

Fall 2010 Volume 50 Number 1

911 Emergency Dispatcher Certification



Use this 911 training system to teach your students how to work as an Emergency Telecommunicator. Students will experience real-life emergency dispatch situations and the national certification they receive will put them at the top of an employer's list.



ADVERTISERS

First Technologies, Inc.	Inside Front Cover	
Youngblood Lumber Co.	1	
MasterGraphics	6	
First Technologies, Inc.	7	
First Technologies, Inc.	13	
First Technologies, Inc.	19	
Goodheart-Willcox Publisher	21	
Haldeman Homme, Inc.	23	
First Technologies, Inc.	25	
KEEP Bright Idea	26	
First Technologies, Inc.	27	
Technology Education Concepts	28	
First Technologies, Inc.	Inside Back Cover	
Lab Midwest	Outside Back Cover	
PI FASE SUPPORT OUR	DVFRTISFRS	

TABLE OF CONTENTS

WTEA Board of Directors	2
President's Message	3
Annual Meeting/Calendar	4
District News	5
Executive Director	7
Interface Subscription Form	8
Awards Nomination Form	9
Fall In-services	10
Opportunities	11
Gateway Technical College HERO	12
2010 Conference Highlights	14
2011 Conference Registration	15
NC3 Train-the-Trainer	16
A Tiny Galaxy	17
Becky Werner Foundation	18
Fox Valley Technical College Camp	19
InvenTeam	20-22
HOMES Project	24-25
KEEP Bright Idea Fundraiser	26
Announcements	27
WTEA Editor	28

Cover design by: Howard Roloff, 116 S. Morris St., Stoughton, WI 53589, hroloff1@netzero.com

Interface is the journal of the **WTEA**. It is published and mailed from Stoughton, Wisconsin three times a year and is distributed to members of the **WTEA**. Articles for publication should be sent to: Doug MacKenzie, *Interface* Editor, 960 Yuma Circle, Stoughton, WI 53589, doug@wtea-wis.org.

YOUNGBLOOD LUMBER CO.

Wholesale supplier since 1876

- FAST SHIPMENT AND DELIVERY
- FINE QUALITY CABINET GRADE MATERIALS
- ONE ON ONE SERVICE REPRESENTATIVES
- WIDE RANGE OF INVENTORY
- COURTEOUS KNOWEDGEABLE SERVICE
- MATERIALS SORTED OR SELECTED SPECIFICALLY FOR YOU

THE INDUSTRY LEADER... SERVING THE UPPER MIDWEST

OFFICE HOURS 7:30 AM - 4:00 PM YARD HOURS 7:30 AM - 3:45 PM SATURDAY HOUR 8:00 AM - 11:45 PM

1335 CENTRAL AVENUE NE • MINNEAPOLIS MN 55413

612-789-3521 • 800-933-1335 • FAX 612-789-9625

Web Page: www.youngbloodlumber.com

2010 - 2011 WTEA Board of Directors

WTEA Home Page www.wtea-wis.org

PRESIDENT - Pete McConnell

(H) 715-536-2691 (W) 715-536-4594 x 3142 (email) pete.mcconnell@maps.k12.wi.us Merrill High School, 1201 N. Sales St., Merrill, WI 54452

VICE-PRESIDENT - Greg Groom (H) 262-348-9642 (W) 262-348-2000

(H) 262-348-9642 (W) 262-348-2000(email) greg.groom@badger.k12.wi.usBadger High School, 220 South St., Lake Geneva, WI 53147

PAST-PRESIDENT - Al Gomez

(H) 608-628-3098 (email) alangomez@live.com 803 Woodview Dr., Sun Prairie, WI 53590

SECRETARY/TREASURER - Kyle Novak

(C) 920-585-6612 (W) 920-845-2336 x 443W (email) novakkyle@gmail.com 309 Nancy St., Wrightstown, WI 54180

EXECUTIVE DIRECTOR - Joe Ciontea

(Cell) 920-904-2747 (email) joe.ciontea@wtea-wis.org Fond du Lac High School WTEA Office: P.O. Box 1312, Fond du Lac, WI 54936-1312

CONFERENCE COORDINATOR - Jeffrey L. Dowd

(H) 262-886-0964 (Fax) 262-884-4643 1235 Lancelot Lane, Racine, WI 53406

PROGRAM COORDINATOR - Steven Johnston

(H) 608-689-3033 (W) 608-789-7700 x 7798 (email) johnston@mwt.net Logan High School, 1500 Ranger Drive, LaCrosse, WI 54603

SEMINAR COORDINATOR - Damon Smith

(H) 715-838-9361 (W) 715-852-6772 (email) dsmith1@ecasd.k12.wi.us Eau Claire North High School, 1801 Piedmont, Eau Claire, WI 54701

MARKETING CHAIRPERSON - Bryan Albrecht

(W) 262-564-3610 (C) 262-496-4592 (email) albrechtb@gtc.edu Gateway Technical College, 3520 30th Ave. Kenosha, WI 53144

STUDENT COMMITTEE CHAIRPERSON - Ian Crammond

(W) 608-355-3940 (H) 608-770-3899
 (email) icrammond@baraboo.k12.wi.us
 Baraboo High School, 11201 Draper St., Baraboo, WI 53913

DPI REPRESENTATIVE - Brent Kindred

(W) 608-266-2683 (email) brent.kindred@dpi.wi.gov Tech. Educ. Consultant, P.O. Box 7841 Madison, WI 53707-7841

ITEA REPRESENTATIVE/WEBMASTER - Michael Beranek

(H) 715-877-3575 (W) 608-989-2525 (email) Beranm@btsd.k12.wi.us Blair Taylor High School, N31024 Elland Rd., Blair, WI 54616

UNIV. REPRESENTATIVE - Sylvia Tiala

(W) 715-232-5619 (email) tialas@uwstout.edu 224D Comm. Tech. Bldg., Menomonie, WI 54751

UNIV. REPRESENTATIVE - Frank Steck

(W) 608-342-1532(email) steck@uwplatt.edu1 University Plaza, 411 Pioneer Tower, Platteville, WI 53818-3099

UNIV. REPRESENTATIVE - Betty Pfaff

(W) 608-796-3287 (email) bjpfaff@viterbo.edu Viterbo University, 900 Viterbo Dr., LaCrosse, WI 54650

TECH COLLEGE REP - Mike Cattelino

(W) 920-735-4887 (email) cattelin@fvtc.edu Fox Valley Tech. Col., 1825 N. Bluemound Dr., Appleton, WI 54912

DISTRICT 1 DIRECTOR - Ken Bessac

(H) 715-246-8947 (W) 715-243-1247 (email) kenbessac@hotmail.com New Richmond H. S., 701 E. 11th St., New Richmond, WI 54017

DISTRICT 2 DIRECTOR - Tom Martin

(H) 608-874-4414 (W) 608-822-3276 x 242 (email) tmartin@cesa3.k12.wi.us CESA #3, 1300 Industrial Dr., Fennimore, WI 53809

DISTRICT 3 DIRECTOR - Position Available

DISTRICT 4 DIRECTOR - William Reiger

(H) 715-235-7354 (W) 715-672-8917 (email) brieger@durand.k12.wi.us Durand High School, 604 7th Ave East, Durand, WI 54736

DISTRICT 5 DIRECTOR - Brian Schiltz

(H) 715-453-2947 (W) 715-453-2106 (email) schiltzb@tomahawk.k12.wi.us Tomahawk High School, 1048 East Kings Rd., Tomahawk, WI 54487

DISTRICT 6 DIRECTOR - Phil Bickelhaupt

(H) 715-570-9376 (W) 715-423-1520 x 7129 (email) Phillip.Bickelhaupt@wrps.org Lincoln H. S., 1801 16th Street South, Wisconsin Rapids, WI 54494

DISTRICT 7 DIRECTOR - Ryan Ubersox

(W) 608-849-2275 (C) 608-577-6716(email) rubersox@waunakee.k12.wi.usWaunakee High School, 301 Community Dr., Waunakee, WI 53597

DISTRICT 8 DIRECTOR - Greg Hedrich

(H) 920-475-0721 (W) 920-872-2161 x 153 (email) hedrgre@rbsd.k12.wi.us Laconia High School, 301W. Division, Rosendale, WI 54974

DISTRICT 9 DIRECTOR - Christopher Napierala (H) 414-384-7382 (W) 414-616-5800

(H) 414-384-7382 (W) 414-610-3800 (email) napiercx@milwaukee.k12.wi.us Samuel Morse M. S., 4601 N. 84th St., Milwaukee WI, 53225

DISTRICT 10 DIRECTOR - Doug Kugler

(H) 262-790-9128 (W) 262-970-3639 (email) dkugler@waukesha.k12.wi.us Waukesha North H. S., 2222 Michigan Ave, Waukesha, WI 53188

DISTRICT 11 DIRECTOR - Norm Hippert

(email) nhippert@luxcasco.k12.wi.us Luxemburg-Casco High School

DISTRICT 12 DIRECTOR - Steve Meyer

(W) 920-756-9238 (email) smeyer@brillion.k12.wi.us Brillion High School, W. 1101 Hwy HR, Brillion, WI 54110

INTERFACE EDITOR - Doug MacKenzie

(H) 608-873-9479 (email) doug@wtea-wi.org 960 Yuma Circle, Stoughton, WI 53589

Applause for Opportunity (and Challenge)!

By Pete McConnell, WTEA President

It has been an honor to represent a professional and top rate organization such as the WTEA in the past five months. No, I'm not going anywhere and this is not farewell. This is welcome to the dance! Crank up the tunes! There have been a number of opportunities for me to learn leagues. The local supervision of these licensing issues is critical and demands adherence to relevant, rigorous, and foundational curriculum as delivered by trained and competent professionals. Stay in touch with your District Representatives and continue the discussion.

about some specific issues that may prove to help us all grow and look to the future with a renewed awareness.

My annual visit to the Wisconsin Skills State Conference in the Dells was spectacular. I have been an advisor since 1987 and I continue to be incredibly proud of the quality and high standards that our students, advisors, and State Skills Team display every year. There is an opportunity for advisors to come together and visit with Brent Kindred and others from around the state. There is a chance to touch base as usual, but I took notice of this particular topic. Take advantage

of the grants and opportunities that are available to Skills chapters as well as all technology education teachers. There are STEM grants, science equivalencies, multiple programs from the DPI, KEEP, and many others. Several of these programs go unnoticed and unused. Contact Brent Kindred, come to the Fall DPI/WTEA information sessions this fall, and take advantage!

There was a fantastic response to the teacher licensing discussion that surfaced just prior to the end of the school year. The involvement and support for the discussion was overwhelming. I was able to connect with several supportive CTE organizations and it was invigorating to stand up and learn about the concerns and issues in regard to teacher licensing. The DPI is concerned about many levels of licensing issues and I believe the ultimate goal is to maintain the health and strength of Wisconsin CTE. It is all of our responsibilities to stay actively informed about licensing legislation and continue the discussion with administrators, teacher training institutions, and col-



I am constantly reminded to take advantage of the awesome resources we have in front of our noses! The Wisconsin Technical College system is awesome and mobile. The opportunities for articulation, training, and supportive resources are endless. The WTEA is anxious to share this resource with all of you. Contact your District Representative and set up an event that involves your local technical school. The instructors and program directors are willing to assist you in your classrooms as well as training and continued education opportunities.

The fall season brings new energy to our profession and our classrooms. Take advantage of the resources. The workshops, conferences, and professional connections are designed to entice us to the next level of professional excellence! You have demonstrated in a number of ways that we will continue to commit to providing the finest technology education for our students. Remember to stay connected with your political, community, business and industry contacts and other support systems to move your programs forward during these challenging economic times. Your inquiries will be met with support and your students will move forward! Let us know how we can support your involvement!

The WTEA board is excited to meet this fall at Gateway Technical College. I promise to provide an agenda that will continue to develop leadership, support, and training for our membership. Contact our executive director Joe Ciontea or any one of our board members if you need assistance with membership or any other WTEA issues.

Plan now to attend The 42nd Annual WTEA Conference and Trade Show "Generating Innovation"

March 10 & 11, 2011 at Chula Vista Resort, Wisconsin Dells

ANNUAL MEETING/CALENDAR

2010 Annual Membership Meeting Highlights

by Kyle Novak, WTEA Secretary/Treasurer

The following summary highlights the 2010 General Membership Meeting held March 4th at Chula Vista Resort during the annual spring conference.

- SkillsUSA presented the opening ceremonies.
- Secretary's report was given.
- WTEA name edit vote was explained to membership and taken.
- Greg Groom was installed as vice president.
- Pete McConnell was installed as president.
- The Wisconsin K-12 Energy Education Program (KEEP) presented information about their program to the membership.
- Executive Director Joe Ciontea gave financial report.

- Donation bucket passed for WTEA scholarship (\$283.25 collected).
- President Pete McConnell addressed the membership about his background and WTEA strength.
- Brent Kindred from DPI addressed membership about his role with DPI in relation to tech. ed.
- Conference coordinator Jeff Dowd relayed to membership positive feedback from exhibitors about the conference.
- Motion made to dedicate a room at the spring 2011 conference for the purpose of CTE student organization activities. Vote taken, Vote did not pass.

Complete minutes are available from Kyle Novak at novakkyle@gmail.com

- Dates to Remember -

Sept. 30 - Oct 1, 2010	SkillsUSA Fall Leadership Conf	. Stevens Point, WI
October 7, 2010	DPI/WTEA Fall In-service	CESA #1 Offices
October 14, 2010	UW-Stout Tech Ed Conference	Menomonie, WI
October 14, 2010	DPI/WTEA Fall In-service	CESA #8 - Gillett, WI
October 20 - 23, 2010	National Career Pathways Netwo	rk Dallas, TX
November 2, 2010 D	PI/WTEA Fall In-service CES	SA #3 - Fennimore, WI
November 11, 2010 DF	PI/WTEA Fall In-service CESA #	11/12 - Rice Lake, WI
December 2 - 4, 2010	ACTE Conference	Las Vegas, NV
February 24 - 25, 2011	UW-Stout SkillsUSA Conference	e Menomonie, WI
March 10 - 11, 2011	42nd WTEA Conference	Wisconsin Dells, WI
April 12 - 13, 2011	SkillsUSA State Conference	Wisconsin Dells, WI
June 19 - 25, 2011	SkillsUSA National Conference	Kansas City, MO

DISTRICT NEWS

District #2

Tom Martin



As we embark on a new school year, plans are underway to hold a district meeting with Dr. Frank Steck and his students at the University of Wisconsin Platteville as well as an industry partner during the school year.

Teachers will also receive infor-

mation via my weekly email and podcast. These services provide teachers with key information throughout the year!

Our instructors also have tremendous professional development opportunities that include courses in Wood-turning (An Introduction to Woodturning), STEM (WhySTEM, September 22 - http://www.swacademy21. org/why_STEM.html for more information) in addition to the tremendous offerings at CESA #3.

We will also be preparing for the Wisconsin SkillsU-SA Southwest Wisconsin Regional, slated for Thursday and Friday, January 27 & 28. Last year we had over 125 students and as we look to expand into Auto Tech and Carpentry contests, we look to see many more students descend upon Southwest Wisconsin.

Here's to another tremendous year!

District #5

Brian Schiltz



Hope all of you had the opportunity to get some rest and relaxation this summer, as well as, taking a trip or two of your dreams, making a few bucks helping the neighborhood or running your own business, and participating in a few classes to maintain your teaching licensure. As many of us know, things

can pop up that require our time and attention causing distractions in our lives. This year make sure you examine and determine what your priorities are in your life. The creation and formation of relationships should be one of these priorities. Grow and build your relationships within your home, your classroom, your district, and your community. Look for new opportunities to network and make new connections that will lead to opportunities. Make it a great year.

District #7

Ryan Ubersox

Greetings WTEA Members!

It's an honor to be asked to serve as District 7 Director at the Spring 2010 WTEA Conference. This will be my ninth year teaching at the Waunakee Community School District. I've been a member of WTEA since my days as an undergraduate at UW-Platteville and

involved with SkillsUSA for over six years, serving as our local advisor for two. I currently am teaching PLTW classes, Introduction to Engineering Design and Digital Electronics, and have had experience in many other areas of technology and engineering education as enrollments change from year to year.

Our WTEA district includes the school districts in the surrounding areas of Madison College (formerly Madison Area Technical College) and Blackhawk Tech. To properly serve the teachers of District 7, we will be back on track with two meetings this school year. Our meetings are open to all technology and engineering teachers/coordinators in our district and is not limited to WTEA members.

The first meeting is going to be at Sun Prairie High School on November 17. Sun Prairie has a high quality and diverse technology and engineering program and now is housed in a brand new 10-12 grade high school. More specific information will follow via e-mail and mailings to your schools. Please e-mail me if you are in District 7 and have not received a recent e-mail message from me, so that I can get you on my distribution list.

We are looking for a second meeting in the spring.

If you are interested in hosting, or have a business in your area which would be beneficial for us to meet at, please contact me.

I look forward to meeting and networking with you throughout the year!

Kind regards.





With the right tools—and your expert guidance—everything is possible. Every design superstar gets their start somewhere. It's likely with the expert guidance of someone like you. But every master needs the sharpest tools—and that's where we come in. Whether it's Autodesk[®] software, curriculum, enhanced training or even printing hardware you need to meet today's STEM initiatives. We can help you shape the next generation of design—and designers. Let us show you how.

(800) 873.7238 / mastergraphics.com/education



Making Design Data Work

Autodesk

Architecture, Engineering & Construction Manufacturing Authorized Education Partner



Refreshed, Recharged, and Ready to Rock n Roll!

by Joe Ciontea, WTEA Executive Director

By the time you read this we will all have several weeks of school under our belt. Your Board of Direc-

tors was busy 'minding the store' during the summer: lots of e-mail exchanges, some discussions with DPI about teacher licensing, and a summer summit in Merrill, Wisconsin. Plans are moving forward for the spring conference, the exhibitors are signing up earlier than usual, the keynote speakers are contracted, and the Board of Directors will be meeting the weekend of September 25th to kick off this year's association activities.

Can you believe it? This is the first issue of volume 50 of our association's journal; it's also our first official full color publication. This is a great orga-

nization with a proud history of leaders from all over the



state. Please consider taking a more active roll this year: attend a regional meeting, write an article for the journal,

> present a sectional at the conference, or offer to serve on the Board of Directors. Give me a shout and I will hook you up. On a personal note I had a great summer. My wife and I, along with a retired colleague and his wife, spent 2 weeks visiting Alaska (we were working on the bucket list). Thank goodness for digital cameras, I took 800+ photographs. We saw Mt. McKinley from both sides of the mountain range, saw the Big Five in Denali, went 4-wheeling in the Rockies, panned for gold in Fairbanks, cruised the inside passage, went whale watching, and my wife bought me a great hat (see my photo).

Have a great fall, see you at the conference.



Mastercam University

Mastercam University is a 16-week online training course. There are 5 different courses to pick from and you have unlimited access to the course you choose over the 16-week period. Cost \$100.

Name	Y	Cour log-on will be sent via email. Please list your email below:
Address		-
City, State, Zip	p	ar call our office to pay with a credit card
Phone/Cell Phone	P	Please fax this order form to (262) 363-4882.
Order Today	Choose one (1) Mastercam University course from those li Mill Design and Toolpaths Advanced Mill Design and Toolp Lathe Design and Toolpaths Mastercam for SolidWorks Principles for Machining	sted below. Hint: Use these courses with your projector/overhead as curriculum for your class!



For more information and a sample syllabus, visit: www.mastercamu.com www.firsteched.com 1.800.787.9717

Interface

SUBSCRIPTION

W **1 € A** *Interface* School Subscription

The WTEA school (building or district) subscription provides you and your local colleagues with an opportunity to keep informed about technology education in Wisconsin. The more local technology educators you sign up, the more you save. An individual subscription is \$30, but you can sign up 6 people for only \$125 - that's a savings of \$55 (see fee schedule listed below). Each additional person beyond the initial 6 is only \$10.

How it works:

Complete the form below and list every technology educator in your building. If your department has teachers in more than one building, duplicate the form and provide us with the correct school address for each educator. That way separate buildings in the same school district can be combined to increase your savings. All names listed must be employees of the same school district. Tally the fees on the form and send it along with a check or school purchase order to the address on the bottom of the form. <u>To be eligible for all benefits of this special pricing, school subscriptions should be sent as soon as possible</u>.

What you get:

Each person receives: a personal copy of the *Interface*, all association mailings and notices, invitations to attend regional technology education meetings and workshops, unlimited access to the WTEA website, discounted admission to the association's annual technology education conference, and eligibility to receive all association awards (educator of the year, program of the year, award of excellence, 25 year award). All mailings will be sent to the school address on the form. This school year subscription will expire the following fall. This form will be published in the Interface each fall; it is also available on the WTEA website.

Please type or print all information. Duplicate this form as necessary.

			•	
School Dist.	School Name			
School Address				
School City	State	Zip		
Phone ()	School Fax			
Local Technical College District (used for regional wo	orkshops and meeting ir	nvitations)		
Local Tech. Ed. contact (dept. chair, LVEC, etc.) :				
E-mail address of local Tech Ed. contact:				
Name and email			# of years teaching	Fee
1				\$30
2				\$25
3				\$20
4				\$20
5				\$15
6				\$15
Each additional person is \$10 each; names and schoo	I address may be attacl	hed on a sepa	arate sheet.	
Please note: The Interface is published 3 times per y	ear: fall, winter and sp	oring	Tot	tal

Send this form with check or Purchase Order to: WTEA PO Box 1312 Fond du Lac, WI 54936-1312 Fax 920-922-0779

WTEA Awards Nomination Form

Nomination Procedure

The Wisconsin Technology Education Association (WTEA) Awards Program annually recognizes technology educators, industry professionals, and technology education programs that have demonstrated outstanding achievement.

- Write a brief description that describes why the nominee deserves recognition from the association.
- · Indicate the award category (individual, school, or special recognition).
- Nominations must be received by November 15th to be considered for recognition the following spring.
- Technology educators must be a member to be considered for award recognition.

• For a detailed description of the awards, visit our website or contact any member of the Board of Directors. The awards committee will contact the nominee and request information regarding the nominee's curriculum, achievements and contributions to Technology Education along with letters of endorsement. Responses must be received by January 10th or the nomination will not be considered by the selection committee.

Nominee Information (Please type or print)

Name		
School Name & Address		
City	Zij	
Work Phone	e-mail	
Rationale: Briefly describe why the	his individual or program should be recogniz	zed.
	Award Categories	
[] Individual Awards: Award of Excellence	Technology Educator of the Year	Lifetime Achievement Award
[] School Awards: Middle School/Junior High I	Program of the Year	High School Program of the Year
[] Special Recognition Award: For non-technology educati	ion teachers, administrators, business spon	sors and industry professionals
Nominated by		
Address		
Work Phone	e-mail	
Signature		_ Date
www.wtea-wi	s.org WTEA, P.O. Box 1312, Fond d	u Lac, WI 54936
Fall 2010	Interface	Page 9

FALL IN-SERVICES

DPI/WTEA Fall In-services

by Brent Kindred, DPI Technology Education Consultant

Agenda

9:00am - Welcome and introductions

association, upcoming events, regional

8:45am - Registration

to the days activates

competitions and more.

Opportunities

Perkins Act.

Hour Certification

9:10am - SkillsUSA Updates

9:20am - KEEP Organization

The KEEP organization has a lot of

activities and events for us to attend.

in schools through teacher education.

9:40am - Carl Perkins Update and

Moving Forward With Your Plan

We will discuss the grant, technical skill attainment, aligning your

curriculum, articulation agreements,

10:10am - Career Safe/ OSHA 10

and the vision for the remainder of this

-Workforce Ready System

Their goal is to increase energy literacy

Discussion about our student

Welcome to the 2010 – 2011 school year. For me, the highlight of the Fall season is hosting our annual DPI/WTEA Fall In-services. This is our opportunity to gather as a professional community and discuss the hot topics that are happening. We try to hold these in various locations around the state and hopefully one near you. All in-services are drive-in, drive-out events in an effort to keep costs at a minimum. Your major costs will be travel and a substitute teacher. Many of our schools will use Carl Perkins funding for the substitute teacher since this is TEE professional development and we always cover Carl Perkins updates as well. All locations will have exactly the same agenda (see below).

Who: DPI/WTEA are hosting each in-service

Registration Cost: Free (depending on location, lunch might be on your own)

2010-2011 Technology and Engineering Education Fall In-service

October 7, 2010 CESA #1 N25 W23131 Paul Road Suite 100 Pewaukee, WI 53072 RSVP by 10/4/10

October 14, 2010 CESA #8 223 West Park Street PO Box 320 Gillett, WI 54124-0320 RSVP by 10/11/10

November 2, 2010 CESA #3 1300 Industrial Drive Fennimore, WI 53809 RSVP by 10/28/10

November 11, 2010 CESA #11/12 225 Ostermann Drive Turtle Lake, WI 54889 RSVP by 11/8/10

Send RSVP to brent.kindred@dpi.wi.gov **Topics to be Discussed:** Teacher Licensing Update, TEE curriculum updates, Science Equivalency, Math Equivalency, SkillsUSA Updates, KEEP organization opportunities, Career Safe/ OSHA 10 Certification, STEM grant update, Carl Perkins updates/Programs of Study, the new longitudinal data system being implemented this year, and more.

Dates:

- October 7, 2010 CESA #1/ CESA #1 offices
- October 14, 2010 CESA#8/ to be held in Gillett, WI
- November 2, 2010 CESA #3/ to be held in Fennimore, WI
- November 11, 2010 CESA #11/12/ to be held in Rice Lake, WI

We are looking forward to delivering an informative and enjoyable day.

10:30am – What's Happening with Math & Science Equivalency

11:30am - Lunch on your own We will eat lunch in our meeting room.

12:15pm - TEE Licensing Updates

This will be an update from the many conversations that happened at the end of last school year.

1:30pm - STEM Grants and other Grants available

TEE is STEM. The vast majority of our subject matter has science, technology, engineering and math embedded. In this session we review the STEM grants offered by DPI, other STEM initiatives around the state, and what is your vision for STEM initiatives and activities.

3:30pm - Adjourn

Brent Kindred Technology and Engineering Education Consultant

Wisconsin Department of Public Instruction P.O. Box 7841 Madison, WI 53707-7841

Museum of Science Launches New Website

The Museum of Science, Boston recently launched a new website making its National Center for Technological Literacy® (NCTL®) and its corresponding resources accessible nationwide: www.mos.org/nctl. The NCTL was established in 2004 to advance technological literacy by helping state governments modify their educational standards and assessments, designing standards-based, teacher-tested K-12 engineering materials, offering pre-service, in-service, and online professional development for educators, and creating museum exhibits and programs.

The new website offers educators information about NCTL curricula and professional development materials and provides individuals and organizations across the country with tools to advocate for technological literacy within their education systems.

The country's only science museum with a comprehensive strategy and infrastructure designed to foster technological literacy in both science museums and schools nationwide, the Museum of Science now provides access on one easily navigable site to all NCTL activities and offerings. They include low-cost K-12 engineering curricula and professional development opportunities, design challenges, contact information, and news updates with relevant data and research from organizations such as the National Academy of Engineering (NAE), National Research Council (NRC), International Technology and Education Association, and U.S. National Science Board.

The NCTL's national efforts are greatly enhanced by strong partnerships with state departments of education, universities, and collaboratives. These partners expand opportunities for teachers and students to experience a rich and engaging science, technology, engineering and mathematics (STEM) curriculum.

Lights, Camera, Action!

by Beth Beimel

The Wisconsin K-12 Energy Education Program (KEEP) would like to introduce our first energy video contest! Wisconsin high school students (grades 9-12) are invited to participate in this exciting new video contest. The theme is Doable Renewables: Renewable Energy in My Community. Using their creativity, students can high-light homes and businesses that utilize renewable energy or they can envision new and different applications. From simply using the sun to dry clothes or to determine the best location for a wind turbine, students can use their imagination to explore the options of renewable energy in their community both now and in the future.

Through partnerships with Focus on Energy and Wisconsin Public Service (WPS), KEEP will coordinate the

contest with the videos hosted on the SchoolTube Web site. This contest will also offer an opportunity for Wisconsin residents to vote on their favorite video. Submissions will be accepted October 13th through December 13th, 2010, with voting open to the public January 15th to the 28th, 2011. The contest offers prizes to the judge's favorite (an iPod shuffle), the community favorite (an iPod shuffle) and an overall winner (an iPod nano). The teachers who act as the advisor to a winning video will also receive a prize as well (an iPod nano and a year membership to the Midwest Renewable Energy Association).

For more information on the video contest please visit the KEEP Web site at: www.uwsp.edu/keep, click on Student Involvement and Video Contest.



Interface

Gateway Technical College Opens New HERO Center

Gateway Technical College on Sept. 3 officially opened its new HERO Center – Health and Emergency Response Occupations – a state-of-the-art facility which provides added opportunities for students, EMS workers and firefighters to receive realistic, hands-on training.

The 8,700-square-foot addition to an existing 12,000square-foot building is located near Gateway's Burlington Center at 380 McCanna Parkway and provides instructors access to cutting-edge technology and the ability to replicate real-life scenario training to students through the design and scope of the building and its equipment.

In it, students access opportunities for real-life, scenario-based training, disaster simulation and technologyequipped classroom instruction.



EMS students receive quality training on METIman patient simulators in the Human Patient Simulator Lab of Gateway Technical College's HERO Center.

"The HERO Center stands as a testament to the men and women who serve every day to keep our community safe," says Gateway Technical College president Bryan Albrecht.

"We are proud to partner with our community police, fire and EMS service departments in providing a state-ofthe-art leadership and training facility. The HERO Center reflects our respect for all first response professions."



Gateway Technical College EMS students can train in an actual, working ambulance at the HERO Center.

A few of the many training features of the center include:

- state-of-the-art classrooms, enhanced audio/visual capabilities, numerous breakout rooms and enlarged scenario rooms that can be converted to various living environments -- bathroom, bedroom, kitchen -- which make the training done there even more realistic and focused.
- instructors and students have access to fire detection, alarm and suppression training props that represent the most state-of-the-art equipment today.
- a realistic command center run as a virtual fire department where instructors train firefighters on emergency situations from a single building fire to a community-wide emergency situation.
- METIman simulators, computerized mannequins which simulate different human patient traits including ability to talk, real pulses and breathing, bleeding and other conditions.

- video capabilities in the METIman area, where ٠ students and instructors can record the training session and provide for further direction and instruction.
- an apparatus bay area with areas designated for simulation of actual firefighting situations including a second-floor roof and apartment.
- two ambulances one stationary, the other an actual working ambulance - instructors can train firefighters and EMS students on how to load patients into the ambulance and work with them in its confined quarters.

A HERO Center monument, "On Eagles Wings," paying tribute to emergency workers, was dedicated at the Sept. 3 ceremony. The monument includes a piece of the World Trade Center pulled from the wreckage caused by the terrorist attacks of Sept. 11, 2001.

The center can be seen at Gateway's Web site at www. gtc.edu/HEROCenter.



Instructors can stage multiple simulated firefighting situations for firemen to train in the Apparatus Bay of Gateway Technical College's HERO Center.







Combine both Mastercam and SolidWorks in one interface...



for SolidWorks

Together at Last!



For more information, visit: www.mastercamforsolidworks.com

Putting Education

www.firsteched.com 1.800.787.9717

Mastercam is a registered trademark of CNC Software, Inc. ©Copyright 1983-2009. All rights reserved. SolidWorks is a registered trademark of DS SolidWorks Corporation.





Highlights of the 41st Annual Spring Conference & Trade Show March 4 - 5, 2010



Plan Now to Attend the 42nd Annual Conference & Trade Show *"Generating Innovation"* March 10 - 11, 2011 • Chula Vista Resort



42nd Annual Technology Education Conference and Trade Show <u>Tentative Conference Overview</u>

Wednesday, March 9th, 2011 7:30 p.m. Pre-registration Evening Workshops (Tentative)

Thursday, March 10th, 2011

7:30 a.m. – 3:30 p.m. Conference Registration
8:00 a.m. – 3:30 p.m. Trade Show
8:55 a.m. – 9:03 a.m. General Welcome
9:05 a.m. – 10:00 a.m. 1st General Session
10:15 a.m. – 3:45 p.m. Concurrent Sessions
10:15 a.m. – 2:30 p.m. Curriculum Exchange
4:00 p.m. – 5:00 p.m. WTEA Membership Meeting



Thursday Keynote Speaker:

Tim Johnson, Director of Governmental Affairs for the National Center for Construction Education and Research (NCCER)

Thursday, March 10th (evening)

7:00 p.m. – 9:00 p.m. Awards Banquet 9:00 p.m. (following banquet) President's Reception

Friday, March 11th, 2011

7:30 a.m. Conference Registration
7:00 a.m. – 8:15 a.m. Alumni Breakfast
8:45 a.m. – 12:15 p.m. Concurrent Sessions and Vendor Demonstrations
12:30 p.m. – 1:45 p.m. 2nd General Session/Luncheon
2:00 p.m. – 3:00 p.m. Concurrent Sessions/WTEA Board Meeting



Friday Keynote Speaker:

Kay Frances, Motivational Humorist and Stress Management Specialist

Session Topics Include: Building Construction, Robotics, Invention and Innovation, Digital Electronics, Manufacturing at The High School Level, Projects Designed to Teach Concepts, Automotive Technologies, Alternate Energy Sources, Standards & Technology, Promoting Technology and Engineering Politically, Building High Mileage Vehicles, Project Lead the Way, Skills USA, Middle School Roundtable, Middle School Engineering, Communication Technologies, New Teacher Boot Camp, and much more!

ocal Tec	h College Dis	trict	# vears te	
				eaching
	School N	ame		
State	Zip	E-mail:		
nount dı	<u>ie.</u>			
5.00 [] 1 year men	nbership - \$30.00	D \$	
lust be p	ostmarked by	December 23, 2	2010)	
[] \$115 Nor	n-member Regist	ration \$	
r 23, 201	0):			
[] \$135 non-r	nembers	\$	
1) [] \$28		\$	
hed [] payment er	nclosed 1	Fotal \$	
	.00 [lust be p 23, 201 [/] 1) [thed [State 2ip 1ount due. .00 [] 1 year men lust be postmarked by [] \$115 Nor • 23, 2010): [] \$135 non-n 1) [] \$28 thed [] payment er	State L-mail: nount due. .00 [] 1 year membership - \$30.00 lust be postmarked by December 23, 2 [] \$115 Non-member Regist .23, 2010): [] \$135 non-members 1) [] \$28	State 2ip E-mail: nount due. .00 [] 1 year membership - \$30.00 \$ lust be postmarked by December 23, 2010) [] \$115 Non-member Registration \$.23, 2010): [] \$135 non-members \$ 1) [] \$28 \$ thed [] payment enclosed Total \$

NC3 Hosts National Train-the-Trainer at Gateway's Horizon Center

Instructors from around the country traveled to Gateway Technical College as part of a national train-the-trainer event sponsored by the National Coalition of Certification Centers (NC3) and hosted at the college's Horizon Center for Transportation Technology in Kenosha.

Event instructors delivered the nationally recognized Snap-on Incorporated train-the-trainer curriculum, which provided attendees with training in the latest automotive diagnostic platforms, torque technology methods as well as the new diesel technology curriculum.

Instructors who attended the training sessions are equipped with the skills, knowledge and course materials to train students and automotive professionals in their local communities. Through integration of industry-driven certification programs into their curriculum, colleges across the country were provided standardized worldclass training to advance the skills of technicians.

This is the first time NC3 hosted the train-the-trainer event. NC3 is a national coalition of business and educa-

tional partners with a goal of responding to current and future economic needs through strong education-industry partnerships that will produce industry-driven and industry-sustainable portable certifications in transportation, aviation and energy.

The coalition has received national attention as a model initiative in response to the current economic landscape. Snap-on Incorporated and Gateway Technical College are founding members of NC3, which was conceptualized based on the strong relationship and the successful implementation of a state-of-the-art certification center. Gateway, a leadership partner in the coalition, houses an NC3 office and development lab at the Horizon Center.

Instructors from Wisconsin who participated include: Peter Lyon of Northeast Wisconsin Technical College, Paul Marquardt & Jon Werkmeister of Nicolet Area Technical College, and Larry Hobbs, Matt Janisin, Chuck Wasik & Dave Clarbour of Gateway Technical College.



CALL FOR PRESENTERS

2011 Conference Theme:

"Generating Innovation"

42nd Annual Spring Conference March 10th & 11th, 2011 - Chula Vista Resort, Wisconsin Dells

Presenter form must be submitted by November 30, 2010 by mail, fax, website submission or e-mail.

Directly submit via online form at: http://www.wtea-wis.org/bapresenter.html E-mail: johnston@mwt.net • Phone: 608-689-3033

The Turbulent Tale of a Tiny Galaxy

by Trudy Bell and Dr. Tony Phillips

Next time you hike in the woods, pause at a babbling stream. Watch carefully how the water flows around rocks. After piling up in curved waves on the upstream side, like the bow wave in front of a motorboat, the water speeds around the rock, spilling into a riotous, turbulent wake downstream. Lightweight leaves or grass blades can get trapped in the wake, swirling round and round in little eddy currents that collect debris.

Astronomers have found something similar happening in the turbulent wake of a tiny galaxy that is plunging into a cluster of 1,500 galaxies in the constellation Virgo. In this case, however, instead of collecting grass and leaves, eddy currents in the little galaxy's tail seem to be gathering gaseous material to make new stars.

"It's a fascinating case of turbulence [rather than gravity] trapping the gas, allowing it to become dense enough to form stars," says Janice A. Hester of the California Institute of Technology in Pasadena.

The tell-tale galaxy, designated IC 3418, is only a hundredth the size of the Milky Way and hardly stands out in visible light images of the busy Virgo Cluster. Astronomers realized it was interesting, however, when they looked at it using NASA's Galaxy Evolution Explorer satellite. "Ultraviolet images from the Galaxy Evolution Explorer revealed a long tail filled with clusters of massive, young stars," explains Hester. Galaxies with spectacular tails have been seen before. Usually they are behemoths—large spiral galaxies colliding with one another in the crowded environment of a busy cluster. Tidal forces during the collision pull gas and stars of all ages out of these massive galaxies to form long tails. But in IC 3418, the tail has just young stars. No old stars.

"The lack of older stars was one tip-off that IC 3418's tail isn't tidal," says Hester. "Something else must be responsible for these stars"

Hester and eight coauthors published their findings in the June 10, 2010, issue of The Astrophysical Journal Letters. The team described the following scenario: IC 3418 is speeding toward the center of the Virgo cluster at 1,000 kilometers per second. The space between cluster galaxies is not empty; it is filled with a gaseous atmosphere of diffuse, hot hydrogen. Thus, like a bicyclist coasting downhill feels wind even on a calm day, IC 3418 experiences "a stiff wind" that sweeps interstellar gas right out of the little galaxy, said Hester—gas that trails far behind its galaxy in a choppy, twisting wake akin to the wake downstream of the rock in the babbling brook. Eddy currents swirling in the turbulent wake trap the gas, allowing it to become dense enough to form stars.

"Astronomers have long debated the importance of gravity vs. turbulence in star formation," Hester noted.

"In IC 3418's tail, it's ALL turbulence."

To many astronomers, that's a surprising tale indeed.

See other surprising UV images from the Galaxy Evolution Explorer at http://www.galex. caltech.edu.Kids (and grownups) can play the challenging new Photon Pileup game at http://spaceplace. nasa.gov/en/kids/galex/photon/.



In the ultraviolet image on the left, from the Galaxy Evolution Explorer, galaxy IC 3418 leaves a turbulent star forming region in its wake. In the visible light image on the right (from the Sloan Digital Sky Survey), the wake with its new stars is not apparent.



Help Educate Your Students About Meningitis

by Bob & Dee Dee Werner, The Becky Werner Meningitis Foundation

During our presentation at the WTEA Conference last spring, we were able to tell our Career & Technical Education teachers about meningitis and the vaccine to help prevent meningitis.

Our daughter Becky was a 20 year old college student when she died from bacterial meningitis February 25th, 2004. Becky was a big hugger and a very happy girl. She loved volleyball, country music, her dog Rocky, her friends and her family. Since her death we have been educating people on the importance of getting their children vaccinated against this disease.

We started the Becky Werner Meningitis Foundation so we could raise awareness about meningitis. The focus of our Foundation is to educate students about this potentially deadly disease. Last year we addressed over 7,000 students with our FREE high school presentation. In addition, we raise funds to assist in meningitis research and to help families affected by this disease..

What Is Bacterial Meningitis

Bacterial meningitis is a serious bacterial infection. Unlike viral meningitis, it can potentially kill an otherwise healthy young person within 24 hours after the first symptoms appear.

Meningitis can be difficult to recognize, especially in its early stages, because meningitis symptoms are similar to those of more common viral illnesses. But unlike more common illnesses, meningitis can cause death or disability within just 1 day. Many of the people who survive meningitis can be left with serious medical problems that may include amputation of limbs, fingers, or toes, severe scarring, brain damage, hearing loss, kidney damage, and psychological problems.

Who's at Risk for Meningitis

Even people who are usually healthy can get meningitis. However, data from the Centers for Disease Control and Prevention (CDC) have shown that the risk of getting meningitis increases in teens and young adults.

Age Plays a Part

They may not know it, but teenagers and young adults are at greater risk for getting meningitis and are more likely to die compared to younger age groups. In fact, about 10% of the 1000 to 2600 Americans who get meningitis each year will die. Death rates are up to 5 times higher among teenagers and young adults (15 through 24 years of age) compared to other age groups.

How Meningitis Spreads

Common everyday activities can spread meningitis. This includes kissing, sharing lip gloss, sharing eating utensils, drinking glasses and water bottles, living in close quarters such as a dormitory or summer camp, and smoking. Activities that can make teens feel run down may also put them at greater risk for meningitis by weakening their immune system. These include staying out late and having irregular sleeping patterns.

Who Should Get Vaccinated?

Getting your child vaccinated is the best way to help protect them from meningitis. The Centers for Disease Control and Prevention (CDC) and other leading medical groups recommend meningitis vaccines for:

- Preteens and teens 11 through 18 years of age
- College freshmen living in dormitories
- Children 2 through 10 years of age who are at increased risk

To watch Becky's video, please visit our website at www. stampoutmeningitis. com or contact us at rwerner3@wi.rr.com if you have any questions or to schedule a FREE presentation for your students.





Fox Valley Hosts Power of Manufacturing Camp

Fox Valley Technical College hosted the "Power of Manufacturing" camp this past summer. The event was funded by local industries and the *Nuts*, *Bolts*, *and Thing-amajigs Foundation* http://www.nutsandboltsfoundation. org/. The camp was intended to get middle school aged students interested in manufacturing related careers. During the camp students designed, fabricated, and tested dragsters powered by an electric angle grinder. They raced the dragsters on a 100 foot track in the FVTC commons.



Students learned skills in the areas of welding, machining, sheet metal fabrication, finishing, assembly, etc. The camp is part of a national program developed by Nuts, Bolts & Thingamajigs®, (NBT), the foundation of the Fabricators & Manu-

facturin



facturers Association International in collaboration with the National Association for Community College Entrepreneurship (NACCE). NBT was founded by John Ratzenberger, known for his role as Cliff on the program *Cheers*. Fox Valley Technical College plans on running the camp more throughout the next year. To learn more about the

> camp and how you can become involved please email Steve Meyer at smeyer@brillion.k12. wi.us or Mike Cattelino at mailto:cattelin@fvtc.edu.

CNC FOR ALL BUDGETS...



- CNC Routers
- CNC Plasma Cutters
- Mastercam Compatible
- Stepper or Servo Motors
- Vacuum Table Option
- Machines fully assembled
 - On-site Training





www.firsteched.com 1.800.787.9717

InvenTeam Grants Give PLTW Students An Opportunity To Shine

By Mike Carr

Doesn't it seem odd that people living in cold weather climates aren't able to take more advantage of the cool air outside to make refrigeration easier? Why isn't this endless supply of cold air being used in refrigerators to reduce electricity use and lower energy costs?

Those were the questions that an enterprising group of Project Lead The Way (PLTW) students in Appleton, Wisconsin asked before embarking on a research and development project that earned them a Lemelson-MIT InvenTeam Grant and the opportunity to create a new kind of refrigerator, the Ecofridge. Their experience and success show how students and teachers in PLTW's Engineering Design & Development (EDD) course can expand their horizons and take advantage of additional learning opportunities on a national stage.

The Lemelson-MIT InvenTeam awards are given annually to teams of high school students from across the nation who present an innovative idea and make a formal application explaining the rationale for their project and how they'll use the grant to develop their idea into a working prototype. Jerome H. Lemelson, one of the most prolific inventors in U.S. history, and his wife, Dorothy, founded the program at the Massachusetts Institute of Technology in 1994. Its goal is to recognize outstanding inventors and encourage new solutions to real-world problems, while enabling and inspiring young people to pursue careers emphasizing creativity and invention.

Preliminary proposals are due by the end of April for the following school year. After being selected by the award committee, those with merit are developed into formal proposals by mid-September and the winning teams are given the go-ahead and a \$10,000 grant in early October. The teams then have all school year to develop and test their project before traveling to Cambridge, Massachusetts at the end of June to make a presentation at MIT's EurekaFest event.

Sean Schuff, one of the PLTW teachers at Appleton's Tesla Engineering Charter School, had been aware of the Lemelson-MIT program for several years and how well it might tie in with his senior capstone class, Engineering Design & Development (EDD). In the spring, he presented the idea to students, who would be taking EDD in their senior year, and invited them to consider developing a preliminary proposal, if they felt they had a suitable idea. of the students – Garrett Custer, Tylor Rathsack and Mike Leveille – said they wanted to do something with refrigeration using cool outside air to reduce energy consumption. They had brainstormed the idea and were excited about it, so we wrote up the grant application and submitted it for consideration at the end of April. About a month later, we got word that we were one of about 35 teams invited to submit a formal proposal in mid-September."

After the group made the first cut, Schuff was awarded an expense-paid trip to Cambridge in June for Eureka-Fest, a multi-day conference presented by the Lemelson-MIT program. He and his fellow teachers met with MIT professors, attended seminars on the engineering design process and learned about the formal application process. Schuff also got to view that year's winning presentations to see what the top student teams had done to earn their awards. He returned to Appleton with an appreciation of the task that lay ahead and how to help his team of students meet the challenge.

"We started meeting weekly at the end of July," Schuff says. "Garrett, Tylor and Mike recruited two more students to the team, Nick Behnke and Josh Ritzman, and everyone was excited about tackling the project. We also lined up some key people from outside, as potential mentors, and the Georgia-Pacific Corporation offered a \$10,000 grant, if the team was selected for the final competition."

The team's formal application was submitted in mid-September. The document included an outline of their proposed solution, an overview of existing refrigeration technology, a description of each team member and mentor, and an itemized budget totaling \$8,600. Within several weeks, word came from MIT that the Tesla proposal had been accepted and the five young men were now officially an InvenTeam, with eight months to develop and complete their product before presenting it at EurekaFest the following year.

Now the real work began. "Because of the Project Lead The Way EDD course," Schuff says, "we came into this very well prepared. The structure of that class was perfect for what the students were going to do. For this competition, they're inventing, creating a product, and that's what EDD is all about."

"The first stage was drawing everything up and batting around ideas," says Josh Ritzman, the member who

"When I came back a week later," Schuff says, "three

was recruited for his electrical expertise. "Then we went to Lowe's and bought a couple of identical refrigerators." The two were full-size Tappan models with the coils easily accessible from the back, making them ideal for modification into what the team soon dubbed the "Ecofridge."

The basic approach to increasing the efficiency of the refrigerator was to create a way to route the coolant out of the appliance to where cold outside air would provide a natural heat exchange before the now-cold liquid was returned to the refrigerator. By taking advantage of low temperatures outside and chilling the coolant in this relatively simple and low cost manner, energy consumption would be significantly reduced.

Proving the concept and creating a workable prototype was the goal, but the students first had to address a more basic challenge. "The hardest part was figuring out how it actually worked," Ritzman says. "Refrigeration was fairly new to me, so I had to learn how cooling occurs and then look at all the wiring and controls to see how our idea could be integrated with the existing design."

After formulating its plan, the team developed a Gantt chart, created drawings, gathered materials and began creating the system, confering with their mentors as different approaches were tried and tested. "The advisory team was outstanding," Schuff says. "We were able to find an engineer with a background in refrigeration and he was instrumental in helping them understand those concepts. The other individuals were also of great help when called upon by the students. They were outstanding role models for these students to learn from."

In addition to being highly motivated, the team itself possessed a solid background as successful engineering students. The four Tesla students – Custer, Leveille, Rathsack and Ritzman – were all taking EDD as their capstone Project Lead The Way class, having already taken four PLTW courses: Introduction to Engineering Design, Principles of Engineering, Digital Electronics and Computer Integrated Manufacturing. The fifth member of the team, Behnke, was from another Appleton area high school and was recruited for his experience in media communications. He was in charge of managing the team's finances, documenting their work and handling community relations.

As the school year progressed, the team worked on the Ecofridge as part of their EDD class and also met outside of class to pursue the project. "They went through the entire engineering process and had to document everything," Schuff explains. "Their work focused on four key elements – the coolant, heat exchangers, piping and pump. They did a lot of bench level prototyping and testing of different designs." Like most engineering projects, there were some surprises along the way and hurdles to overcome. "They

piggybacked the two refrigerators," Schuff says, "by taking the doors off one and sliding it up against the back of the other to see if it would reduce the energy load by cooling the coils. It was



an 'aha' moment, when they learned you can't cool them, because the coils require a certain temperature range to work effectively. Of course, the refrigeration expert could have told them that, but he wanted the kids to learn that on their own. It was an intensely teachable moment, when they discovered something so unexpected and then had to figure out why that was."

For the Ecofridge, two key challenges were determining the optimal liquid to serve as the coolant and selecting the most efficient pump to move it through the extended system of PEX piping. "They tested different fluids," Schuff says. "They experimented with water, RV antifreeze and pure propylene glycol, each having differ-



ent characteristics. It was obvious that water wouldn't work, since it would freeze, so they tried RV antifreeze, which is 50% propylene glycol. The impeller pump they were using worked fine with water, but the viscosity of the antifreeze made it unworkable. So they changed to a positive displacement pump, which worked fine until the antifreeze was chilled down and turned to slush, which the pump couldn't handle. Eventually they went to 100% propylene glycol and that worked well, but it was a real learning process for them."

Once the big issues had been resolved, the team focused on finalizing the design and testing it further. In addition to proving that their concept would work, they wanted to determine if the Ecofridge could deliver the hoped-for reduction in energy usage. "They did an energy study," Schuff says, "and even with running the small fans on the inside of the fridge and the pump, their design increased the efficiency of the refrigerator by about 85%, which is obviously very significant."

The students then did a cost / benefit analysis comparing the projected cost of their design with the potential savings and long term payback, which turned out to be a math and economics lesson in itself.

"They considered a number of factors in their calculations," Schuff explains. "In Appleton, cold weather lasts about 4 to 5 months each year, so the energy usage would be reduced only in those months. They figured their system might sell for about \$120 and would save about \$13 a year in electricity. They were a little disappointed in how long it would take to recoup the cost, but viewed it as a positive way to reduce a household's carbon footprint."

While they were crunching the numbers, Schuff encouraged the team to look at the big picture, especially at a time when green-friendly solutions are in increasing demand. "When you consider that 99% of all homes have refrigerators and tens of millions of them are in areas where it gets cold in the winter, the potential energy savings are enormous" he points out. "This design could be scalable, so for commercial refrigeration, the possibilities are also very exciting. And the farther north you are, the greater the potential benefits will be."

The June trip to Cambridge for EurekaFest was another learning experience for the five graduating seniors. "Our team had a display and was also selected to give a presentation onstage to the entire group," Schuff says. "Up until they got to MIT, they had just regarded this as another school project, despite my attempts to explain to them that this might be something more than that. At EurekaFest there was a point in time where all of them had this epiphany at once and realized that this wasn't just a class project, it was a viable product that could potentially be patented and developed commercially. It was a transforming moment when they all recognized that 'we might really have something here,' and for me, as a teacher, that was very gratifying."



Although all five young men are now in college, they're investigating future possibilities for the Ecofridge. They are working with the Small Business Development Center to determine potential marketability and patent applications.

Schuff says that the InvenTeam experience is something that other PLTW teachers and students should pursue. "This is a fantastic program. Every school that offers the Engineering Design & Development course should have a Lemelson-MIT InvenTeam. It parallels the EDD process and provides an extra dimension to what students are doing in the class. It affords them an additional opportunity to be challenged and to excel. The impact this has had on our group of students has really been phenomenal. I think that they would've gone far and done great things without this experience, but it's really solidified in their own minds that what they've chosen to do is the right thing for them, both personally and professionally."

The accomplishments of the Tesla students are a testimony to the benefits of offering a strong STEM education program, according to Dale Hanson, director of career and technical education for the Appleton School District. "The success of our students in the InvenTeam program exemplifies what we're trying to accomplish in all of our STEM initiatives," he says. "The impact of what they've done has captured the attention of our students, faculty

and the Appleton community. When high school engineering students can develop their ideas into a working prototype and learn about patents firsthand, that's huge on the learning curve. One of our goals is to help students decide if engineer-



ing is something they like and want to pursue, so this kind of experience is invaluable."

To view the Tesla team's Ecofridge presentation at EurekaFest, go online to http://techtv.mit.edu/genres/26-invention/videos/3445-lemelson-mit-eurekafest-2009---tesla-engineering-charter-school-inventeam-presentation.

SD BO Printer \$9,995.00



The most affordable 3D printer available



The **SD300 Pro** enables you to create functional 3-dimensional models directly from your CAD data. Now product prototype models can be designed and built right at your desktop in no time for a fraction of the cost!

The plastic sheet lamination technology produces durable, flexible and transparent models that can be drilled, machined, finished and do not distort over time.



To learn more about how the SD300 Pro can bring rapid prototyping to your desktop, visit **www.intelitek.com**



Think it. Design it. Build it.





Haldeman Homme, Inc Doug Bartow, dbartow@haldemanhomme.com

Office: (800) 795-0696 x601 Cell: (608) 630-4329 www.haldemanhomme.com



HOMES Project Teaches More Than Building Trades

by Ryan Ubersox, Waunakee High School

As technology and engineering professionals, we are all aware of the importance of learning specific skills of a profession and the real life learning that happens in each of our classes. Some projects dig a little deeper than just hand eye coordination and technical know how.

Currently, an extraordinary mock-up home sits inside the construction shop at Waunakee High School. The home is truly sustainable unlike what most consider when thinking of the new catch phrase in construction in sustainable building.

John Sutton, owner of Sutton Architecture of Madison, approached Jim Staskal, construction teacher at Waunakee High School with an idea. The two have worked together previously on projects, but Staskal couldn't turn this one down. It was based on Sutton's annual sailing trip he has taken each of the past 10 years to the Caribbean. He has always been fascinated with the simplicity of the structures in the Caribbean, but knows that improvements need to be made to the inequities he continually sees there.

From what Sutton has seen, there is always the bottom of the pyramid. This happens everywhere, but especially in developing countries where unemployment is high. People put together anything they can find that will shelter their families including cardboard, scrap metal, palm trees, bamboo trees.

The population in the islands is not very large, from 3-4k on some islands, to 30k-50k on others, but Sutton thinks this type of housing development can make an enormously positive impact on quality of life in the Caribbean.

Sutton, has named this project Housing Opportunities Made Entirely Sustainable (HOMES), stated his goal is to find a way to finance 72 units, which he estimates would cost \$300,000, if the future homeowners or volunteers helped with the construction. He also wants to include a community center to help the owners of the houses feel a sense of social belonging and community.

Sutton stated "This is about human sustainability, not necessarily energy efficiency or disaster relief", although some of the features of the structure are more environmentally friendly than most homes in the U.S.

Sutton has worked on various buildings such as condos, student apartments, apartments, and hundreds of types of buildings. "The biggest money maker in the Caribbean is tourism, but not all of the money trickles down to the lowest level of the pyramid." This leaves the majority of people without the means to purchase what we in the states consider to be acceptable housing even when compared to some of the worst student apartments.

Sutton continued saying "There is no reason to wait for a disaster to happen to get this housing program going in the Caribbean. This idea of sustainability is based on whether or not a building will hold up, whether or not this will improve the quality of life on the islands."

Sutton and six students, one of which had extensive construction experience, worked on the structure throughout the 2009-2010 school year. The structure is intentionally designed so that unskilled labor with few hands on skills can put it together. The house also includes environmentally friendly concepts like a cistern to provide safe water for families and does not waste any water. Sutton has been working with the DNR to develop a two flush cistern so that the first level takes away impurities and the second level fills up with clean drinkable water. This will allow families to prioritize their water use and choose which water to use for washing hands or watering plants.

According to Sutton, flushing toilets is the biggest waste of water in the states. He has adopted a composting system that can be used as organic property to fertilize their soil as the soil quality on the islands is pretty poor. This is a much more green and desirable way to go and prevents sewage from becoming toxic.

The home includes a garden area to provide fresh vegetables year round to be available all year to families given the climate and opportunities for fresh produce.

Jim Staskal stated "We hope this can aid people in the islands" when asked about the end goal. Waunakee has a full scale model, but it is only a mock up at this point and there is much more work to be done to make this project a reality.

"This year," stated Sutton, "the focus is on ventilation, windows and door construction, appropriate design and materials to withstand the Caribbean elements, and built in furniture."

Devon Greiber, a recent graduate and past Waunakee SkillsUSA Chapter President who had the most construction experience in the class, took the role as foreman. He said "I really enjoyed the project from the beginning. I could clearly see that the skills I had developed would be helping someone in need. That is something special."

"This structure was something a little more challenging" stated Greiber whose family owns a local heating and sheet metal company. He enjoyed the hands on component. He was working on a more basic shed and then was recruited to head up the HOMES project.

"There was a ton of teamwork that was needed to complete the project" said Greiber. "Many of the students were unskilled and had never even put walls together before. They

learned skills like drywall mudding and taping, building gable walls, and other things that go into building a home, not just a shed."

Greiber said the biggest eye opener was that he couldn't believe that it is expected that a family of 6 could live in this structure as it is the size of his bedroom. "It really opened up all of our eyes to the differences between the U.S. and other countries. None of the students realized that the Caribbean was like this. If it weren't for this project, we still wouldn't understand the need in that region."

He thought it was very interesting that one of the



goals was to collect every drop of water that hit the house into water tanks and that through the cistern, people could wash their hands with it and then used it again to water plants. He also stated that the five gallon pail for a toilet would take some getting used to, but understood how wasteful our ways in the states were in comparison.

"I think I could last in a structure like this for a month. It reminds me of a hunting shack." said Greiber.

Greiber's advice to underclassmen is that high school students can

contribute to things like this by getting involved in SkillsUSA, doing community service trips, designing structures to help, and getting outside of our classrooms and comfort zones to see what is happening in the world. "We need to start influencing younger people to help those in need at a younger age" said Greiber.

In the future, he would enjoy seeing this project become a reality by helping to build these houses in the Caribbean and says this has changed his understanding of what is really happening outside the U.S.



New Features:

- Less Cost Per Model
- Faster Build Time
- Smart Support Technology
- New Catalyst Software
- Color Model Cartridges

PLTW has chosen Dimension as their 3D Printer of choice!

USE OUR 3D PRINTER IN YOUR CLASSROOM- FREE!

"Try to get our competitors to give you the same chance to evaluate their machine before you buy." - Bob Werner, President-First Technologies, Inc

A Bright Idea

By Beth Beimel, Project Assistant Wisconsin K-12 Energy Education Program (KEEP)

Last school year, 78 Wisconsin schools and organizations participated in the K-12 Energy Education Program's (KEEP) Bright Idea Fundraiser. Students from these schools and organizations raised over \$53,000 for their various needs. The funds went to support everything from rain gardens to field trips to supplies for building Electrathon cars. The most amazing part of this fundraiser is that while the 2009-2010 schools and organizations were raising over \$53,000 they also prevented over 21 million pounds of CO2 from entering earth's atmosphere. This is the equivalent of taking 156 cars off the road!

A great aspect of this fundraiser is that teachers from every discipline sign up to participate. Dave Doering, an engineering and technology teacher from Bayfield High School, uses their funds to support their Electrathon program. "This pays for meals and hotel rooms for students... some of the Electrathon vehicle parts from wheels, tires, electrical connections, lexan for windshields, etc... Without fundraiser activities like this one - students would not be able to go on the three Electrathon competitions trips. Another big bonus of this fund raiser is the educational component of the energy efficiency. Students are learning about the issues of energy efficiency and how this will help to reduce our dependence on foreign energy



sources. What would they be learning if they were selling candy?"

Participants are impressed with the ease of the fundraiser, the amount of money they are able to raise, and the fact that students are learning through the process. People seem to be enthusiastic about buying something that saves them money and energy while supporting their local student organization. Energy conservation is a particularly important issue that can be incorporated into any lesson. And why not raise a little money to support your school in the process? Technology and Engineering classes can particularly benefit from this fundraiser, as many of them deal with energy use, conservation, and efficiency. With KEEP's Bright Idea Fundraiser the possibilities are endless.

KEEP receives its primary funding through Focus on Energy, Wisconsin's statewide resource for energy efficiency and renewable energy. Focus on Energy works with eligible Wisconsin residents and businesses to install cost effective energy efficiency and renewable energy projects. Focus information, resources, and financial incentives help to implement projects that otherwise would not be completed, or to complete projects sooner than scheduled. Its efforts help Wisconsin residents and

> businesses manage rising energy costs, promote instate economic development, protect our environment and control the state's growing demand for electricity and natural gas. For information about KEEP, visit www.uwsp/keep and for more information about Focus on Energy services and programs, call 800-762-7077 or visit online at www. focusonenergy.com.

Check out the WTEA Home Page www.wtea-wis.org

Page 26

ANNOUNCEMENTS

Check your mailing label now!

Check the first line of the mailing label on the back cover of this magazine

to see when your membership expires.

You will not receive the next important issue of the Interface

unless your dues are paid beyond 2010.

See page 8 for subscription & membership information.

Plan now to attend The 42nd Annual WTEA Conference and Trade Show *"Generating Innovation"*

March 10 & 11, 2011 at Chula Vista Resort, Wisconsin Dells



Introducing NetSupport School, a complete classroom management solution providing:

- Internet and Application Metering
- Real-Time Screen and Audio Monitoring
- Multimedia Student Testing
- Keystroke Logging
- Print Management
- Integrated Interactive Whiteboard
- Remote Control of Student Machines
- And Much More!

NetSupport School is a cost effective way to take back control of the classroom while at the same time, enhancing the quality of instruction delivered.



For more information and pricing, please contact First Technologies Inc. at (800) 787-9717 or visit our website at: www.firsteched.com

You Tube



EDITOR'S PAGE

The Charles Schulz Philosophy

The following is supposedly the philosophy of Charles Schulz, the creator of the 'Peanuts' comic strip. You don't have to actually answer the questions. Just read straight through and you'll get the point.

- 1. Name the five wealthiest people in the world.
- 2. Name the last five Heisman trophy winners.
- 3. Name the last five winners of the Miss America pageant.
- 4. Name ten people who have won the Nobel or Pulitzer Prize.
- 5. Name the last half dozen Academy Award winners for best actor and actress.

How did you do? The point is, none of us remember the headliners of yesterday. These are no second-rate achievers. They are the best in their fields. But the applause dies. Awards tarnish. Achievements are forgotten. Accolades and certificates are buried with their owners. Here's another quiz. See how you do on this one:

- 1. List a few teachers who aided your journey through school.
- 2. Name three friends who have helped you through a difficult time.
- 3. Name five people who have taught you something worthwhile.
- 4. Think of a few people who have made you feel appreciated and special!
- 5. Think of five people you enjoy spending time with.

Easier? The lesson: The people who make a difference in your life are not the ones with the most credentials or the most money or the most awards. They simply are the ones who care the most.

"Be Yourself. Everyone Else Is Taken!"

Have a good year. See you at the conference in March. Doug MacKenzie, Interface Editor



Is your school looking for true STEM curriculum?



The STEM Academy is the answer!

The STEM Academy offers:

- National Math and Science standards compliance
- K-5 Level Program
- Middle School Level Program
- High School Level Program
- Participation for ALL Students, not just top 10-20%
- No annual costs
- Flexible Curriculum
- National Certifications
- A Mentoring Program
- Curriculum, hardware, software and professional development



www.firsteched.com 1-800-787-9717

WTEA 960 YUMA CIRCLE STOUGHTON, WI 53589

CHANGE SERVICE REQUESTED



STEM Application Modules

Materials Technology Measurement Graphic Design Hydraulics Pneumatics CNC Machines Plastics Technology Structural Engineering Computer Aided Manufacturing Robotics Electricity Thermal Technology Mechanical Systems Mechanisms Electrical Control Computer Aided Design Computer Control Robotic Simulation Manual Machines

Phone: 414-258-6415 • www.labmidwest.com 8101 Milwaukee Avenue • Wauwatosa, WI 53213 Ask for a corelation of Amatrol's Application Modules from Dale Kirchner at LAB MIDWEST

