shortage of Science and Math Proficient Teachers**:
- Heather Peske and Kati Haycock, The Center for Public Education, *Teaching Inequality: How Poor and Minority Students are Shortchanged on Teacher Quality,* June 2006
- Michael Alison Chandler, *Higher Pay Urged to Fight Dearth of Math and Science Teachers*, Washington Post, June 12, 2007
- **Students Lack Science and Math Proficiency**:
- Heather Peske and Kati Haycock, The Center for Public Education, *Some good and not-so-good news about 2005 science scores,* June 2006
- **Aging Workforce**:
- American Electronics Association, *Losing the Competitive Advantage: The Challenge for Science and Technology in the United States"*
- **Fewer College Students Pursuing Engineering Degrees**:
- Dr. Willard Daggett, *Workplace Skills for The Global Economy*, 2007 Model Schools Conference, June 30-July 3, 2007, Washington D.C.
- American Electronics Association, *Losing the Competitive Advantage: The Challenge for Science and Technology in the United States"*
- **U.S. Losing Competitive Edge**:
- Dr. Willard Daggett, *What Makes Successful Schools Work?*, 2007 Model Schools Conference, June 30-July 3, 2007, Washington D.C.

Workforce Coalition: Education Task Force
Developing Partnerships for Workforce Connections



Workforce Coalition: Education Task Force
Developing Partnerships for Workforce Connections
Notes

- In 2007 Marshall Space Flight Center (MSFC) transitioned leadership of the Integrated Stakeholder Coalition for Workforce Development (ISCWD) to the Huntsville/Madison County Chamber of Commerce Workforce Coalition. The ISCWD Systems Approach to the Education to Workforce pipeline called for a community-wide effort to develop individuals from infancy through adulthood. The Impact of BRAC 2005 and a projected 4700 positions and impending workforce turbulence underscored the need to move Coalition leadership to the Chamber. With the move came establishment of sub-committees to address: education, recruitment, and quality of life.

- The transition plan called for MSFC to lead the Education sub-group, now called the Workforce Coalition: Education Task Force.

- The Education Task Force is focusing on K-12 education specific initiatives identified by the Workforce Coalition, with a mission to develop mechanisms for community stakeholders to align resources and activities to improve science, technology, engineering, and mathematics (STEM) education for workforce experience.

- The Workforce Coalition identified the following K-12 education initiatives for Task Force action:
  - Improved coordination and collaboration between education and business/industry personnel to dissolve the disconnects between schools and the workforce
  - Implementation of activities to build interpersonal and critical thinking skills needed for the workforce. To affect change in education for our community and other communities – partnership activities should be relevant to workforce needs and implemented for sustainability.
  - STEM Partnership Success Requires:
  - Professional Development and Training for teachers to be proficient in technology and problem-based learning.
  - Business/Industry Personnel to receive training in pedagogy and how to communicate and connect to students.
  - (Pedagogy: the art or science of teaching; education; instructional methods)
  - Utilization and Engagement of parents, media, and others in the community who influence and shape students' lives.

Partners Connecting Students to the Workforce

Building Career Focus and Skills

PARTNERS

- Workforce Coalition: Education Task Force
- Junior Achievement
- Alabama Math, Science, Technology Initiative (AMSTI)
- NASA Education (Educator Resource Center, Digital Learning Network (DLN), Speakers' Bureau, etc.)
- Educators and Business/ Industry Personnel

ACTIVITIES

Career Technology Activities

- Career Profile Research
- Interest and Skills Inventory
- Virtual or Work-Site Field Trips
- Speakers

Science, Technology, Engineering, and Math Activities

- AMSTI Training for Aerospace Activities
- Future Training for Additional Course of Study Activities
- Engineering Design Challenges
- Competitions

RESULTS

What the Students learn…

- Ethics and Life-Long Learning Criticality
- Hands-on, Team Building and Apprentice Skills
- Problem-Based Learning and Application
- Skills Alignment to Workforce Need

Partners Connecting Students to the Workforce
Notes

- Current Research, Education Task Force Meetings and Meetings with local School System Leaders (Huntsville City, Madison City, and Madison County) concur that strategies are needed to address:
- Student engagement and interaction with relevant work world activities
- Career-focus and STEM activities that meet state course of study requirements
- Initiation of partnership efforts at the middle school level to allow time to explore options and develop a road map of activities for the future.
- Partners: The Alabama Math, Science, Technology Initiative (AMSTI), MSFC Academic Affairs, and Junior Achievement have developed hands-on, problem-based learning activities that are aligned to course of study requirements to address STEM skills and career connections. For example, the NASA Digital Learning Network (DLN) features videoconferencing programs that connect students to NASA Careers.
- Meetings with School System Leaders resulted in the following suggestions for partnership efforts to address career focus, STEM, and inter-personal skills:
- Career Technology Modules need improvement and integration of activities to build student interest and skills.
- The Task Force Plan calls for Junior Achievement, NASA, and business/industry personnel to collaborate on activities to supplement and enrich the curriculum.
- Educators and Students require activities to improve STEM skills to meet the Alabama Math and Science Assessment Tests.
- The Task Force Plan calls for AMSTI, NASA, and business/industry partners to collaborate for integrative activities that meet course of study requirements and provide hands-on, problem-based learning activities.

- The proposed plan calls for initiation of partnership efforts at the middle school level. The goal is to develop a process plan that can be modified for other grade levels and to reach other communities.

- Education Task Force Professional Development events this summer include:
- Support of the Huntsville/Madison County School Great Teacher Conference, where a sub-set of teachers collaborated with business/industry personnel and guidance counselors to build career-focus activities.
- Support of the AMSTI professional development workshops for educators, where scientists and engineers collaborated with educators to provide subject-matter expertise and activities for student career connections.

- *Partners Working Together on Integrative Activities will Result in Student Skills and Connections to the Workforce.*

Partners Connecting Students to the Workforce

Building Science, Technology, Engineering and Math (STEM) Skills

PARTNERS

- Workforce Coalition: Education Task Force
- Alabama Math, Science, Technology Initiative
- NASA Education
- Educators and Boeing/NASA Engineers and Scientists

Summer 2007

- Engineer Pre-Training for AMSTI Activities
- AMSTI Educator Professional Development with Engineer Collaboration and Subject-Matter Expertise:
  - Earth in Space
  - Catastrophic Events
  - Energy, Machines, and Motion

2007/08 School Year

- Engineer/Scientist Subject-Matter Consultant to Teacher
- Engineer/Scientist Speakers and Mentors to Enrich Student Hands-on, Problem-Based Learning and Career Connections
- Engineering Design Challenges and Competitions

RESULTS

What the Students learn…

- Ethics and Life Long Learning Criticality
- Hands-on, Team Building and Apprentice Skills
- Problem-Based Learning and Application
- Skills Alignment to Workforce Need

Partners Connecting Students to the Workforce

Building Career Focus

PARTNERS

- Workforce Coalition: Education Task Force
- Junior Achievement
- NASA Education (Educator Resource Center, Digital Learning Network (DLN), Speakers' Bureau, etc.)
- Educators and Business/Industry Personnel

July-August 2007

- Identify Schools and Career Clusters
- Teacher In-Service Training and Collaboration with Business/Industry Personnel

2007/08 School Year

- Career Interest/Aptitude Assessments
- Students Matched to Career Cluster
- Resume, Interviewing, Soft Skills Training
- Workplace Visit
- DLN Video Conferencing with Parent and Industry Career Personnel and College Reps
- School/Community Career Nights to Showcase Activities

RESULTS

What the Students learn…

- Ethics and Life Long Learning Criticality
- Hands-on, Team Building and Apprentice Skills
- Problem-Based Learning and Application
- Skills Alignment to Workforce Need