

STEM Equity Pipeline Overview

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Iowa Science and Mathematics Teacher
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**Expanding Options for Women and Girls in
Science, Technology, Engineering and Math**

Why Do We Need to Encourage Students to Study Science & Engineering?

- By the year 2050, 85% of the entrants into the workforce will be people of color and women. In 2003, women were 26.1% of all STEM occupations. In 2004, African Americans and Hispanics were 6.2% and 5.3% of all STEM occupations respectively.
- In order for the US to remain competitive and to deal with the challenges that face us globally, we must educate students from all demographic backgrounds and encourage more to consider engineering. The numbers are NOT in our favor.

STEM Equity Pipeline

- Project of the National Alliance for Partnerships in Equity Education Foundation (NAPE)
- Funded by the National Science Foundation
- Human Resources Directorate, Gender in Science and Engineering Program, Extension Services Grant



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Goals

- Build the capacity of the formal education community
- Institutionalize the implemented strategies by connecting the outcomes to existing accountability systems
- Broaden the commitment to gender equity in STEM education

Defining STEM

- US Dept. of Ed., Office of Vocational and Adult Education
- STEM Transitions Project
 - www.stemtransitions.org
- 16 Career Clusters – 6 Clusters

Defining STEM

- Science, Technology, Engineering and Math
- Agriculture, Food and Natural Resources
- Health Science
- Information Technology
- Manufacturing
- Transportation, Distribution and Logistics

STEM Equity Pipeline Project Methods

- Professional Development
- Teacher Training
- Consulting and Technical Assistance
- Virtual Web-based Professional Learning Community
- Best Practices Handbook

STEP 1
Document
Performance Results

STEP 2
Identify
Root Causes

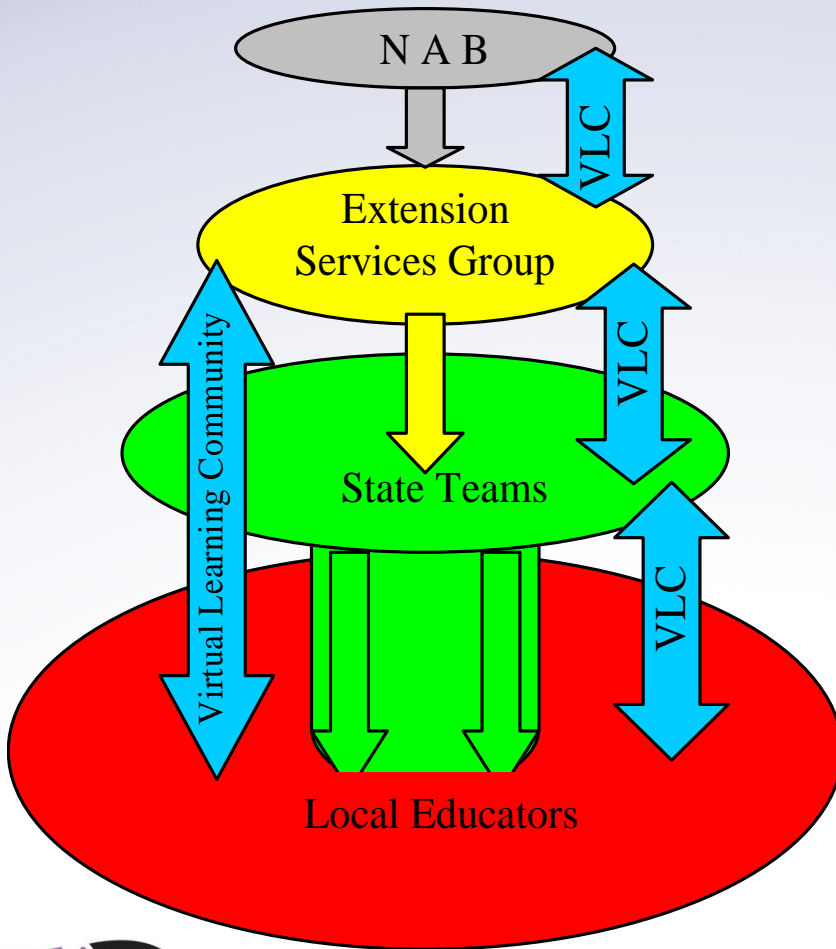
**The Five
Step
Process**

STEP 3
Choose
Best Solutions

STEP 5
Implement
Solutions

STEP 4
Pilot Test and
Evaluate
Best Solutions

Model



National Advisory Board

Advice and Resources
Dissemination

Extension Services Group

Professional Development,
Technical Assistance
Consulting Services
Best Practices Handbook

State Teams

Professional Development
Technical Assistance

Virtual Learning Community

Evaluation and Customer Service Feedback
Online Courses, Webcasts, Website,
Listserv, Resource Materials, Links

Local Educators

Process Improvement
Best Practices Implementation

Extension Services Group (ESG)

- State Facilitator
- Cadre of national recognized experts
- Focused technical assistance and professional development with State Teams
- Conduct webinars, webcasts, online courses, presentations, workshops, training

Virtual Learning Community

- Public portal for the STEM equity community
 - Listserv
 - Links
 - Articles, Resources, Reports and Research
 - Calendar of Events in STEM
 - Webcasts, Webinars, Video, Podcasts, Power Points
 - Online courses and Tutorials
 - Performance Data on Women & Girls in STEM
 - Professional Development Needs Assessment
 - Evaluations Instruments and Surveys
 - Suggestion Box
 - More!
 - www.stemequitypipeline.org

State Teams

- Participating States
 - California
 - Missouri
 - Illinois
 - Oklahoma
 - Wisconsin
 - Iowa
 - Minnesota
- Secondary/Postsecondary collaboration
- Led by the agencies that administer career and technical education in the state

State Team Members

- Personal Passion
- Professional or Volunteer Commitment
- Provide Professional Development
 - middle school
 - high school
 - community colleges

State Leadership Team

- Develop Implementation Plan
- Data Collection for Evaluation
- Host Facilitator On-Site Visits (up to 4/yr)
- 5 Step Program Improvement Training
- Attend the STEM Equity Pipeline State Team Leadership Training
- Conduct “Extension” Services

State Teams

- Advise the State Leadership Team
- Integrate into existing professional development systems in the state
- Conduct outreach to constituents about the projects activities
- Participate in Professional Development
- Participate in STEM Equity Pipeline Virtual Learning Community
- Conduct “Extension” Services

State Network

- Participate in Professional Development
- Participate in STEM Equity Pipeline Virtual Learning Community
- Provide summative and formative feedback

State Support from Project

- Intensive services provided for two years
- All services provided for free
- Budget for State Team Activities and travel to State Leadership Institute ~\$7500/State each year for two years
- Participation in project professional development after initial two years is free

Activities for New States

- Secondary/Postsecondary collaborations
- Existing STEM initiatives participating
- Strong professional development mechanisms to reach STEM CTE cluster teachers and related academic teachers
- State Leadership Team identified
- “Extension Agents” identified

Iowa's Experience

- Application Development & Award
- Selection of Team Members
- Project Kick-off and Orientation
- Brainstorming and Discussion

Iowa's Experience

Funded by a grant from the National Science Foundation, GASEXT-07054 Equity Pipeline Project, Grant No. 10042734000

IA Implementation

Core values:
(1) Focused and realistic (2) Collaboration with other initiatives (3) Use technology for outreach/communication

Goal 1: Build the capacity of the formal education community to implement research-based approaches proven to increase the participation and completion of females, including those with disabilities, in STEM education.

Strategy
1.1 Participate in two STEM EPP webinars that are developed and offered based on the needs assessment completed by IA Team members (November 2008).
1.2 Explore infusing the STEM EPP information/intellectual specialization into professional development offered to Iowa's elementary, middle and secondary counselors and TAG educators. (http://www.iowaschoolcounselors.org/)
1.3 Collaborate with the IA Math and Science Education Partnership on the 2009 Summer Institute for members of the IA Association of Teacher Educators/33 teacher preparation institutions of higher education (IHE). (http://www.iowamathscience.org/index.shtml)

Goal 2: Institutionalize the strategies implemented by connecting the outcomes to existing accountability systems.

Strategy
2.1 Train staff from three community colleges (Hawkeye Community College, Indian Hills Community College, and Iowa Western Community College) to infuse the 5-step process into one or more existing initiatives.
2.2 Collaborate with Project Lead the Way to institutionalize gender equity strategies into teacher training, counselor training, and school certification and ensure that the commissioned data projects can capture the successes of such strategies (http://www.pltwiowa.org/)

Goal 3: Broaden the commitment to gender equity in STEM education.

Strategy
3.1 Present at six workshops, conferences, and other events where the audience is a stakeholder in gender equity and/or STEM classes and careers.
3.2 Secure funding for pilot project to increase the number of women in high-wage, high-growth careers.

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Iowa Strategies - Goal 1

- Participate in STEM EPP webinars
- Infuse STEM EPP information/intellectual specialization into PD offered in Iowa
- Collaborate with Iowa Math and Science Education Partnership
 - 2009 Teacher Prep Summer Institute

Iowa Strategies - Goal 2

- Community College Pilot Programs
 - Indian Hills
 - Hawkeye
 - Iowa Western
- Collaborate with PLTW
 - Pilot Schools
 - Teacher/Counselor /Administrator Training
 - Data Collection and Analysis (gender)

Iowa Strategies - Goal 3

- Present STEM EPP to stakeholders
 - School Administrators
 - Math and Science Instructors
 - CTE Deans
 - Counselors
- Legislative Support

Iowa's Experience

- Girl Scouts – AEAAs and Midwest Collaborative Project
- University Collaboration (ISU)
- STEM Internship w/Iowa DE
- IWD Collaboration

Iowa's Experience

- Successes/Challenges
 - Passion and Commitment
 - Wealth and breadth of knowledge
 - Transparency and Accountability

 - Coordination among entities
 - State-to-state collaboration

Questions?

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