

THE M.I.T.E.S. MESSENGER

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Editorial Staff: Dr. Alan Papendick, Mr. Paul Driggers., Mr. Richard Silet



IMTS FIELD TRIP

By George Scherwin

Taking students to the IMTS in Chicago, IL is hard to put into words. This is a Field Trip that usually requires 2½ years of planning to make it happen. Why so long you might question. Well it only happens every two years in Chicago and arrangements need to start usually the April or May before the September event. This machining show will normally happen the 2nd week of September so School Board and parental permissions should be gotten before the school lets out for summer hiatus. The teacher will have additional planning to do other than getting permissions. (i.e. getting vehicles and chaperons) for the trip. Paul Driggers and I suggest one chaperon per every 5 student attendees (In the past sometime it was an Advisory Team member another time it was another Instructor), selection of an inexpensive hotel/motel should the trip include an overnight stay (Find a hotel outside of the

Chicago proper, as they tend to be cheaper).

A recommendation by Paul Driggers is for this trip be an overnight trip so the teacher and student attendees have time to see as much as possible. It is also noted that making a round trip all in one day is too much. To assist with keeping travel cost low look to a local college or local tool supplier they have a bus or van that might be donated or cheaply rented for the trip.

To assist students with the expenses for the trip, i.e. fuel, food, and accommodations, students should be instructed on how to contact local businesses and advisory committee members to attempt to go out and get their portion underwritten

The IMTS has just about everything involving machining there, machines, tooling, coolants, software, everything. Attendees could literally spend days talking to vendors about different types of tooling and what is best for the classroom applications. If it is something new to machining or new

technology it is shown at the IMTS and those present can see it work. The show is aimed at Manufacturers so some equipment is just simply outrageous, but the vendors are very willing to talk and explain it to anyone willing to ask. Many vendors were extremely happy to talk to educators and were sure to offer discounts on any educational orders.

Over the course the 2016 show a 3D application printed a car that was driven out of the building upon completion.

The ability to see what is new and different in the industry was very beneficial. Methods were illustrated showing teacher techniques to save money through the purchase of different tooling than what a teacher might generally use but would last longer.

The show can be overwhelming the first time through. Paul and I recommend, that attendees be sure to bring their walking shoes.....

LET'S TRY COMMUNITY SERVICE AGAIN

- Alan Papendick

During research for my doctorate I learned that many School Districts in Michigan as well as many post-secondary institutions in the United States require students to perform community service hours to graduate. For example, some high schools in northern Michigan and the State of Washington, students must accumulate in the neighborhood of 200 hours of community service to get a diploma. Some school districts differentiate between community service and "service learning" by requiring students to demonstrate that their work has contributed to their education. If a student in high school is enrolled in a CTE Program, Michigan's Office of Career & Technology Education (O.C.T.E.) is requiring community service as part of students' participation in co-curricular club opportunities (i.e. SkillsUSA and BPA). Should you wonder if Public Schools in Michigan or America could require volunteer hours as part of graduation requirements; it was challenged in *Immediato v. Rye Neck School District*, but the court found no violation.

Most high schools in Michigan, do not require community service hours for graduation, but they are seeing

an impressive number of students get involved in their community through extra-curricular classes. For example, in Palo Alto, California, students at Palo Alto High School log about 45,000 hours of community service every year. As a result, the school's College and Career Center awards about 250-300 students the President's Volunteer Service Award every year for their hard work."

I have received requests from the O.C.T.E. for information regarding the possibility of M.I.T.E.S. members accumulating community service opportunities as necessary data to be presented in C.T.E. programming TRAC books. Some of member teachers have made the request for M.I.T.E.S. to suggested community service ideas that they might include as part of their program. Resulting from these appeals, I made a request of seasoned teachers and received some excellent ideas that included *ADOPT A HIGHWAY* program, serving in a *SOUP KITCHEN*, and working on a *HABITAT FOR HUMANITY* home. Other ideas I can think of are *TUTORING* at Middle or Elementary schools. How about starting up an Industrial Arts Program in these same schools where the high school students go out with hand tools to teach, or building toys for the Marine

Corp.'s *TOYS FOR TOTS* program.

Remember that it is not what the student does but that they remember that the service they are performing is for the benefit of the public or its institutions.

SANTA'S WOODSHOP

Craig Conrad and Alan Papendick

Each year, during the fall semester, Mr. Conrad's advance woods class of students put their projects aside, in November, to build wooden toys for the children in their community. Then, right before Christmas break, the class transforms the woodshop into the North Pole, with students dressing as elves, with Santa and Mrs. Claus in attendance, a program is developed and put on that included working on toys, singing, and breaking piñatas, and the highlight of the evening always being.....the toy exchange. The students of the class called these "perky" 3 to 5 year old up front to sit on Santa's lap, and that's when the students give the youngster a toy made especially made for them. All of the toys were large toys, ranging from rocking horses to airplanes and motorcycles along with doll houses. This was Moffat County High School's way of giving back to

the community supporting the Industrail Arts Program through placing orders for chairs made in the mass production class. Note: Mr. Conrad (who taught for 28 years) waited a long time for this, several years ago he had his first elf building a toy who received one when he was 5 years old. Santa's Woodshop had gone full circle in Craig, Colorado and could in your school!

COMMUNITY SERVICE IN CONNECTIONS WITH SANTA'S WORKSHOP

Alan Papendick



Train Track Router Bit Set #23613

M.I.T.E.S. Executive Board understands the importance of Community Service opportunities being made available to young people. Therefore when the idea of making a train sets for the *TOYS FOR TOTS* organization was presented at the September 2016 meeting, a

\$1,000.00 budgeted was added for the purchase of 10 sets of train track router bits. The budgetted monies were carried over to the 2017-18 budget by President Brian Kloha. The Complete Train Track Router Bit Sets #23613 have been ordered and will be picked up from L.L. Johnson's Workbench on October 12, 2017.

M.I.T.E.S. was able to negotiate a special price of \$100.00 per set of 4 bits that Rockler Woodworking and Hardware Company normally sell for \$145.00 per set. The executive board is willing to sell these router bit sets to M.I.T.E.S. members on a first come first serve basis for the cost of \$100.00 including USPS freight. This set of router bits are necessary to have the train track sections being made, correctly fit together. I have also received permission from Mr. Glenn Snyder, Rockler's Retail Merchandise/Marketing Director, to reproduce the **Rockler**® Train Track Ez-Plans for use by MITES members for this project.

I spoke with a M.I.T.E.S. vendor, Mr. Walt Harvey of Tecumseh Wood Working, who is willing to work with the M.I.T.E.S. members to establish special pricing for the lumber necessary. I am also working with unspecified companies at this time to assist with the cost of this project. It is my hope for

\$100.00 and a two year production commitment to this Community Service project; that each participating school will receive the needed router bit set, if possible enough wood to make two sets of track that will create the approximately 20 feet of track per year, and enough paint to decorate the train cars made to accompany the track as well as enough wheels to create the 5 train cars, along with instructions.

The router bits purchased will belong to the schools wishing to participate. The router bits will make it easier for future students of the participating Industrail Arts programs to make a train sets for themselves or family members as an in-class project after the completion of that required for MITES sets.

Mr. Steve Stevenson of Iconic CNC, a previous vendor, offered a suggestion as how to get other classes at your school involved in this community service project. It was suggested that a **Robotic class:** design and install a battery-operated motor in the engine car that is able to pull all the cars around the track, **drafting/engineering class:** to design any jigs and make drawings necessary for production, **Interior Design** or **Art Class:** painting or decorating the cars that will accompany the train track set.

Please contact me at apapendick@gmail.com or 989-859-9407 for purchasing of the router bits for this event. I will have additional with me at the November 4, 2017 Board of Directors meeting at Ferris State University for those who are not able to make contact. An invoice will be made available for those school where one is necessary. Checks are to be made payable to M.I.T.E.S. and sent to Alan Papendick, 5407 Swede Avenue, Midland, MI 48642. If payment is to be made with a Credit Card contact Mr. Scott Morey at (231) 409-8470 for PayPal explanation.

ARTICLES NEEDED

The editors of the M.I.T.E.S. Messenger, Alan Papendick and Paul Driggers are requesting articles or project plans with step-by-step procedures to be submitted from the M.I.T.E.S. membership or other educational personnel. These articles can be program bragging, classroom methods being used. If you are insecure with your writing strengths send one of us a brief outline of what you are doing in the classroom or what your district is doing in support of Industrial Arts or C.T.E. that you find exciting or might assist programs in other parts of the state or mid-West.

Lesson plans or projects are always welcome by the editors and members. If you have project plans or pictures to add to the M.I.T.E.S. Messenger's pages they are also welcome.

BOARD MEETINGS FOR 2017-18

November 4, 2017

Ferris State University
08 Campus Dr.
Big Rapids MI. 49307

January 13, 2018

Pinconning High School
605 W. 5th St.
Pinconning MI. 48650

March 24, 2018

Oakland Community College
2900 Featherstone Rd.
Auburn Hills MI. 48326

CASE FOR FUNDING A CNC ROUTER FOR YOUR CLASSROOM

Paul Driggers

STEM grants and similar funding sources aren't just about PCs and tablets. Digital fabrication programs are pinnacles of math, technology and CAD/CAM skill development. That's why putting a CNC Router in your classroom is a great opportunity for your students — and help is available for you to do just that.

There are specialists who are glad to assist you in creating a funding plan, including providing advice on applying for STEM grants and foundation programs specifically targeted at C.T.E. One company willing to assist teachers, Industrial Arts or C.T.E., is Powermatic. Powermatic specialists can be contacted by coping the following web address and pasting it into your browser.

http://engage.jpwindustries.com/powermatic-cnc-grant-advice?utm_source=Mx%20Group&utm_campaign=Powermatic%20CNC%20Education%20Journey&utm_medium=Email%20Blast&utm_content=16-WT-0319%20Powermatic%20CNC%20Education%20Journey_Email%205&mkt_tok=eyJpIjoiTTJJeE1HRmhNbU0yTURZMlIsInQiOiJ5SFBuT2VRaFFwTW16QmFtWEZOZDI0dnBsdE5PMUt uZ01nb3kwSUgxaWwvVGtTSXhvSVpCMINBeHFqSDZGVVV EY25cL1VIY3o3SE1PODdcL1o2em1FOTRnTXRMb3kyeTRqUXY0RFNkeUJ5UIB0UjNGTU40V0tzckJsT1JhXC9qcnpaclgifQ%3D%3D

ARE YOU A HIGH SCHOOL SHOP TEACHER WHO MIGHT BE LOOKING FOR REAL CLASSROOM DISCIPLINE

A former Marine took a new job as a high school shop teacher. Just before the school year started, he injured his

back. He was required to wear a plaster cast around the upper part of his body.



Fortunately, the cast fit under his shirt and wasn't noticeable.

On the first day of class, he found himself assigned to a class with the toughest students in the school. The smart-aleck young men, having already heard the new teacher was a former Marine,

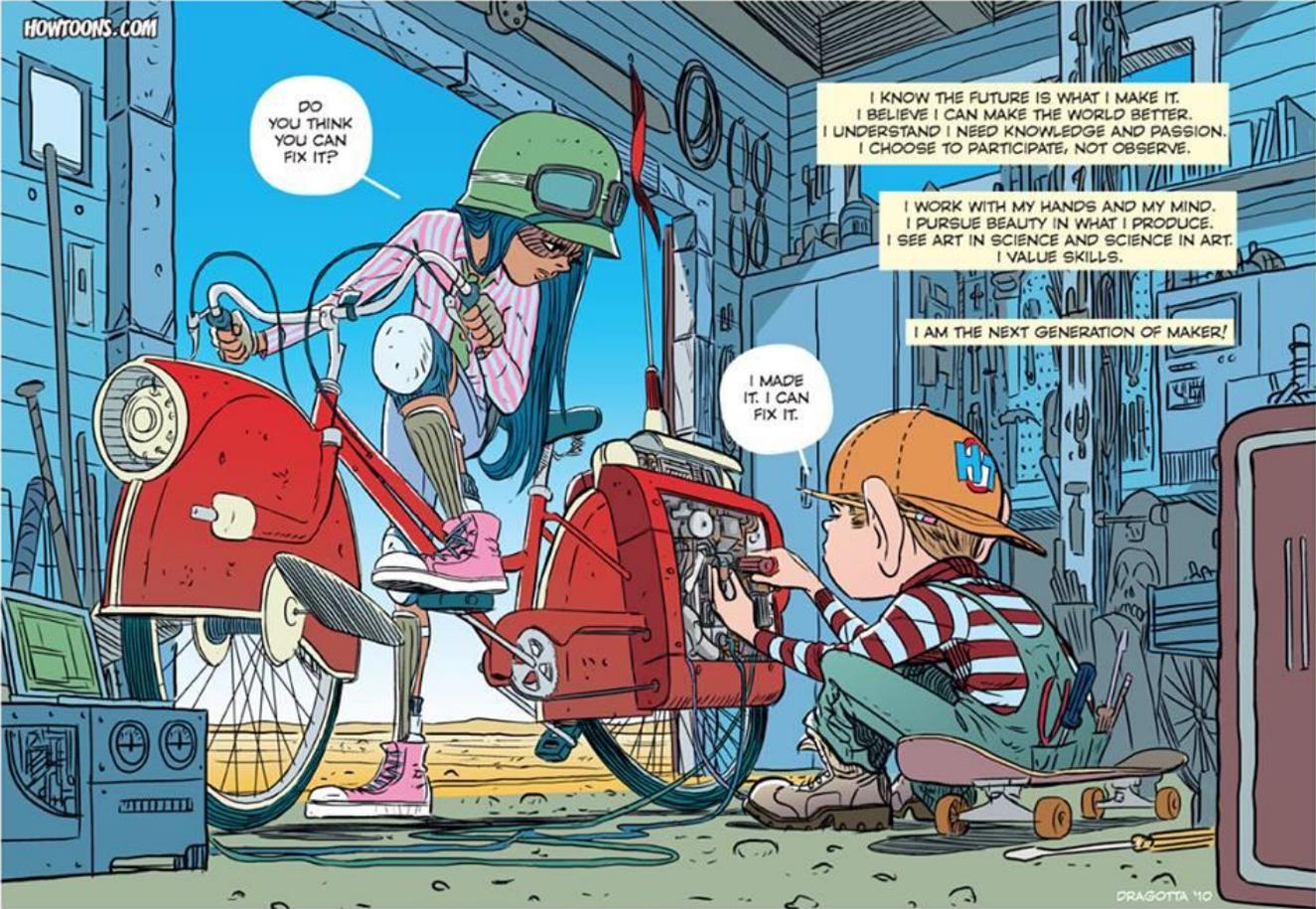
were leery of him and he knew they would be testing his discipline in the classroom.

Walking confidently into the rowdy classroom, the new teacher opened the window wide and sat down at his desk. When a strong breeze made his tie flap, he picked up a stapler and stapled the tie to his chest.

Dead silence... **THE REST OF THE YEAR WENT VERY SMOOTHLY.**

MITES: THE ART TEACHING THE NEXT GENERATION OF MAKERS!

By
TEACHING KIDS TO WORK
WITH THEIR HANDS



TESTING DIFFERENT TYPES OF PENETRATING OILS

By Mr. Lloyd Bender – Submitted by Paul Driggers



A question that often comes up when mechanics and teachers come together is the effectiveness of penetrating oils in loosening rusted fasteners. Do the commercial products really loosen bolts and, if so, which one works the best? To find out, Lloyd Bender recently tested four (Kano Kroil, Liquid Wrench, PB Blaster, and WD-40) for their performance, along with a home-brewed mixture of one part automatic transmission fluid with one part acetone. Dr. Papendick was disappointed to learn that his favorite solution of straight Coke Classic was not included in the test.

Natural exposure would be representative of real world applications, but requires a very long time and a number of replicate samples to handle the wide sample to the wide sample-to-sample scatter encountered in natural exposure. Using artificially accelerated corrosion reduces the time required and provides nearly identical test samples. The testing done was not on bolts, since Mr. Bender did not have access to equipment for measuring the torque on threaded fasteners, but can measure the load on the sliding fit.

So the reader can decide if this was a fair test or not, this what Mr. Bender did. A 5/8" diameter rod of cold-finished low carbon steel was lathe drilled, parted of in 0.50" lengths, and number sequentially. Each length was individually reamed to 0.250". All pieces along with commercial ground 1/4" x 1" dowel pins were ultrasonically cleaned together for 20 minutes in methanol to remove all machining fluid and oil. A dowel was inserted into each length using finger pressure leaving 1/4" of dowel exposed at each end. Years of exposure were simulated by 12 hours of alternate immersion using 10 minutes in a 3% solution of NaCl (table salt) followed by 50 minutes of drying in 105° F air.

The corroded samples were randomly divided into five groups (Photo 1), plus one control group left as corroded. One fluid ounce of penetrating oil was used to immerse each group in three samples for a period of 12 hours. Samples were then drained on paper towels to remove the excess oil for ease in handling. A Baldwin compressometer of 1200-pound scale was used to determine the load required to move the dowel pin. This was done in numerical sequence in a single blind test – samples only identified by number and not with the penetrating oil used.

PENETRATING OIL	AVERAGE LOAD	PRICE PER FLUID OUNCE
ATV / Acetone Mix	53 pounds	\$0.10
Kano Kroil	106 pounds	\$0.75
Liquid Wrench	127 pounds	\$0.21
PB Blaster	214 pounds	\$0.35

WD-40	238 pounds	\$0.25
None	216 pounds	--

The first and foremost conclusion that was reached from the result is that any oil is better than trying to strong-arm things apart dry. These products actually do free up rusted parts. The price and performance of mixing one's own penetrating oil is interesting, but keep in mind that most of the cost in commercial products comes from the ease applicator can. If the user has the time and opportunity for soaking overnight, the home brew method appears to be the winner.

By the way, on the subject of cost, the price quoted is what was paid locally by Mr. Bender is what he paid locally to obtain the minimum quantity possible. Buying in bulk and shopping around can reduce the cost of the commercial penetrating oils substantially.