

**MINNESOTA STATE COLLEGES AND UNIVERSITIES
BOARD OF TRUSTEES**

Agenda Item Summary Sheet

Committee: Board of Trustees

Date of Meeting: May 21, 2008

Agenda Item: Presentation by the Minnesota State Colleges and Universities Foundation

☐

Proposed
Policy Change

☐

Approvals
Required by
Policy

☐

Other
Approvals

☐

Monitoring

☒

Information

Cite policy requirement, or explain why item is on the Board agenda:

A major fundraising initiative for the Minnesota State Colleges and Universities Foundation is Project Lead the Way. Today's presentation will provide the Board of Trustees background on the statewide initiative.

Scheduled Presenter(s):

Robert Erickson, Chair, Minnesota State Colleges & Universities Foundation

Joan Volkmuth, President and Executive Director of the Minnesota State Colleges and Universities Foundation

Jim Mecklenburg, Project Lead the Way Program Director

Michael Lehn, Project Lead the Way

Tim Ciavarri, Instructor, Olson Middle School, Bloomington, MN

Jennifer Kalkman – 8th Grade Student

Jesse Pai – 7th Grade Student

Joni Wetherhead – 8th Grade Student

Jack Graaves – 7th Grade Student

Outline of Key Points/Policy Issues:

Background Information:

**MINNESOTA STATE COLLEGES AND UNIVERSITIES
BOARD OF TRUSTEES**

INFORMATION ITEM
Presentation by the Minnesota State Colleges and Universities Foundation

BACKGROUND

Joan Volkmuth, President and Executive Director will provide an overview of Project Lead the Way, a major fundraising initiative of the Minnesota State Colleges and Universities Foundation.

Project Lead the Way Minnesota State Colleges and Universities Board of Trustees



May 21, 2008

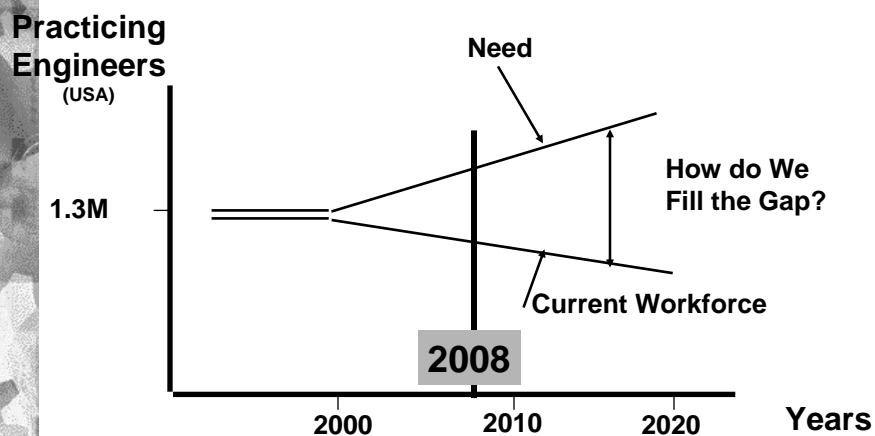
What do we know about post-secondary schools of science, engineering & engineering technology ?

- **Number & percent of potential US undergraduate engineering majors is in decline:**
 - **1992 - 67,000 – 9% of ACT test takers**
 - **2006 - 48,000 – <5% of ACT test takers (ACT)**

And....

- **Most colleges & universities do not have all the qualified students they need – especially 2-year colleges.**

Future Engineering Need & Supply



Note: Total workforce with Science & Engineering education exceeds 10M, 30+% work in S&E; Engineering accounts for 1.9M degrees and 1.3M working in the field, (NSF Science and Engineering Indicators 2000)

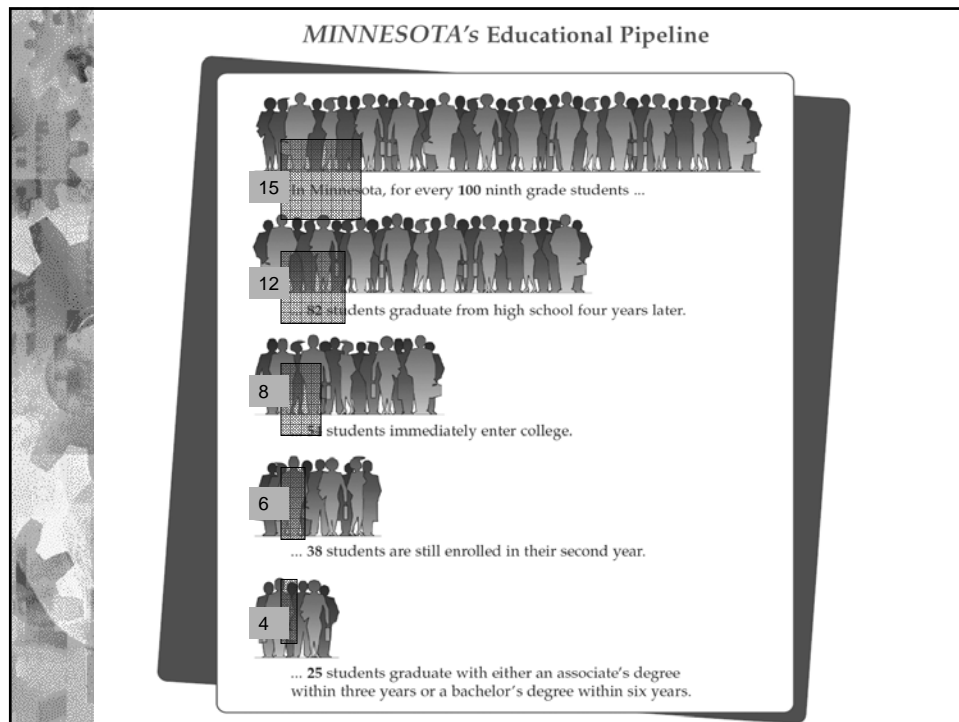


Michael Lehn - Project Director
Minnesota State Colleges and Universities

Why is it important to

transform

school curriculum ??



Today's students ask:


- Why do I need to know this?
- When will I ever use this?
- What do I need to do for an A?



Questions Students Should Ask !

- What if ?
- Why not ?
- How about ?

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PLTW makes math and science relevant for students by...

- Engaging them in hands-on, real-world projects so they understand how the skills they are learning can be applied in everyday life.



Project- and Problem-Based Contextual Learning

Why does it work ???



**PLTW Curriculum's approach
uses...**

- **Activities-based learning**
- **Project-based learning**
- **Problem-based learning**

Research shows that PLTW students experience....

- Increase in student motivation
- Increase in cooperative learning skills and an higher-order thinking
- Improvement in student achievement

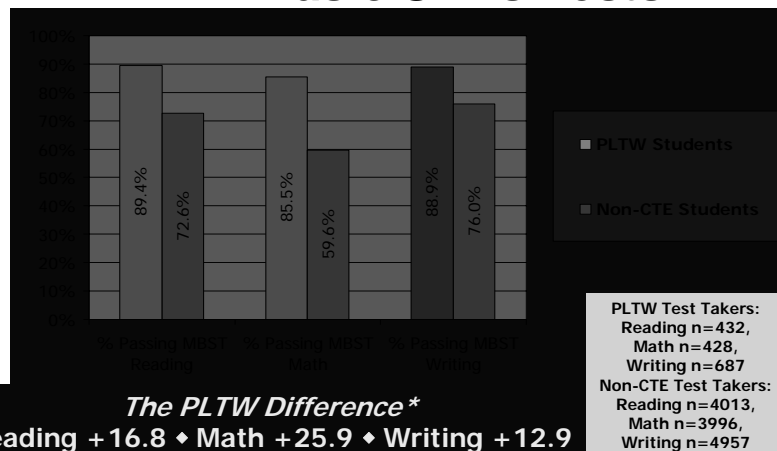
Project Lead The Way Outcomes

Minneapolis Public Schools (MPS)
Career & Technical Education (CTE)
Annual Report 2006-07



MPS North student works on a digital electronics project.
Starting salaries for electrical engineers are in the \$60K range.

Outcomes PLTW students outperformed non-CTE students on MN Basic Skills Tests



* "The PLTW Difference" is simply the difference in percentage points for each measure.

(c) 2008 MPS - CTE

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Project Lead the Way assists MnSCU's Goals by...

- Students become college ready
- Teacher readiness and retention in STEM curriculum
- Link STEM study to careers to bridge perception gap



PLTW and STEM Education Initiatives

- Curriculum development in STEM career pathways
- Bridging the diversity gaps in STEM and introducing Industry to K-12 best practices program
- Focus on the untapped talent pool across underrepresented populations



Centers of Excellence

- 360° Manufacturing and Applied Engineering Center of Excellence – Bemidji State University
- Minnesota Center for Engineering and Manufacturing Excellence – MSU-Mankato
- Center for Strategic Information Technology and Security – Winona State University
PLTW Digital Electronics
- HealthForce Minnesota – Metro State University
PLTW Biotechnical Engineering and Biomedical Sciences



Teacher Training

- Faculty and staff from the University of Minnesota, the Minnesota PLTW joint affiliate institution, and Minnesota State Colleges and Universities faculty will provide **teacher training and regional support for schools** seeking certification and delivering PLTW curricula.



PLTW Summer Training Institutes *Summer 2008*

- *Bemidji State University*
- *MSU Mankato*
- *St. Cloud State University*
- *University of Minnesota*



James Mecklenburg - Program Director
MNCEME



Middle School Program: Gateway To Technology

Design and Modeling (9 wks)
The Magic of Electrons (9 wks)
The Science of Technology (9 wks)
Automation and Robotics (9 wks)
Aerospace Technology (9 wks) NASA

**Environmental Engineering (9 wks)

**Energy and the Environment (9 wks)

** In development



PLTW Classes in the Middle School



Olson Middle School Bloomington Schools

Tim Ciavarri- Instructor

Students

Jennifer Kalkman 8th
Jesse Pai 7th

Joni Wetherhead 8th
Jack Graaves 7th

High School Course Program

**Foundation: Principles Of Engineering
Introduction to Engineering Design**

**Specialization: and/or
Digital Electronics
Computer Integrated Manufacturing
Civil Engineering and Architecture**

**Bio-technical Engineering
Aerospace Technology**

Capstone: Engineering Design and Development

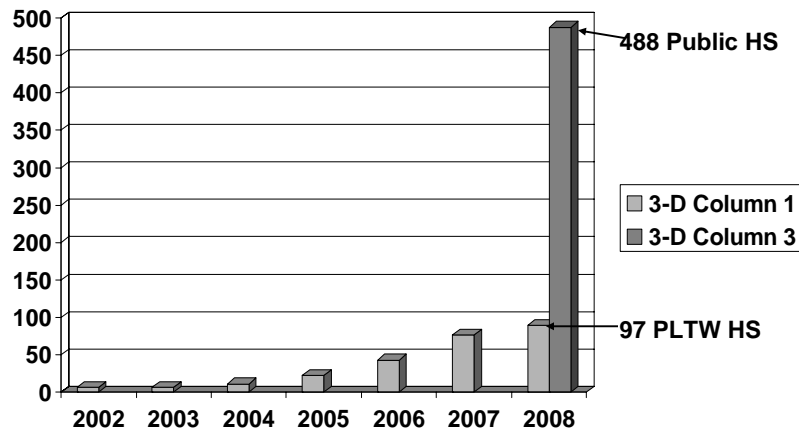
Note: Requires college prep mathematics each year.

PLTW High Schools Classes Teach the Design Process...

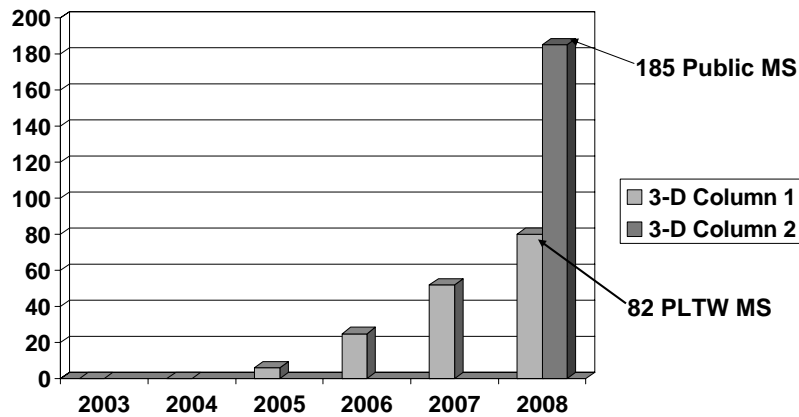


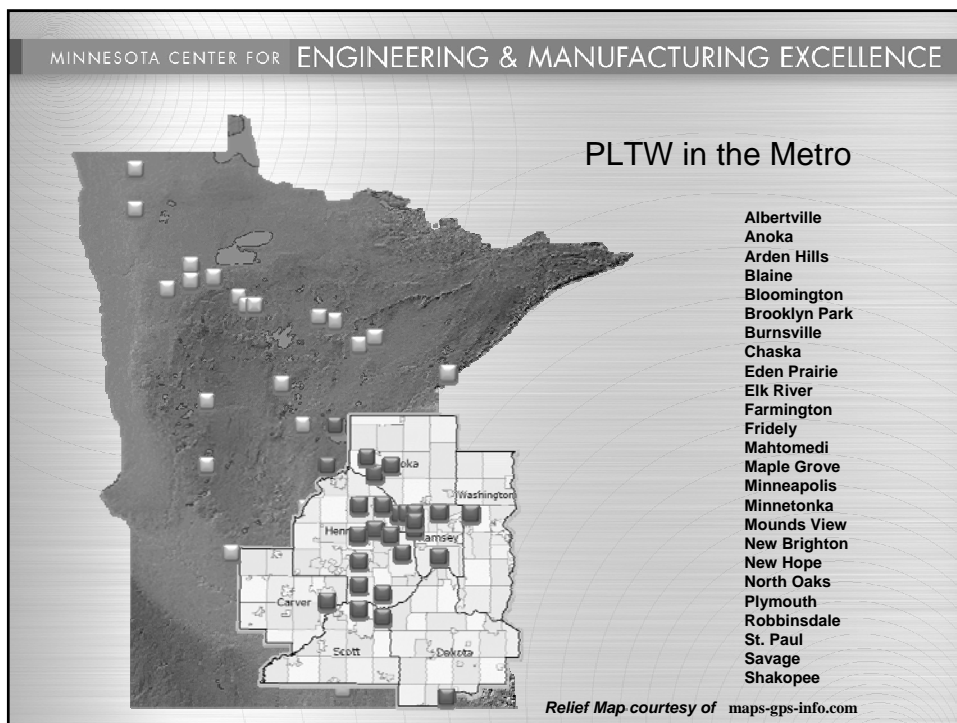
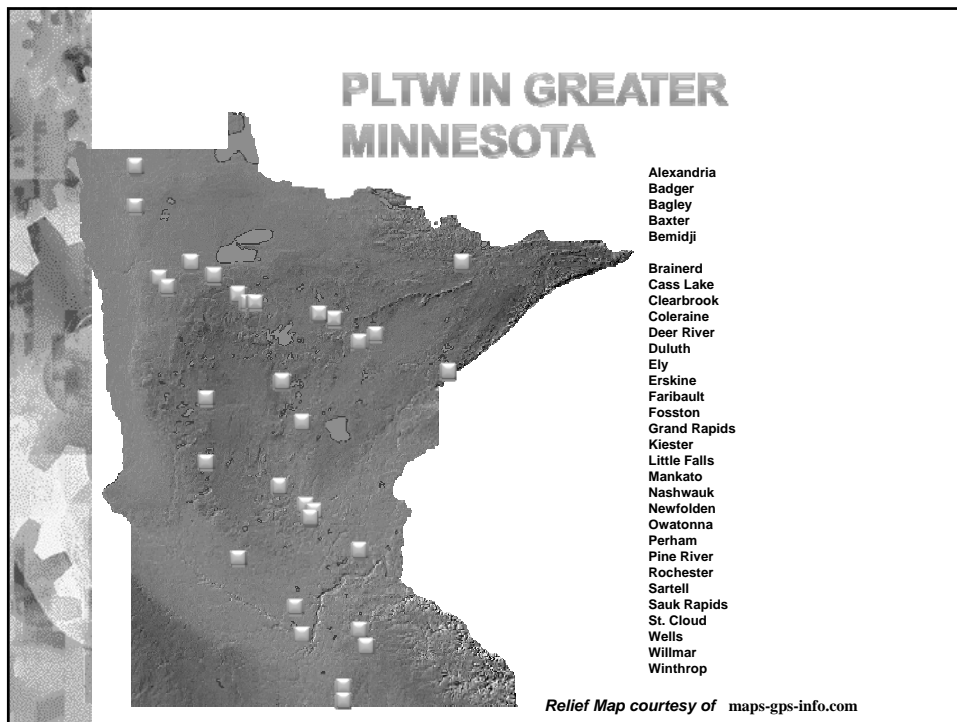


Minnesota PLTW High School Locations



Minnesota PLTW Middle School Locations







Future Growth Needs

- 40 New Middle Schools @\$25,000 = \$1,000,000
- 40 New High Schools @ \$35,000 = \$1,400,000
and/or
- Software for 125 schools @ \$4000 = \$500,000
and/or
- Specialty equipment for Computer Integrated Manufacturing (CIM) 20 locations = \$1,000,000
and/or
- Specialty equipment for Biotechnical Engineering (BE) 40 locations = \$600,000



Questions??