Volume 61 • Number 3 • Spring 2022 Journal of the WTEA

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PRESIDENT'S MESSAGE Why I Enjoy March The Most!

By Doug Dimmer, WTEA President



Wow, what a month March is! You might all not agree with me saying March is the best, but just hear me out. First of all, March is my birthday month and along with four other members of the Dimmer clan, we celebrate like true Wisconsinites do with a classic weekender event. Second, is that not only do we celebrate the first day of spring (better weath-

er), but we stick a great holiday, St. Patrick's Day, right into the middle of the month. And with daylight saving starting in March, I enjoy not driving home in complete darkness after a day's work. Think of all the great sporting activities that are going on; March Madness and the Frozen Four in college hoops and hockey, professional basketball and hockey are at the height of their seasons, spring baseball has kicked off, water is starting to open up to get some fish-

"... let it be known, as Tech Ed teachers, we are the ones who are shaping ready for the up and today's students into tomorrow's workforce."

ing in, and I would expect you turkey hunters are getting yourselves coming season. And, of course, don't forget spring break!

These are just a few personal reasons why I enjoy the month of March. But truly, the real reason why I pick March over all the other months is because it is the month that we as professionals have chosen to gather and bond as an association at our annual conference. It's a time when you can get back together with friends, colleagues, vendors, businesses, schools, students and whomever else wants to join in to show, what I believe, is the greatest and coolest foundation in education in regards to the advancement of our students' well-being and livelihood.

From the kick-off with Wednesday night's banquet, the keynotes, our trade show, project showcase, break-out sessions, the social, wrapping it all up with "make and takes," and our outreach events - and we still have more to give.

I want to thank the WTEA Board for making this year's conference a success, especially Steve Johnston, Tom Barnhart, Joe Ciontea and Steve Meyer for coordinating and planning this event every year. I would also like to thank Dave Stroud for guiding us through that dark walk in the woods the past couple years and bringing us back to almost the same place it was before the world stopped. Of course, it would all be at a loss if it wasn't for you, our

members, to make it as special as it is for me. I believe we have one of the best associations in the United States and the reason that it is, is because of you, our members. We have great people in our state who are willing to step up and share great ideas to benefit not just them but us all.

As your president I want to thank you all for making this association the best and making March my favorite month. Please continue doing the incredible things you are doing every day. If you know of anyone who was not

able to attend this year's awesome event, make sure they plan early for next year's conference. And lastly, let it be known, as Tech Ed teachers, we are the ones who



are shaping today's students into tomorrow's workforce. Have a great rest of the year!

NEW ©2023 resources that prepare your students for today's workforce





Please contact Kathy Moehle kmoehle@g-w.com 708.821.6545



WTEA BOARD NEWS & CALENDAR **2022 Winter Board of Directors Meeting Summary**

By Mac Chopin, WTEA Secretary/Treasurer

The following summary highlights the Winter WTEA Board meeting held January 14, 2022.

- · WTC Representative Mike Cattelino is retiring from teaching, Steve Meyer is going to take over in fall.
- WTEA Conference vendor exhibit spaces are sold out.
- Dave Stroud has received the ITEEA's Emerging Leader Award and is looking at his ability to accept the award in person. WTEA Summer Outing for a Brewers game will take place sometime in July.
- The WTEA will give a presentation to the WI Energy Workforce Consortium on February 17th.
- Jesse Domer was elected as the new vice president.
- DPI is working on new Tech Ed and Engineering standards. • ITEEA will be in Orlando, Florida, on March 9-12, 2022.
- ITEEA will be in Minneapolis April 12-15, 2023. • Matt Schultz and others are working on new Make and Take for Conference.
- Alan Mamerow is starting a consortium of schools for District E; he is also working on a precision metals program.
- Eric Sutkay is working with Focus on Energy for HVAC curriculum.
- Stephen Hadfield is working with a manufacturing group with Mid-State. This would be a purchasing group to reduce costs to schools.

For additional information contact any member of the Board of Directors. Complete minutes are available from Mac Chopin at chopinm@waterloo.k12.wi.us

Mark Your Calendar

WTEA Foundation Scholarship Deadline May 15, 2022

SkillsUSA National Conference

June 20-24, 2022Atlanta, GA

WTEA Summer Aviation Tour

June 21-22, 2022 Oshkosh & Appleton

WTEA Family Brewers Game Outing July 24 (1:10pm)AmFam Field, Milwaukee

ACTE CareerTech VISION 2022

Nov. 30-Dec 3, 2022 Las Vegas, NV

54th Annual WTEA Annual Conference March 8-10, 2023 Chula Vista, Wis Dells

ITEEA National Conference April 12-15, 2023.....Minneapolis, MN



EXECUTIVE DIRECTOR'S MESSAGE Spring 2022 Report from the Executive Director

By Joe Ciontea, WTEA Executive Director

The pandemic created a lot of challenges for all of us, both personally and professionally. Late last summer the WTEA Board had to decide how to plan the 2022 spring conference – hold it live or host another virtual event. We decided we would create the best event we could for whoever was available to attend. We



Joe Ciontea

were confident that the membership would want to attend but were unsure about their ability to get released from school. The amount of vendor participation was also a big unknown. The final attendance surpassed our expectations and comments from both the membership and the vendors was very favorable.

Elsewhere in this issue are the highlights of the postconference survey. I want to thank Steve Johnston, Tom Barnhart, Matt Schultz, Steve Meyer, Anna Vitale, and all of the Board members who worked hard to make our 53rd conference a success! Our conference sponsors and donors are also a key component to our conference. Their support keeps the registration fee down and helps to create a meaning experience to all attendees. They are identified elsewhere in this issue. Please support them when shopping for equipment and services for your program.

Awards Videos

Last January the Board approved a motion to hire a marketing firm to create videos for several of the 2022 award winners. If you haven't seen them, go to the awards page on our website and watch the videos for the Technology Educator of the Year, Middle School Program of the

Year, and the High School Program of the Year. Maybe they will inspire you to nominate a colleague for a future award.

Special Thanks to Bob Werner

During the annual membership meeting on Friday morning, we honored five members with a WTEA 25 Year Award wristwatch. This was the 25th year that the watches



Joe Ciontea presents Bob Werner (left) with a gift of recognition

were sponsored by Bob Werner and First Technologies. To commemorate that milestone, we presented a schoolhouse

clock to Bob Werner to hang in his office.

Sad Passing

Pete Spangler has been a WTEA member, conference attendee, and conference presenter for as long as I can remember. Pete taught at several different school districts throughout Wisconsin, worked as a licensed journeyman/ master machinist and tool-and-diemaker, and advised a First Robotics Team and several SkillsUSA chapters. Upon his retirement he opened the Wisconsin Manufactory, a nonprofit maker space in Whitewater. Pete attend-

ed the conference last month and won the TV in the drawing after the Friday luncheon. Pete passed away unexpectedly a few days later on March 22nd. Those who know him will miss his smiling face and positive attitude.



Pete Spangler proudly displays the TV he won in the Friday raffle drawing

What's Next?

Work has already begun on next year's conference. But before that happens, we have more WTEA events this summer. The Summer Aviation Tour takes place June 21-22 and our first WTEA Milwaukee Brewers game takes place July 24. More information about those events can be found in this issue and on our website.

I hope the final weeks of the school year go smoothly for you.

Professionally yours, Joe Ciontea





PAST PRESIDENT'S MESSAGE **Stroud Leads WTEA Through A Challenging Period**

By Dave Stroud, Ashwaubenon High School



Dave Stroud receives the Emerging Leader recognition at ITEEA conference, in Orlando

I would like to share what an honor it has been serving as your WTEA President for the past two years. I'm not going to lie, it was an unusual two years and not at all what I was expecting, but I feel that we made it through the most disruptive event that has ever happened to education, and that the WTEA was still able to provide value to its members during this time.

For that, I am extremely proud, and would like to recognize and thank the rest of the WTEA board

for their hard work and leadership during this time. Moving forward, I will be staying on the board for another year to assist new president, Doug Dimmer, acclimate to his new role, just as Phil Bickelhaupt helped me when I became president. I will also be searching for candidates to be the next president of the WTEA, so if you know anyone that would make a good president, or if you would like to run, contact either Joe Ciontea or me and we will get you everything you need.

One of my last duties as president was to attend the ITEEA conference in Orlando, Florida, the week before our state conference. I attended many interesting sessions on future trends in STEM education, safety, and construction. I was also honored by receiving the ITEEA's Emerging Leader recognition. The ITEEA Conference will be in Minneapolis next year, so consider attending this event.

If at any time you would like to improve your leadership skills, or become more involved with Technology & Engineering education at the state Enjoying downtime level, please contact your district director or any of the WTEA board sin TE teachers at members, and we will find a way to ITEEA conference get you involved.



with other Wiscon-

Thank you again, have a great rest of the school year, and a relaxing summer break.



INTERFACE

2022 WTEA SUMMER TOUR Theme: AVIATION



June 21-22, 2022

Price: Only \$35 (Limit: 30 Participants) Free event T-shirt for all attendees



Test Your Skills on a Flight Simulator!

Tuesday, June 21 Two Tours: Sonex (Oshkosh) & Plexus Corp. (Neenah) *Dinner: Meade Street Bistro (Appleton)

Summer Tour Sponsored by:



Wednesday, June 22

Two Tours: FVTC Aviation Center & Basler Turbo Conversions (Both in Oshkosh)

**Hotel Arrangements available on WTEA website Questions about the event? Contact Mike Cattelino 715-853-7648 mike.cattelino@seagrave.com

For all event details and registration / payment info go to the WTEA website: wtea-wis.org







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Larry Granec 608.630.1018 DIRECTOR'S REPORT

Careers in the HVAC Field

Eric Sutkay. District F Director





HVAC presenter at WTEA **State Conference**

After last week's presentation at the WTEA conference I will definitely be contacting Focus on Energy to help put me in contact with some local HVAC contractors! These presentations are definitely going to be the spark that some of my kids need for a successful career pathway! Focus has it dialed in below.

Your students are on the verge of making one of their first big life decisions—choosing a career. Often, the trades are overlooked as a viable option. However, there is a significant need for young skilled HVAC trades people in Wisconsin and career growth opportunities and earning potential is substantial. In response, Focus On Energy launched a new initiative designed to build connections between contractors and Wisconsin high schools to facilitate HVAC

career exploration workshops with students.

Focus on Energy works with close to 900 HVAC across the state -

To learn more about this new initiative and connect with a local contractor to schedule an HVAC career exploration workshop for your students, contact Karl Hilker at contractors karl.hilker@focusonenergy.com

and wants to connect your school with local contractors. This includes an interactive classroom discussion designed to present information to students about careers in this essential industry.

Focus on Energy offers a range of support materials to help make these connections and facilitate engaging workshops. These valuable resources were developed with input from an advisory group comprised of Tech Ed teachers and HVAC industry professionals and includes:

- Customizable promotional workshop flyer.
- Recommended methods of contacting HVAC contractors to set up workshops.
- HVAC industry recruitment video.
- Workshop presentation outline.
- HVAC industry overview handout for students and

their parents.

· Post-workshop customizable press release template to share with local publications.

These tools and additional details can be found at https://www.focusonenergy.com/HVACcareers

To learn more about this new initiative and connect with a local contractor to schedule an HVAC career exploration workshop for your students, contact Karl Hilker at karl.hilker@focusonenergy.com.



Attendees learned about thermostat wiring among other things

Whether it is learning to wire a thermostat or troubleshoot a furnace, what a great opportunity for the students of Wisconsin!



WTEA CONFERENCE HIGHLIGHTS 53rd Annual Spring Conference & Trade Show



Mark Your Calendar for the 54th Annual Conference

"Technology Education: Building Wisconsin's Workforce" March 16-18, 2022 Chula Vista Resort, Wisconsin Dells



Purpose • Pathways • Professionalism

March 8-10, 2023

Spring 2022

INTERFACE

WTEA AWARDS **2022 WTEA Awards and Recognition**

WTEA LEADERSHIPAWARD "For Commitment and Service to the WTEA" Sponsored by Goodheart-Willcox Publisher





Angie Arneson WTEA Director at Large

Mike Cattelino WTCS Representative



Bob Morehead WTEA Vice President

FUTURE TECHNOLOGY EDUCATOR Sponsored by WTEA Foundation, Inc.



William Vanden Heuvel **UW-Stout**

WTEA INSPIRE AWARD "For Fostering Future Technology Educators" Sponsored by H2I Group



(Starting 2nd from left) Duane Elfering -Barneveld HS; Brennan Mickelson - Mishicot H.S.; Dennis Erik Haakenson - Oregon H.S.



Steve Hoersten **Rice Lake Schools**







"For 25 Years of Service to Education" Sponsored by First Technologies, Inc.

WTEA 25 YEAR AWARD

(Starting 2nd from left) Jeff Otto and Jeremie Meyer. Not Pictured: John Bursa, William Kroseberg.

WTEA SPECIAL **RECOGNITION AWARD** "For Contributions and Service to **Technology** Education"



Stacey Everson - La Crosse School District; Wally Gnewikow - La Crosse Logan H.S.



Dustin Lehman Mukwonago Area Schools







James Eastman Menasha High School



Corey Foght



WTEA

Montello School District Madison Memorial H.S.



Matt Kolpack Slinger High School



NEAN

Nolan Otremba **Beloit Turner High School**

WTEA HIGH SCHOOL PROGRAM of the YEAR "Outstanding High School Technology Education Program" Sponsored by Goodheart-Willcox Publisher



Badger High School, Lake Geneva (Starting 2nd from left) Clint Geissler-Dept. Chair, Ryan Bouzek, Jake Popanda, Marie Collins-CTE Director; Mike Smith, Jenny Straus-Principal; Tom Sheeley. Not pictured: Glenn York, Arnie Oswald.



WTEA TECHNOLOGY **EDUCATOR of the YEAR** "For Outstanding Contributions to **Technology Education**" Sponsored by **Goodheart-Willcox Publisher**



Jeremie Meyer Ashwaubenon High School

WTEA MIDDLE SCHOOL **PROGRAM of the YEAR** *"Outstanding Middle School* Technology Education Program" Sponsored by **Goodheart-Willcox Publisher**



Kennedy Middle School, Germantown John Parrish and Jeff Thielke

Special Thanks to Our Awards Program Sponsors! The WTEA and the WTEA Foundation wish to thank the 2022 Awards Program sponsors:







WTEA KEYNOTE SPEAKER Building an Innovative, Entrepreneurial, and Diverse Workforce Through Invention Education

Dr. Leigh Estabrooks, Invention Education Officer at the Lemelson-MIT Program

Dr. Leigh Estabrooks, Invention Education Officer at the Lemelson-MIT Program, presented the keynote address at the WTEA Conference. The Lemelson-MIT Program, a sponsored program in the Massachusetts Institute of Technology's School of Engineering, has funded eight high school InvenTeams® in Wisconsin. Dr. Estabrooks worked in product development for Fortune 500 companies

and was a licensed high school teacher at a CTE school in Massachusetts prior to joining MIT. This article summarizes her remarks with a call to action for CTE teachers in Wisconsin to invent with all students.

As the invention education officer, I have the privilege of working with high school teachers and their students across the United States to conceptualize, design, and build technological solutions to real-world problems. Invention has always been a focus of mine from my days in industry. Today, I'm often asked what I invent. I answer, "I invent inventors." Like all inventors, I look for good problems to solve. The problems I seek to address are rooted in these facts:

1) Innovation that has fueled economic growth in our country has slowed.



Dr. Leigh Estabrooks Invention Education Officer MIT School of Engineering

2) The U.S. lags other countries in training students in the STEM fields that fuel innovation.3) Inequality in the U.S. has left out millions of inventors because they lack exposure to innovation.

Let me separate the terms invention and innovation. We see these two actions as being different, with invention being the

The Lemelson-MIT Program, a sponsored program in the Massachusetts Institute of Technology's School of Engineering, has funded eight high school InvenTeams® in Wisconsin.

wellspring of innovation. Invention is developing a useful, unique idea, and innovation is creating value from that idea. You won't have innovation without first having a useful, unique idea that is reduced to practice. CTE offers exceptional opportunities to reduce an idea to practice—to make it! Stepping back from invention is a strong STEM foundation that is also offered in our CTE programs.

My job affords me the opportunity to see—and to share—the possibilities when young people invent. While we don't expect our high school InvenTeams to apply for and receive a U.S. patent, we're thrilled when they do so. To date, 13 of our funded teams have received a patent. Having the U.S. Patent and Trademark Office to "review" students' work and issue a patent is the ultimate in authentic assessment. All patents have received pro bono legal support from intellectual property legal firms and Microsoft's Make What's Next Program for teams that have predominantly female participation. Increasing female participation has been a goal of the Lemelson-MIT Program for years. According to Sohar et al. (2018), women's rate of total patenting is only around 11%.

¹Bell, A., Chetty, R., Jaravel, X., Petkova, N., & Van Reenen, J. (2017, 2019). Who Becomes an Inventor? The Importance of Exposure to Innovation. Nation Bureau of Economic Research Working Paper Series. DOI 10.3386/w24062.

²Sohar, K., Mercier, N., Goble, L., Ghahramani, F. & Loftin, B. (2018), Gender Data Gap: Baseline of U.S. Academic Institutions. Technology & Innovation, 19(4), 671-683.

I've seen outstanding invention projects funded by the Lemelson-MIT Program in Wisconsin at the following schools:

- Bayfield High School (2006)
- Brillion High School (2008)
- Tesla Engineering Charter School (2009)
- Green Bay Southwest High School (2011)
- Wausau West High School (2014)
- Tesla Engineering Charter School (2018)
- Logan High School (2019)
- Omro High School (2021)

The InvenTeam initiative provided funding of up to \$10,000 to each team, ongoing coaching and mentoring for teachers and students, and communications expertise to share the good work of each team. Teams have participated in an end-of-year capstone event called EurekaFest. They have been well supported by their communities, including working with beneficiaries of their inventions, being advised by technical mentors, and receiving additional financial support. The Lemelson-MIT Program has also had support in Wisconsin from Georgia-Pacific LLC in Green Bay and Ashley Furniture Industries, Inc. in Arcadia.

One recent 2019 InvenTeam is from Logan High School's CTE program, under the facilitation of WTEA member, Steve Johnston. This team of students invented an energy harvesting system to extend the battery life for vacuum socket units in above- and below-knee prostheses. By harvesting heel-strike energy while walking, the system extends operating battery life beyond the current 24



Early prototype drawing, from LaCrosse Logan High School, October 2018

hours. A BluetoothTM communication link allows the user to monitor the energy storage system using a compatible cell phone and app.

It's remarkable to watch the progress of fully engaged young inventors throughout their year working with the Lemelson-MIT Program. The Logan team went from a sketch in a notebook in October 2018 to showcasing at MIT in June of 2019.

I would like to ask WTEA members to remember that you, too, are inventing inventors. Some tips to invent inventors include:



LaCrosse Logan InvenTeam in front of MIT dome

- Invent with all your students. Invite them in and hold the door wide open!
- Include CT/CS and remember the "M" in STEM.
- Engage your communities to support local inventors and their projects. They can provide mentors, internships, and funding, and can help with problem identification.
- Build your local pathways to invention by offering camps and after-school programming, working with youth development organizations, conducting middle and elementary school outreach, and offering near-peer mentoring.

To learn more about the possibilities of invention education, please consider attending our combined 2022 EurekaFest celebration and Professional Development Summit June 15–17. Whether you attend in person on the MIT campus or join us virtually, this three-day professional development summit is the one event you'll not want to miss. Connect directly with Invention Education leaders, educators, and students, and enjoy the interactive sessions that demonstrate the power and accessibility of Invention Education.



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WTEA TECHNOLOGY EDUCATOR OF THE YEAR

Jeremie Meyer, Ashwaubenon High School

Now that the hustle and bustle of the conference is

over, I'd like to again thank the WTEA for awarding me the 2022 WTEA Technology Educator of the Year. It is truly an honor. What else can I say? Well... feel free to stop down at the Briggs & Meyer receiving award from Stratton Motorplex at Elkhart Lake's Road America on May 11-12, 2022 to see the Formu-



WTEA Vice President **Bob Moreland**

la Student teams test their vehicles. It's been a long time since the teams have had the chance to meet at the track so it should be a great time.

I'd like to thank my wife, Michelle. She has to put

up with me... and believe me... that's not an easy job. Significant others of educators know what I am talking about: The late



Elkhart Lake Formula Race

the companies and in-

dividuals that I've re-

lied on over the years

- there are MANY I'd

like to thank but I'll

keep this short. With-

out that help, the students wouldn't have had those learning

opportunities. To my

students, thank you.

You've made teaching

teachers reading this,

some advice: Don't

think for one minute I

(or any "experienced"

teacher) have all the

To the younger

fun.

nights developing curriculum, family time interrupted by job reference calls, the times of being together watching TV and your mind is somewhere else trying to figure out a way to help that student repair a project.

I'd also like to thank my colleagues, Dave Stroud and Tom Barnhart and the Ashwaubenon School District. They allow me to do the crazy projects with the students and help me out in multiple ways. Also like to thank all



Meyer with students

answers and has never made a mistake. Don't let that fear keep you from trying new ideas. I have had many examples of the ideas the students and I have tried over the years that didn't always work out as planned. Here are a two examples.

The "Yellow Banana" - Actually the second high mileage vehicle my students built. Our first one spent more time broken down in the Fleet Farm parking lot at UW-

Stout than it did on the track. This was our first attempt at a fiberglass body and aluminum tube chassis. That body was NOT smooth or light!



The "Yellow Banana"

The "Widow Maker" mini-chopper. The students and I were invited to participate in the FVTC Mini-chopper build one year. The students saw a picture from the internet of a motorcycle they liked. So, we modeled our design after it. Let's just say we needed to do more research into motorcy-

cle design and how it affects stability. This thing did NOT want to go straight!



The "Widow Maker"

Again, don't be afraid to TRY. There is a wealth of information out there and a ton of people willing to share their knowledge and skills with you. Don't be afraid to ask those questions and try something new.

Again, thank you to the WTEA and I wish everyone a safe and exciting competition year.

A BRIEF BIO OF JEREMIE MEYER Years in education: 26 (7 at Ashwaubenon) Activities: Coordinator of Formula Student USA program at Ashwaubenon Education: B.S. in TE, UW-Stout • M.S. in Education Leadership (in progress) · Vocationally certified for Tech. College teaching Other interests: Waterfowl hunting · Enjoys flying airplanes (since age 13) including his experimental Supercub.

WTEA H.S. PROGRAM OF THE YEAR _____ Lake Geneva's Badger High School

The Badger High School Technology Education Department was recognized as the Wisconsin Technology Education Association's 2022 High School Program of the Year. The WTEA annually honors education and industry professionals who have demonstrated outstanding service and commitment to Technology Education. The Badger Tech Ed teachers were honored at the Annual WTEA Awards Banquet held at the Chula Vista Resort in March. Highlights of the Badger Tech Ed program include highly qualified instructors, widespread transcripted credit with Gateway Technical College, and industry-recognized cer-



tifications embedded into the curriculum in each area. In addition, the recently created Acade-

mies of Badger have helped students group high school courses while they are at Badger to earn up to 36 college credits prior to graduation. These commitments to excellence in Tech Ed add value to the programs already offered to students at Badger.

The mission statement of the Badger CTE Program is: "The Badger Career & Technical Education Department provides current and relevant career-based education tied to rigorous standards to give students opportunities to earn transcripted credits and industry-based certifications in preparation for college and high skill, high wage, high demand careers, while strengthening core academics through the application of skills.

"This mission statement encompasses the spirit of the Tech Ed Department at Badger," said Marie Collins, CTE Director. "The WTEA High School Program of the Year Award is recognition of all of the hard work and dedication to students Badger's Tech Ed teachers have shown," Collins added. "With programming in numerous career pathways and the development of The Acad-



of The Academies of Bad-Badger H.S. Tech Ed Dept: Glen York, Tom Sheeley, Mike Smith, Arnie Oswald, Jake ger, Badger's Popanda, Ryan Bouzek, Clint Geissler. students have

opportunities not found at most high schools."

The district has stayed up-to-date with equipment and facility needs to address the ever-changing climate of Tech Ed. Grants have supported purchases of equipment like the recently obtained Haas mill. "When our business partners indicate changing technologies are necessary to provide our students with the experience they need for college or careers, find ways to make the purchases," Collins said. The Haas mill was purchased with funds from the Techni-

cal Incentive Grant.

Student achievement and success, not just in high school but after high school, is integral to Badger's programs. With so many courses aligned to transcripted credit at



Gateway Technical College, Badger keeps up-to-date with Tech Ed curriculum and industry certifications that students need for success in college and careers.

Innovative national curricula like Project Lead the Way Computer Science and Project Lead the Way Engineering, as well as Geometry & Construction, provide students with opportunities to learn in collaborative environments and link core academic skills with their Tech Ed experiences. Badger celebrated the WTEA High School Program of the Year Award with an in-house program to honor the





teachers and students. Principal Jenny Straus stated, "The WTEA Program of the Year Award is recognition and celebration of the quality of instruction provided by our Tech Ed team."

Badger was also named WTEA Program of the Year in 2001, and was named the International Program of the Year in 2002.

To learn more about Badger's Tech Ed Department and The Academies of Badger visit our website at https:// bhs.badger.k12.wi.us/

If anyone would like to apply for the WTEA program of the year, or nominate someone for other WTEA honors and awards, contact Matt Schultz, Awards Committee Chair. See the Interface WTEA Board of Directors page for Matt's contact information (page 2 of this magazine).













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INTERFACE

WTEA M.S. PROGRAM OF THE YEAR Germantown's Kennedy Middle School

Jeff Thielke and John Parrish, Instructors

Tech Ed & PLTW

In 2011 the Germantown School District sought to overhaul the Kennedy Middle School Technology Education facilities, create a new technology and engineering curriculum, and offer PLTW. By repurposing and remod-

eling various classrooms, "new," updated facilities were gradually created.

A two-year implementation plan added PLTW in the areas of Design & Modeling and Automation & Robotics in 7th and 8th grades. In year two, we added Design & Modeling (B) and Robotics (B) classes. The more traditional Tech Ed courses of Exploring Technology, Transportation, Communication, Construction and Manufacturing remained, but were updated. Enrollment grew, with female enrollment increasing drastically from only 9% to 41%.

COURSES:

EXPLORING TECHNOLOGY EDUCATION 6th Grade (Construction/Manufacturing/Transportation/

Communication)

Construction includes building and testing a paper bridge, and architectural home design including interior decorating, utilizing 3-D imaging software. Manufacturing includes plastic casting of a Golf Tee Game. A package is designed to safely transport an "egg" from 20' to the floor. The pre-engineering unit includes CAD drawings



Instructors, John Parrish and Jeff Thielke receive their award.

of the Golf Tee Game utilizing PLTW 3-D modeling software. The measurement unit utilizes a blueprint to construct an air glider, including a performance dis-

tance test. Students

also have units in transportation, communication and robotics. Transportation includes a paper rocket and glider activity to learn concepts about ballistics and stability, and a flight activity about aircraft control. The communica-



tion unit includes semaphore coding, radio station operation and live television news production. In robotics the students assemble gear train mechanisms in order to learn torque, speed, gear ratio, and other power transfer con-

cepts.

CONSTRUCTION 7th & 8th Grade

Students design a "dream" home with 3-D imaging software. Students build a wooden model bridge and perform strength tests, and build a 3/32" scaled floor, roof truss, and model of a residential home wall and floor system. Students create pre-en-

gineering CAD drawings of the bridge and residential



home model design, utilizing 3-D modeling software.

COMMUNICATIONS - 7th & 8th Grade

Students learn photography with an emphasis on lighting, composition, and editing. They also experience the teamwork of multi-camera television production by plan-

ning, performing and filming a game show. A stop-motion animation unit explores film-making including set building and storytelling. Students build a working paper



plate microphone/speaker to learn electrical aspects of communication.

MANUFACTURING - 7th & 8th Grade

Students make castings to create a football tee, giant clothes pin and flexible frog; mold a screwdriver set; and



vacuum form a mold design for candy-making. Students thermoform a clear plastic picture frame. A "gum ball machine," made mostly of wood, is fabricated, assembled, and finished. Students design a 3D printed name tag; design a mold and use a CNC machine for plastisol casting. They also operate

a production plastics injection molding machine. Critical thinking, teamwork and problem solving are incorporated into the construction of a "Rube Goldberg" device.

DESIGN & MODELING (A) 7th & 8th Grade - (PLTW)

3-D modeling is used to create CAD drawings of a car and boat vehicle and weight to speed ratio tests are performed. Students 3D print a product and use graphic design to make a 3" Button.

DESIGN & MODELING (B) 8th Grade - (PLTW)

Students use 3D modeling software to make CAD



Drawings and then fabricate a "mag-lev" and airplane vehicle; a "leaf blower" and hover-craft. Students create a graphic design and transfer it to a T-shirt.

TRANSPORTATION – 7th & 8th Grade

Students apply power tool skills and physics to build a mousetrap and crash car. Students learn electrical energy by building a DC motor and various types of circuits, and learn about space flight and aerodynamics by building a model rocket.

AUTOMATION AND ROBOTICS (A) 7th & 8th Grade - (PLTW)

Students construct a reliable machine that can follow instructions and combine mechanisms and electric motors into a project of their own and write a program to put it into motion.



AUTOMATION AND ROBOTICS (B) 8th Grade - (PLTW)

Students learn to code sensors and motors and then build a four-motor robot and code it for autonomous and radio-controlled operation.

The addition of a plastics program added interest not only from boys, but girls, as well.



Conclusion

There is a consistent effort to promote the program through articles, banners, bulletin boards, displays, our website and presentations. An all-girls class was added in 6th grade to promote leadership.

Our department meets weekly to discuss what activities and units are working well and where revisions are needed. We offer our own perspectives to what new or revised curriculum may look like and a time schedule for implementation. Budget is the driving force for new areas if equipment, software, or materials are needed. The administration allows our department total control over the curriculum. Industry partnerships have assisted the program with equipment, tooling, furniture, materials and training. Teacher, PTA, Carl Perkins, and plastics industry grants, plus local business donations, have all contributed to our success over the years.



WTEA FOUNDATION WTEA Foundation - Spring 2022 Update

By Joe Ciontea, WTEA Foundation, Inc. Treasurer

The WTEA Foundation presented a second scholarship to William Vanden Heuvel, a junior at UW-Stout, during the WTEA Awards Banquet on Wednesday, March 16th.

I am pleased to announce that we raised over \$4,000 for the scholarship fund during the 53rd annual WTEA Conference. We continue to seek scholarship applications. Visit our website (www.wteafoundation.org) for details. **The application deadline is May 15th.**

We want to thank the following companies who donated items for the raffle: H2I Group, Snap-on Industrial,



First Technologies, Chula Vista Resort, and PDS. The Foundation president is Al Gomez, PhD.





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WTEA Foundation Scholarship Applications Due May 15

The WTEA Foundation is offering a renewable \$1,000 scholarship for a high school senior who commits to pursue a career as a K-12 Technology & Engineering educator.



ELIGIBILITY:

- Wisconsin resident
- Enroll in technology education at a Wisconsin university and start the fall semester
- Submit completed application form and 250 word essay prior to May 15

Details of the scholarship and the application form can be found on the WTEA Foundation website at www.wteafoundation.org

PROJECT BUILD

Designing and Building a Crane Model

By Steve Meyer, Manager of STEM Education, Fox Valley Technical College

Overview

Many teachers purchase 3D printers, laser engravers, and CNC routers and struggle finding activities that are easy, do not take much time, low cost, and can get students started using these machines quickly with minimal direction. Often what happens is students end

up downloading files off the internet or use the equipment for simple tasks such as engraving a picture or text. Here is a project that I used in my freshman CAD/CAM class. This could fit into a middle school or fab lab situation or be enhanced for upper grades. This project has students drawing, creating a toolpath, cutting out, decorating, and assembling a small model crane, just like they do with real cranes in industry. My inspiration for this activity came from visiting Manitowoc Crane company years ago and seeing that everything they were doing was exactly what my students were doing, only on a MEGA-engineering scale. All the necessary files, information, and more photos for this project are located in the WTEA Google Drive Folder. Find the link on the WTEA website, under the "Resources" tab.

How It's Made

Individual parts of this crane were drawn in Solidworks. You can use any 2D or 3D drawing program of your choice. Students made engineering drawings of all the parts including dimensions, different views, etc. The students also did a 3D rendering of the assembly of the entire crane. These drawings, along with a BOM and Gantt Chart were put into their engineering portfolio. Students then cut parts out of foam core, corrugate, or thin plywood on a laser engraver. The crane's hook is 3D printed. With a small CNC milling machine or a router, students can machine the tracks out of polystyrene foam instead of using a laser. When done, students apply the stickers and assemble all the parts with hot glue. If you do not have all of the machines listed, this project can be modified easily to use what you have.

Materials Required

- 8.5 x 11 piece of corrugate/foam core/thin plywood
- I used a little PLA for 3D printing the hook
- Small piece of kite string
- Hot glue gun
- 8.5 x 11 sheet sticky back label material or plain typing paper (for printing crane stickers)
- ¹/₂ inch polystyrene foam (approximately 4" x 6") if you plan to machine out tracks
- *Approximate Cost/Crane 50 cents

"My inspiration for this activity came from visiting Manitowoc Crane company years ago and seeing that everything they were doing was exactly what my students were doing, only on a MEGA-engineering scale."

Crane Design:

Step 1: Drawing All the Parts

When teaching a CAD class, I always liked to break it up after students learned some new program features with a tangible activity where they could apply their competencies. For me, it worked better to teach students machine use as we went through drawings rather than learn every feature at once. Plus, it got students away from the computers for a bit. The crane parts are relatively simple using simple dimensions, straight lines, circles, and an extrude feature. After some basic introduction, students should be able to draw this relatively easily. I have included all the files in PDF and Solidworks formats (see WTEA website). You can either pass them out this way or redraw them quickly in the software that you use. The parts include: Crane Tracks, Crane Base, Crane Cab, and Crane Hook. (Continued on next page)



INTERFACE

PROJECT BUILD

Step 2: Cutting Out the Parts on a Laser

Each semester I would cut the above parts out of whatever I had on hand. (Thin plywood, corrugate, foam core). The material pictured below is 3/16" white foam core. Each student needs an 8.5" x 11" sheet. No matter what software is used, the process is most likely the same. Convert the drawings into a .dxf file and import them into the software you use for the laser. In this case, I was using Corel Draw and cutting the files out on an Epilog Laser Engraver.



print multiples to get it done even faster.

need any raft or support material, thus cutting down on material use and time. You can also print it on a low quality setting and still get good results. The entire hook only took 8 minutes to print. I had students print this individually in order to learn the software and set up the machines. As a teacher, you could



Foam Core Cut Outs

Step 3: Drawing and 3D Printing the Crane Hook

Below is the engineering drawing of the Crane Hook. I drew this by drawing two circles one inch from center and then using a tangent line to trim away the side and hook section. You will see this line represented on the drawing. I never explained this to students at first. I wanted them to struggle with it some to come up with how to draw it. I then had students 3D print _______ the hook. The nice thing with this design is that you do not



Crane Hook

3D Printed Hook

Step 4: Decorating and Assembling the Crane

I have developed a PDF file 8.5" x 11" in size with some graphics. You can print this on a color printer. Be sure to print full size. I buy big stacks of full sheet label material with sticky backing. It works great for making stickers for students and for students to add real life designs to their projects. If you do not have any, just print it off on paper and students can cut them out and use a glue stick or tape to put the color images on their crane. Students can then hot glue the parts together, and tie the hook on with a piece of kite string or thin wire.



Sticker File

In Conclusion and What's Next

As mentioned earlier in the article, this project can be the starting point for developing some rich learning experiences. Some other ideas that would be very educational are as follows:

- This could be used as a quick fab lab activity for an open house, teacher training etc., where you demo each machine and have lots of these pre-cut for people to assemble.
- You could give students the Crane Graphics file and have them take their own picture and put themselves in the crane.
- Experienced students could use CAD to make an assembly, add decals and a background, animate it on the screen, etc.
- After doing this, students could each be given an image of another piece of construction equipment to reverse engineer. This could be a great concurrent engineering experence where teams of students had to make different parts of the assembly for a whole set of scale construction models.
- If you have a CNC router or mini desktop mill, students could machine the tracks out of a small piece of polystyrene foam.
- Have high school students make all the parts and partner with elementary school students to construct them (recruitment and great character education)!

Thank You

Thank you. I hope you have success with this. This process really helped me with classroom management. The foam parts only took 30 seconds to cut out and the 3D printed hook was done in 8 minutes. With students having to draw all the parts, some naturally finished sooner helping to minimize bottlenecks at the laser, 3D printer, and other steps along the way. Please visit the WTEA website ("Resources" tab) for a link to a shared Google folder to access a PDF of this document, cut files, blueprints, labels files, etc. Please email me at meyerst@fvtc.edu with any questions on this project, teaching methodology, or improvements you may have. I love seeing pictures of student projects...please send them my way! Good luck and keep it STEMY!

REPORTS: ITEEA & TEECA 2022 ITEEA Annual Conference In Orlando

By Mason Pautsch, ITEEA Rep



Emerging Leader Award

In early March, Dave Stroud and Mason Pautsch attended the 84th annual International Technology and Engineering Educators Association (ITEEA) conference in Orlando, Florida, Dave Stroud was awarded an Emerging Leader Award for his work as the president of WTEA 2020-2022. ITEEA's Emerg-Dave Stroud with the ing Leader Award recognizes Tech

Ed instructors who have demonstrated a high level of competence and

professional activity in the field of technology and engineering education.

The 84th annual ITEEA conference offered a wide variety of breakout sessions and networking opportunities regarding all things Tech Ed related. Traditionally, ITEEA has been more STEM based over the years. However, many trade/CTE based breakout sessions were packed with attendees. Some of the ones that we attended were: Safety Training for Educators, A novel Approach for Integrating 3D Printing Processes into Traditional Manufacturing Process Curriculums, and Class Project: Constructing a Tiny House! It was clear, many of the attendees were very interested in the breakout sessions related to traditional technical education curriculum.

Alongside the breakout sessions and networking opportunities, the ITEEA conference always offers a variety of local outings for attendees to participate in. This year, attendees of the conference were able to tour the Kennedy Space Center. Unfortunately, rainy weather caused some travel delays in and out of Orlando for Dave and myself causing us to miss some of the ITEEA outings. However, we did have some decent weather during our stay in Orlando allowing us to enjoy dinner at Disney Springs.

Missed the ITEEA conference this year? No worry! The 85th annual ITEEA conference will be held in Mason and Dave at Minneapolis, Minnesota April 12-15, 2023. With next year's conference be-



the Rainforest Cafe, **Disney Springs**

STOUT

ing so close to Wisconsin, we are expecting to have several of our WTEA members also attend that event. It was very clear at the conference this year that many of the ITEEA attendees are interested in attending CTE/Trade based breakout sessions. We encourage all WTEA members to consider applying to present at next year's ITEEA conference. This is a great opportunity to showcase projects and ideas that you do in your shops to other educators from around the world. Presenting at the ITEEA may be an opportunity for your district to allow you to attend both the ITEEA conference as well as our yearly WTEA conference.

ITEEA Professional Membership costs \$65 annually. Benefits include discounted ITEEA conference registration, eligibility to receive awards for individual and program/ school recognition, curriculum, professional networking opportunities and discounted insurance. Feel free to contact Mason Pautsch to learn more about ITEEA!



By Will Vanden Heuvel, TEECA Rep

UW-Stout's Technology Engineering Education Collegiate Association (TEECA) attended the annual WTEA conference in March. Ten members, ranging from freshman to senior, attended the conference. We had the opportunity to see many different sessions. I speak for the whole club when I say that the new teacher seminar was very helpful to all of us. Not only was the speaker very helpful, but all the tenured teachers voicing their opinions were a huge help. Another session included information about budgeting and different grants that can be written to help provide money for machinery and materials.

Aside from speakers, our members had the opportu-

nity to socialize with teachers from around the state. We were able to pick their brains for tips and tricks for our futures in education. The stories about how rewarding teaching can be



helped us who attended the conference to be sure about our decisions to go into education.

On Thursday night we were able to go to the silent auction. This was a great opportunity to make connections with teachers and possible colleagues in the future. While meeting these teachers we were able to get contact information and can reach out to them if we are looking for any advice. The listserv was brought up several times.

At our TEECA meeting following WTEA we brought up the listserv and how important it is to be a part of this to gain insight on different subjects within Technology Education. This conference is not only about learning all

the tips and tricks to teaching but visiting and having fun with members in our club, our old high school teachers, and new faces that have been so welcoming for us.

SUMMER OPPORTUNITY Join Workgroup to Develop Free Curriculum on Building Energy Modeling

By Dave Vigliotta, Director of Strategic Partnerships, Slipstream

"It is my hope that this

Slipstream, a mission-driven nonprofit organization, headquartered in Madison, recently launched a new tool that can teach high school students how to build an energy

model and analyze impacts of energy efficiency technologies in buildings.

Slipstream's energy modeling tool, **project will support Wis**-Sketchbox, is a free web-based tool that enables simplified energy analysis of new construction and renovations for commercial buildings. The platform is suitable for all levels of technical expertise, provid-

ing a user-friendly introduction to whole-building energy modeling. Sketchbox allows users to understand the impact of various improvement measures on overall energy



performance and cost compared to a baseline.

Slipstream received a grant to support high school and tech college teachers in developing curriculum around



Sketchbox and to train students how to energy model. If you're not familiar with energy modeling, it is a software-based tool that architects and engineers use to make accurate energy saving decisions on new and existing buildings. A user creates the initial building using an energy code baseline and then re-simulates the building using various energy conservation measures. Sketchbox could be used to teach students

about energy savings opportunities in their school while charting a path to net zero buildings.

Whether students are interested in solar energy, energy efficiency or simply have interest in climate solutions, the bottom line is the clean energy sector is flourishing with impactful career opportunities. Further, the

State of Wisconsin, along with most major cities, businesses and utilities, have recently pledged 100% carbon-free electricity goals. It is my hope that this project will support Wisconsin's transition to a clean energy economy and accelerate new career paths for your students and future generations!

Slipstream is excited to have the opportunity to partner with high school and tech college teachers to devel-



op classroom lessons using its Sketchbox tool. Please reach out to me if you'd like a demo of Sketchbox and would be willing to join a workgroup to develop cur-

riculum. We anticipate the workgroup would meet either virtually or in-person over the summer. Any travel and lodging would be reimbursed and small stipends for your time may be available.

For more information, please contact Dave Vigliotta, Director of Strategic Partnerships, Slipstream at dvigliotta@slipstreaminc.org or (608) 210-7143. More information on Slipstream can be found at www.slipstreaminc.org.



INTERFACE

CONFERENCE SURVEY RESULTS



10 Takeaways from the WTEA Conference Survey



By Steve Johnston, WTEA Board Member & Conference Program Coordinator

- 1) 89.7 % attended the conference for two days.
- 2) 95% were very satisfied or satisfied with the conference program book.
- 3) 92% were very satisfied or satisfied with the program agenda and timeline.
- 4) 92% were very satisfied or satisfied with the general quality of the speakers.
- 5) 92% were very satisfied or satisfied with the relevance of the material presented.

- 6) 89% were very satisfied or satisfied with the selection of vendors in the trade show.
- 7) 93% were very satisfied or satisfied overall with the 2022 WTEA Conference.
- 8) 91% were very satisfied or satisfied with Project Showcase.
- 9) 55% were very satisfied or satisfied with the President's Reception with 35% not attending.
- 10) 22% used the conference mobile App (Yapp) over 50% of the time.

Notice:

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