STEM Day Conference 2013
Building Partnerships for STEM Education

Peter Lindstrom and Anne Hornickel
February 14, 2013
Statewide business and education collaborative advocating for quality STEM education
-- Policymaker briefings
-- Frameworks
-- MN STEM Network

Cross-sector network of STEM practitioners, funders, & advocates to advance STEM education and workforce development
www.scimathmn.org/stemtc
Simple Search Tools!

Minnesota STEM Teacher Center
www.scimathmn.org/stemtc
Standard in Lay Terms

MN Standard in Lay Terms

The surface of the earth is shaped by processes such as volcanic activity and tectonic activity that cause areas to be forced upward, and by the gradual removal of earth materials by weathering and erosion. In Minnesota, the current landscape is largely the result of the scraping away of materials by advancing glaciers and the deposition of sediments by retreating, melting glaciers.

Big Ideas and Essential Understandings

Big Idea

Students need to understand that although changes to the earth's surface are so slow that it may seem unchanging, constructive and destructive processes are constantly at work. The surface of the earth actually changes quickly when viewed on a geologic timescale.

- By the end of the 8th grade, students should know that:
  - The interior of the earth is hot. Heat flow and movement of material within the earth cause earthquakes and volcanic eruptions and create mountains and ocean basins. Gas and dust from large volcanoes can change the atmosphere. 4C/M1
  - Some changes in the earth's surface are abrupt (such as earthquakes

Easy to use tabs for teachers, administrators and parents

Minnesota STEM Teacher Center
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STEM Pipeline--A Complex Problem

- Self perception
- Societal norms & popular culture
- Exposure to fields
- High degree of pre-requisites
- Special support for girls and minorities
- Sustained interest over 15-year period
Essentials for majoring in STEM

Based on “Engagement, Capacity and Continuity,” by E. Jolly, P. Campbell & L. Perlman, 2004
Essentials for majoring in STEM

- Passion
- Knowledge
- Career direction
Essentials for majoring in STEM

- Passion
- Knowledge
- Career direction

- NOVA
- Inquiry learning
- Role model
- Books & Media
- Exhibits
- Special projects
- Camps & internships
- Independent learning

- Competitions
- Great teacher
- Clubs
- Summer camps
- Websites
- Role model

- Classroom learning
- Advanced courses
- Role models
- College access prep
- Professional community
- Mentors
- Advisor
- Counselor
- Campus & industry visits
- Professional community
Essentials for majoring in STEM

- Passion
  - Competitions
  - Museums
  - 4-H
  - Great teacher
  - Summer camps
  - Books & Media
- Knowledge
  - Classroom learning
  - Special projects
  - Museums
  - Camps & internships
  - Independent learning
- Career direction
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  - Career direction
  - Role models
Essentials for majoring in STEM

- Classroom learning
- Special projects
- Libraries
- Museums
- Higher Education
- Independent learning

- Passion
- Knowledge

- Non-profits
- Business
- Libraries
- Museums
- Higher Education
- Business
- Advanced courses
- Non-profits
- Counselor
- Advisor

- Career direction
- Business
- Libraries
- Museums
- Higher Education
- Business
- Advanced courses
- Non-profits
- Counselor
- Advisor

- Great teacher
- Media
- Extension
- Higher Education
- Business
- Libraries
- Museums
- Higher Education
- Business
- Professional Organizations
- Extension
- Great teacher
- Media
- Extension
- Higher Education
- Business
- Libraries
- Museums
- Higher Education
- Business
- Professional Organizations

- Inquiry learning
- Non-profits
- Business
- Libraries
- Museums
- Higher Education
- Business
- Professional Organizations

- Classroom learning
- Special projects
- Libraries
- Museums
- Higher Education
- Independent learning

- Non-profits
- Business
- Libraries
- Museums
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- Professional Organizations

- Extension
- Great teacher
- Media
- Higher Education
- Business
- Libraries
- Museums
- Higher Education
- Business
- Professional Organizations

- Green
- Passion
- Knowledge

- Orange
- Business
- Libraries
- Museums
- Higher Education
- Business
- Professional Organizations

- Red
- Career direction
- Business
A System Challenge Needs Collective Impact
Why Network?

• A network distributes effort and makes nodes responsible for action
• Nodes both contribute to and benefit from the network
• Common knowledge, leveraged resources, coordinated messaging, shared goals and metrics can make a significant impact!
More strategies that will engage students in STEM

- Greater public awareness of the value of STEM
- Greater awareness that ‘STEM is cool’
- Bring real-world examples and inquiry learning into classrooms
- Use specific strategies to engage and retain girls and minorities