Iowa’s STEM
(Science, Technology, Engineering, and Math)
Initiative

Coordinating Council
April 17, 2013
Why STEM Matters...

• STEM workers drive our nation’s innovation and competitiveness & are central to our economic vitality

• Past 10 years, growth in STEM jobs was three times as fast as growth in non-STEM related jobs.¹

• Critical talent gap in STEM

• STEM literacy & decision-making
Science and engineering degrees earned by underrepresented minorities: 1991–2010

Percent

Bachelor's
Master's
Doctorate

NOTE: Data not available for 1999.
Scientists and Engineers Working in Science and Engineering Occupations: 2010

- White women: 18%
- White men: 51%
- Asian men: 13%
- Asian women: 5%
- Black men: 3%
- Black women: 2%
- Hispanic men: 4%
- Hispanic women: 2%
- Other men: 1%
- Other women: 1%

NOTE: Hispanic may be any race. Other includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and multiple race.
National Goals for STEM

• Expand the number of students who pursue STEM careers.
• Expand the STEM-capable workforce.
• Increase women and minority participation in all STEM areas.
• Increase STEM literacy for all.
Why STEM Matters in Iowa

Economic Impact

STEM jobs in Iowa:
• 3.4 jobs for every 1 unemployed person with STEM skills

Non-STEM jobs in Iowa:
• 2.7 unemployed people for every 1 job

<table>
<thead>
<tr>
<th>2011 Iowa ACT</th>
<th>Ability, Interest in STEM</th>
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<tbody>
<tr>
<td>N= 22,968</td>
<td>Met both science and mathematics benchmarks</td>
</tr>
<tr>
<td>Not STEM interested</td>
<td>5402 (24%)</td>
</tr>
<tr>
<td>STEM Interested</td>
<td>2480 (11%)</td>
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Iowa’s Plan to Grow the STEM workforce
Collaboration

✓ Advisory Council
✓ Higher Education
✓ Business Partners
✓ Non-formal Educators
✓ Pre-K thru grade 12
✓ Public Officials
The STEM Advisory Council

40 dedicated individuals, committed to growing STEM in Iowa
Building a Strong Network of STEM Excellence across Iowa

Six Regional Hubs

- Promote STEM education and economic development
- Set and enact STEM-related action plans
- Identify scalable STEM projects
- Deliver and grow STEM across the state
Infusing high quality STEM programming in Iowa’s classrooms

Scale Up STEM

Top Priorities
Student INTEREST
Student ACHIEVEMENT
What is STEM Ed?

Programs focused on:

• Coupling of rigorous academic concepts with relevant, real-world situations.

• Interdependence of the disciplines of Science, Technology, Engineering, and Math

• Experiencing problem solving, critical and creative thinking, and persistence
Where’s STEM? September 2012

STEM Education Heat Map, September 2012

Number of STEM Programs

- 0
- 1 - 3
- 4 - 6
- 7 - 9
- 10 - 15
- 15+
Where’s STEM? November 2012

Number of STEM Programs and Scale-ups by School District, November 12, 2012

Scale Up Locations

STEM Programs by School District

- Iowa STEM Hubs
- Scale Ups by School District

Legend:
- 0: 1 - 3
- 1 - 5
- 7 - 9
- 10 - 15
- 16+
Governor’s STEM Advisory Council, July 2011

To date...

1. Built a management and governance model

2. Established a Regional STEM Network for Iowa.

3. Created statewide Scale-Up initiative to grow 12 exemplary programs to 900 LEAs, 38,000 youth.

4. Compiled a nineteen-recommendation strategic plan for Iowa from seven working group reports.

5. Built a comprehensive evaluation plan of 18 indicators and surveys.
Iowa STEM Monitoring Project

Objective: Systematically observe a series of defined metrics and sources to examine changes regarding STEM education and economic development in Iowa.

Iowa STEM Indicators System (ISIS)
System to track publicly available data at the national, state, and regional levels
18 indicators in 4 areas:
1. K-12 student preparation
2. Achievement/interest
3. College completions
4. Employment

Data sources:
- Department of Education
- Iowa colleges and universities
- Census Bureau
- Iowa Workforce Development
- Scale-up programs
- Iowa Testing
- NAEP/ACT

Statewide Survey of Public Attitudes Toward STEM
Annual survey of Iowans regarding attitudes toward and awareness of STEM education and economic development
Special sections for parents of K-12 children (ages 4-11 and ages 12-19)
Year 1 data collection with 2,010 Iowans
Created to allow for comparisons with other state/regional/national studies

Statewide Student Interest Inventory
Annual assessment of Iowa K-12 student interest in STEM topics
Administered with regular Iowa Assessments in schools across the state
8 STEM interest items in 2 versions for older and younger students
Interest will be compared across demographic and geographic lines
Student interest and achievement will be compared

Scale-Up/Regional
Regional perspective on STEM programming and student involvement
Over 800 local education agencies (LEA) participating in 12 Scale-Up programs
Each LEA reports about local Scale-Up implementation process;
Assessment of STEM interest among student participants in Scale-Up programs
Assessment of STEM achievement among student participants in Scale-Up programs
Iowa STEM: What’s known so far?

- 26% of Iowans have heard of the acronym STEM
- 48% say their child is being very well prepared in STEM subjects by the school he/she attends
- 59% of parents say their child is likely to pursue a STEM career

- 87% of LEA respondents reported they thought the Scale-Up program had increased STEM interest among students *quite a bit or a great deal.*
- 71% of LEA respondents reported they thought the Scale-Up program had increased STEM achievement among students *quite a bit or a great deal.*
- 76% of LEA respondents reported they thought the Scale-Up program had increased STEM career interest among students *quite a bit or a great deal.*
- 62% of LEA respondents reported they thought the Scale-Up program had broadened STEM Participation among diverse students *quite a bit or a great deal.*

- Survey of 2,000 Iowans by the CSBR at UNI, 2012
- Mid-year Survey of Scale-Up implementers by the CSBR at UNI, 2013
Governor’s STEM Initiative
How to get involved
What’s Next:

✓ STEM Professional Development
✓ STEM Licensure
✓ STEM Endorsement
✓ STEM Schools
✓ STEM Public Relations
✓ STEM and Business Partnerships
iExplore STEM festivals
Mentorship & Outreach
Thank you

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