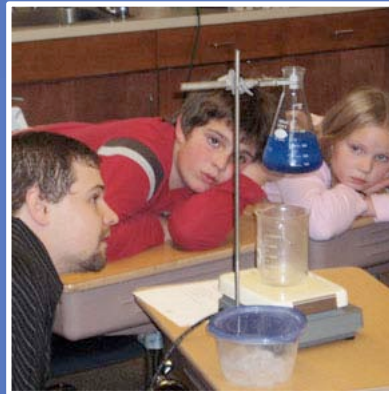
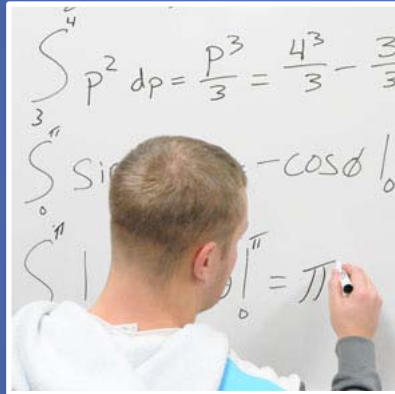
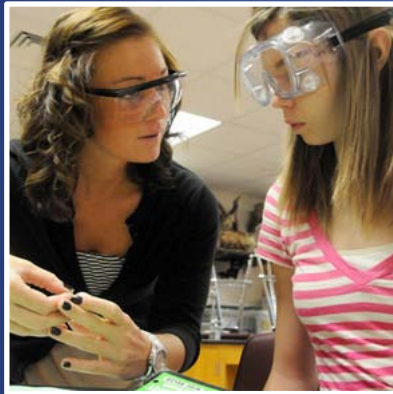


# ADVANCING STEM EDUCATION



*Mary Hopkins-Best, Interim Provost and Vice Chancellor*

# STEM educational reform necessary for a successful and competitive workforce



## National:

- STEM Teacher Corps
- STEM Education Coalition



## Wisconsin:

- Wisconsin Technology Council:  
Educating a Tech-Savvy Workforce  
for Wisconsin
- Wisconsin Common Core Standards  
for Mathematics

“STEM education is an imperative to secure our  
state’s viability in a competitive global economy.”

S. Mark Tyler, President, OEM Fabricators

**Wisconsin STEM: Navigators to the Future,**  
*a report supported through the Wisconsin Technology Council, 2012*

## STEM education focus:

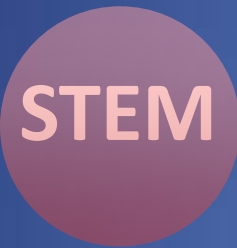
- Integrated studies
- Applied opportunities
- Relationship to career and personal aspirations
- Emphasis on problem solving, collaboration, creativity and critical thinking



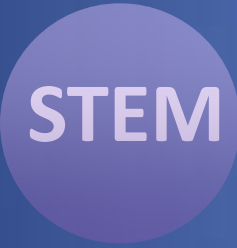
## UW-Stout polytechnic focus:

- Offer a comprehensive curriculum with a career focus
- Blend theory with practice — applied learning
- Apply student and faculty research to develop innovative solutions to real world problems
- Collaborate with business, industry and other education institutions to grow the economy

# UW-Stout STEM focus:



OUTREACH AND COLLABORATION



EDUCATION INNOVATION



APPLIED RESEARCH AND ECONOMIC DEVELOPMENT

## Western Wisconsin STEM Consortia

### Partners

- UW-Stout
- Western Wisconsin Technical College
- Nine school districts
- Business and education

### Goals

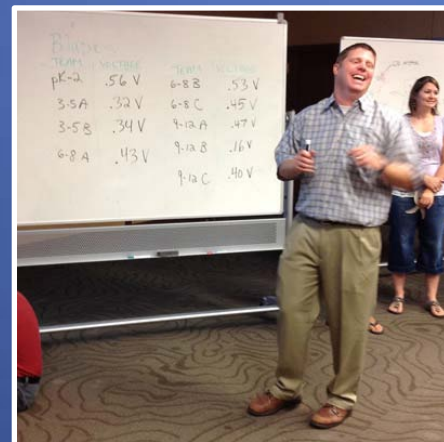
- Professional development
- Increase student academic achievement
- Develop STEM integrated curriculum project
- Build collaborative relationships among K-12, higher education and business



# Western Wisconsin STEM Consortia

## Project Components

- Two-week summer STEM Academy
- Seminars throughout the year
- Online communication and collaboration
- Business partner Involvement
- Teacher peer coaching
- School teams



## Professional Development for Teachers

- STEM content
- STEM teaching strategies
- STEM integrated curriculum



## Evaluation

### Learning improved significantly in the four categories measured

- Data Analysis and Probability   ↑ 7.48
- Geometry and Measurement   ↑ 9.45
- Interdependence, Populations and Ecosystems   ↑ 2.17
- Force, Motion and Simple Machines   ↑ 4.98

### Positive participant feedback

- “Every teacher should have this opportunity.”
- “The UW-Stout instructors are fabulous.”
- “STEM: Stimulating To Educator’s Minds.”



# Applied Science Scholar

## Project Goals

- Recruit/retain traditionally underrepresented students
- Enhance student learning
- Integrate diversity into the curriculum
- Develop a model for replication

## Living/Learning Community

- Live together
- Learn together
- Serve together
- Faculty and peer mentors





# Applied Science Scholar

## Outcomes

### Entire Applied Science Freshmen Community:

- Living/Learning Community was effective
- Improved understanding of the program
- Increased awareness of diversity issues



### Highlights:

- 37 students received \$250,000 in NSF scholarships
- 40% of scholarship recipients completed internships
- 100% of scholars have peer and faculty mentors
- 100% of scholars had paid research experiences
- 9% increase in underrepresented students in first year
- 85% retention rate

# Applied Science Scholar

## Applied Research and Industry Experiences

**Sarah Voeller**  
Researched fungal structures using Scanning Electron Microscopy



**Kelvin Smith**  
Researched hydrophobic dyes used in medical applications



**Lucas Lee**  
Interned with Expert Tree Service and Science



**Henry Hansen**  
Interned with River National Fish Hatchery for the U.S. Fish and Wildlife Service

## Value Added Food Products



### UW-Stout Discovery Center

Harnesses the expertise of UW-Stout faculty, staff, students and other specialists to foster discovery and innovation.

Technical assistance and applied research for Wisconsin small and medium-sized agricultural operations.

Funded by Wisconsin Department of Agriculture, Trade and Consumer Protection, matched with private sector enterprises.

### Project Goals

- Increase commercialization of Wisconsin-grown organic and natural value-added food products
- Streamline value-added food development and innovation process
- Improve private sector partners' ability to develop and commercialize new value-added food products.

# Value Added Food Products

## Project Component: Applied Research

Collaborative research and development by UW-Stout faculty and graduate students.



## Products refined and commercialized in area of food science

- Chicken Pot Pie
- Cheese product w/natural omega



## Products under development

- Basil processing
- Natural pie crusts
- Fruit spritzers
- Beet-based product line
- Flavored beverages
- New food ingredient



## Projects being scoped

- Nutritional replacement
- Baby food
- Cranberry seed oil



# Value Added Food Products

## Project Component: Technical Assistance

Tailored workshops focused on innovation processes and targeted agricultural producers and producer groups (62 growers).

## Project Progress and Sustainability

- Piloting three projects taking a food product from refinement to commercialization, including market research (*domestic and international distribution*).
- An Economic Development Administration award underwrites a share of qualified costs for those projects advancing to commercialization in rural or distressed Wisconsin communities.



*Workshop in Spring Green*

### Workshop topics included:

- Supplier clearances
- Safety and licensing requirements
- Product development
- Scaling to commercial production
- Labeling, packaging and pricing
- Distribution and marketing

# UW-Stout STEM focus:

-  STEM OUTREACH AND COLLABORATION
-  STEM EDUCATION INNOVATION
-  STEM APPLIED RESEARCH AND ECONOMIC DEVELOPMENT

Questions? Comments?