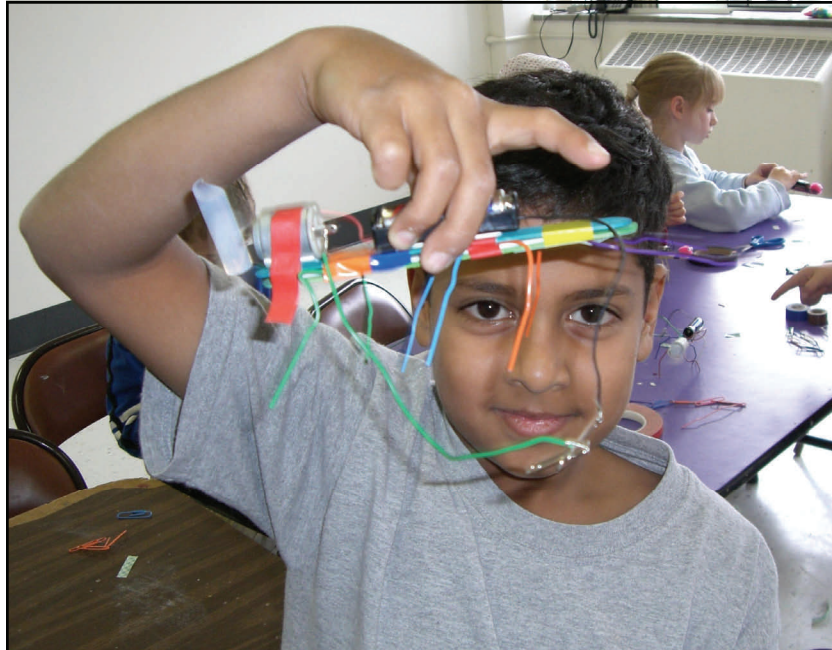


3rd Annual E4 Conference

Excellence in Elementary Engineering Education



**November 16, 2010
University of Minnesota
Continuing Education and Conference Center
St. Paul, Minnesota**

This conference was made possible with generous support from the 3M Foundation, the Minnesota Department of Education and The Works with guidance from the E4 Council.

3rd E4 CONFERENCE

EXCELLENCE IN ELEMENTARY ENGINEERING EDUCATION

NOVEMBER 16, 2010

Schedule

Check in 7:30 — 8:00
Welcome & Keynote . 8:00 — 9:15
Session 1 9:30 — 10:45
Session 2A 11:00 — 12:00
Session 2B 12:00 — 1:00
Lunch and Vendors 11 to 1
Session 3 1:15 — 2:30
Session 4 2:45 — 3:45

Welcome and Keynote 8:00 to 9:15 am

Welcome ROOM 135

Rebecca Schatz, President, The Works
Alice Seagren, Minnesota Commissioner of Education

Engineering for a Competitive World

Steven Webster
VP of Research and Technology Commercialization, 3M

Engineering is cool!

A panel of engineers from diverse fields and backgrounds discusses why they are engineers and how to make engineering engaging for your elementary students.

Chucks Madav, Mechanical Engineer, BAE Systems
Shirin Saadat, Aerospace Engineer, 3M Aerospace
Cassie Svendsen, Biomedical Engineer, AGA Medical
Moderator: Doug Paulson, MN Dept of Education

Session 1

9:30 to 10:45 am

Science Content & Engineering Challenges ROOM 155

Explore an engineering challenge as you discuss the relevant science with links to Minnesota Science Content and Nature of Engineering standards.

Molly Leifeld and Greg Childs, Elementary Science Coaches, St. Paul

Primary Engineering with FOSS kits ROOM 156

Join us as we share how we integrate engineering to enhance our primary FOSS science units. No need to make it harder than it has to be!

Christy Nelson and Peggy Demmert, Cedar Park STEM Elementary

Engineering in Art ROOM 166

Use technology and engineering to enhance your art curriculum, including Sketch-up, SMART Notebook, Kinetic art, Artsonia and the design process.

Elizabeth Weilandgruber and Nancy Meyer, William Byrne Elementary

Explore Biomedical Engineering ROOM 32

Explore how biomedical engineers meet human needs. Try out inexpensive biomedical engineering projects that connect to elementary STEM standards.

Dr. Yvonne Ng, St. Catherine University

Aerospace and how to teach it to kids ROOM 42

Roll up your sleeves and launch gliders, build parachutes, play with rockets and more with experienced teachers and aerospace experts.

Jill Wall, Farnsworth Aerospace PK-8 Magnet School, St. Paul
James Flaten, Minnesota Space Grant

Engineering Sound ROOM 52

Looking for a way to fulfill science standards in sound? Discover the engineering design process and enjoy a sound workshop that includes Boom-whackers, a vibrating sound sandwich and building a wooden ear harp.

Heidi Eschenbach and Jessalyn Johnson, The Works

Circuits, Switches and Invention ROOM 62

Explore basic circuits and make a magic wand, then learn about the invention process as it relates to science and engineering.

Steve Walvig and Kjerstin Quinn, Bakken Library and Museum

The Egg Mobile ROOM 83

Try out this team-oriented design activity focusing on automotive crash safety engineering and project management. Build a vehicle using interesting supplies to transport a raw egg under constraints. Perfect for G4 to G6.

Society of Women Engineers: Anita Hall with Cheryl Moeller, Amanda Baker, Amanda Porter and Kristina Wagstrom

Lunch + Vendors + Sessions 2A & 2B

11:00 am to 1:00 pm

Lunch: Attend one of the 2A sessions listed below from 11 to 12, then eat lunch and explore vendors from 12 to 1, **OR** eat lunch and explore vendors from 11 to 12, then attend one of the 2B sessions from 12 to 1. The buffet lunch upstairs is included in your conference registration fee.

Vendors and Exhibits: Explore information and activities from local nonprofits plus vendors relevant to elementary engineering: The Works, the Bakken, Science House (SMM), U of St. Thomas, getSTEM, MN STEM Network, Engineering is Elementary, KidWind and Lego.

Session 2A

11:00 am to 12:00 noon

Engineering Concepts & MN Standards **ROOM 135B**

Understanding the progressions of engineering concepts in Minnesota State Science Standards will enhance your lessons.

John Olson and Doug Paulson, MN Dept of Education

Lego NXT Robotics **ROOM 156**

Robotics is an excellent tool to teach engineering. Come and learn the Lego NXT program and explore the exciting world of robotics.

Paul Keeney, MTEEA and Anoka Hennepin School District

Sketch-Up Open Lab **ROOM 166**

Stop in anytime over lunch and try out Sketch-up, a free 3-D modeling program that's easy and intuitive for kids to use for design projects.

Inquiry Zone **ROOM 32**

Learn about student achievements in the Inquiry Zone, a unique learning space developed at Crossroads Elementary with the Bell Museum.

Britt Forsberg, Bell Museum of Natural History

Aerospace 2.0 **ROOM 42**

More hands-on projects in Aerospace Engineering from the experts! Best for teachers who've attended "Aerospace and how to teach it..."

James Flaten, Minnesota Space Grant

Jill Wall, Farnsworth Aerospace PK-8 Magnet School, St. Paul

Design Process for Primary Grades **ROOM 83**

A hands-on workshop with age-appropriate design challenges using easily accessible materials and a simple engineering design process.

Amy Benson and Betty Jo Bishop, Cedar Park STEM Elementary

Session 2B

12:00 to 1:00 pm

Project2Excel **ROOM 135A**

Twice exceptional learners can have great potential for future engineering studies and careers. Learn strategies for working with students who are gifted but need support for other exceptionalities.

Dr. Karen Rogers, University of St. Thomas

Shake Rattle and Roll **ROOM 155**

Stop by over lunch and learn about the effects of earthquakes on structures by hands-on activities using an instructional shake table.

Dr. Cathy French, Civil Engineering, University of Minnesota

Using Scratch **VoTech Building, ROOM 230**

Scratch, a free programming language, makes it easy for your students to create and share interactive stories, animations, music and games.

Kent Sall, Museum Magnet School, St. Paul

Sketch-Up Open Lab **ROOM 166**

Stop in anytime over lunch and try out Sketch-up, a free 3-D modeling program that's easy and intuitive for kids to use for design. If you're already using Sketch-up, get answers and advice from the pros.

Share Ideas Using Technical Writing **ROOM 52**

Integrating with engineering gives students authentic opportunities for writing clear informative text and sharing complex ideas.

Charon Tierney, Minnesota Department of Education

How to Build an Engineer **ROOM 62**

Unpack concepts, ideas and skills needed to be an engineer, and learn how to integrate those concepts in all subject areas. Leave with tips on using inquiry to create an environment for engineers to grow.

Ann Bernard and Cathy Kindem, Cedar Park STEM Elementary



Session 3

1:15 to 2:30 pm

You're TOPS with me! ROOM 135A

Use old fashioned tops to explore circular motion, friction, balance and center of mass. Play with tops then create one using a design process.

Dr. Patricia Paulson and Lynsey Haglund, Bethel University

Wind Energy ROOM 135B

Tap into expertise and kits from KidWind to explore sustainable energy and hands-on projects on wind power and turbine design.

Joe Rand, KidWind

Building Bridges ROOM 155

Hands-on activities show you how bridges carry loads through tension (suspension bridges), compression (arch bridges) and combinations.

Dr. Cathy French, Civil Engineering Dept, University of Minnesota

Family Engineering Night ROOM 32

Try out hands-on activities for a Family Engineering Night, a great way to get your students, teachers and community excited about engineering.

Heidi Eschenbach and Jessalyn Johnson, The Works

Empowering Learners through Math ROOM 42

Students will have a better understanding of mathematics by applying it through engineering design. Use the process standards for mathematics to record and communicate thinking.

Sue Wygant, Minnesota Department of Education

Equity and Access in Engineering ROOM 52

Come and explore approaches to incorporate equity and access for all students in your engineering activities.

*Sarah Carter, Science House, Science Museum of Minnesota
Wren Walker Robbins, Science House, Science Museum of Minnesota*

Tech Take Apart ROOM 62

See how an electrical and a mechanical engineer look at machines, then dive in and take apart VCRs, computer peripherals and other gizmos.

John Bushey, MTS and Richard Pollard, The Works

EiE: Primary Chemical Engineering ROOM 83

Discover that engineering can make the difference between disappointingly goopy and super sculpting, as you investigate a primary-level unit from the Engineering is Elementary curriculum.

Maija Sedzielarz, Science Museum of Minnesota and Kris Strandness

Session 4

2:45 to 3:45pm

Fantastic Fusion: STEM and Literature ROOM 135A

Explore three different strategies for integrating literature into lesson plans to help motivate and connect students to hands-on learning.

*Kari Ross, Reading Specialist, MN Dept of Education
Ruslana Westerlund, English Language Learner Specialist, MDE
Wendy Behrens, Gifted and Talented Specialist, MN Dept of Education*

Engineer an Anemometer, SciGirl Style ROOM 135B

Learn about tpt's new SciGirls TV program, then design and create an anemometer, an activity from SciGirls' new engineering guide.

Adine Thoreen and Joan Freese, Twin Cities Public Television

Integrating Lego into Curriculum ROOM 156

See how Robbinsdale integrates Legos and robotics into grades K, 1, 4 and 5, including calendars, laptops, journals and an Engineering rubric.

Stephanie Skelly, Robbinsdale Area School District

Making Sense of Engineering ROOM 32

Engineers develop new devices that are designed to extend our senses. Use your students' senses to enhance engineering instruction with hands-on activities, creative dramatics and storytelling techniques.

Cheryl Moeller and Tim Barnett, STEM Ahead

Engineering and Environmental Science ROOM 42

Integrate engineering & environmental science to give students authentic opportunities to understand people's impact on society and world.

Cara Rieckenberg, Environmental Ed Coordinator, Prior Lake/Savage

Connecting Schools with the Community ROOM 52

Learn how to use your local community and the web portal getSTEM to access professionals and create authentic learning.

Jake Lantry, MHTA getSTEM and Debbie Belfry, Bloomington

Save this date!

November 7, 2011

4th Annual E4 Conference

www.theworks.org