



The Center Page

Volume XI No.1

Macomb Mathematics Science Technology Center

2014-2015

A BIZARRE Experience

By: Mr. Mark Supal MMSTC

The junior team created a Science *Bizarre House* this past Halloween. The goal of the project was for students to use their engineering skills to design and construct a functioning mechanical, electrical

or chemical oddity.

Students worked in group of three and were able to devise some pretty bizarre effects. A maze constructed of plastic walls was created which had various rooms where students displayed their

“scary” gadgets.

Students from MS2STC, MS-VPA and MMSTC were able to enter the maze *if they so dared* on Halloween day. There were plenty of startled faces and loud screams as students progressed through the House.

By the time the day was over, the team earned over \$500 in profit which

will go toward the purchase of a high quality three dimensional printer. The 3D printing technology will make it possible for students to transform ideas into real hand-held models for inventions and research components.

Thanks to all of the teachers and students who made this project successful.

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Above: Brendan Nowakowski '15 (Lakeshore HS) poses next to “the student-created doll with the spinning head.”

Above Right: Alex Trombley '16 (Lakeview HS) poses with a couple monsters. Right: The artistic Megan Davey '16 (Lakeshore HS) puts finishing touches on spooky heads and grotesque limbs.



Who Wants to Be a Mathematician?



Congratulations to **Matthew Polgar** '16 (Sterling Heights HS) for qualifying in the “Who Wants to Be a Mathematician” contest. He scored at least 8 out of 10 questions. He will take the second part of the exam in October. From that group, 10 students will be selected to be finalists in the national competition. The winner receives \$5000 and the winner’s school also receives \$5000. Good luck, Matthew!!

MMSTC Students Forming Innovative Vehicle Design Team (IVD)

By: Mr. Mark Supal MMSTC

Students at MMSTC will again construct an electric vehicle for the Innovative Vehicle Design (IVD) contest sponsored by Square One Education Network.

The Square One Education Network's purpose is to create and fund powerful and relevant experiences for K-12 students that creatively integrate science, technology, engineering, and mathematics (STEM) using best practice supported instruction through unique project designs. The goal of the contest is to design an electric vehicle that

will travel the greatest distance within an hour on a single charge.

Last year's team constructed the "Electric Charlotte" winning first place in innovation. This year, the team will be starting with a standard go-cart frame which will be retrofitted with batteries and an electric motor.

The MMSTC IVD team is open to all students at MMSTC. The competition will be held in May of 2015 at Michigan International Speedway. In addition, another part of the competition will have

students add software technology to the vehicle to help minimize the distraction caused by texting and driving. This part of the competition is being sponsored by Denso

Corporation. Three juniors are involved in writing code for the projects and include: **Ray Ciesllinski** (Fraser HS), **Mike LaBarbera** (Lakeview HS) and **Matt**

Polgar (Sterling HS). Contact Mr. Supal at marsup@wcskids.net if you wish to participate in these events.



MMSTC's own "Electric Charlotte"

Did You Know...



MMSTC is exploring the formation of a PTO organization for MMSTC and MS2TC. The organization's purpose is "for advocacy, fundraising and general support of MMSTC." The first meeting was held on November 13th. For more information or to get involved, contact Dr. Catherine Neuhoﬀ or Mr. Scot Acre (sacre@wcskids.net).

We are Family

It all begins at Freshman Homecoming

By: **Rylie Duggan** '18 Lakeshore High School

When we heard that the freshmen of MMSTC were going to have a homecoming, we weren't quite sure what to expect... We were pleasantly surprised, though---Homecoming was a whole week of exciting, fun activities for the whole class.

We started off Homecoming week by designing and decorating class t-shirts and posters. "It was really fun to make our shirts and make all of the different posters," said **Ryan Jones** '18 (Sterling Heights HS).

Morning students named themselves the 9A Marios and challenged the other classes to "Get on our level!" The 9B Bees went "Buzzing into the Future," and the 9C Sharks focused on "Sinking our teeth into education!"

"Creating a sense of family and team is the most important part of Freshmen Homecoming," said IDS teacher **Mrs. Gravel**. "Your class will be together for

the next four years, and, hopefully, you will learn to trust, encourage, and rely on one another. Activities like Freshman Homecoming help to create that bond."

Yana Pasinos from Sterling Heights HS was a part of this bonding experience. She said, "The shirts turned out really cool and I loved the fact that when the entire 9C group wore them, we all looked like a team."

The spirit week that lead up to the big game included "Michigan vs. Michigan State Day," "Superhero Day," and "Pink Out Day." Finally, Friday came, and it was time for the big game. We all headed outside wearing our class shirts. There was a large table set up with tons of food. Everyone ate their fill while the teams warmed up. Class 9A challenged the sophomores in the morning, and class 9B faced off against 9C in the afternoon. The AM game was

very close. The ninth and tenth graders seemed to be evenly matched and ended in a tie. At halftime, the band, consisting of six freshmen, went on and played our National Anthem.

Jessica Damer (Lake Shore HS) said, "My favorite part of Homecoming week was playing in the band during halftime. We did pretty good for only being able to practice together for 15 minutes."

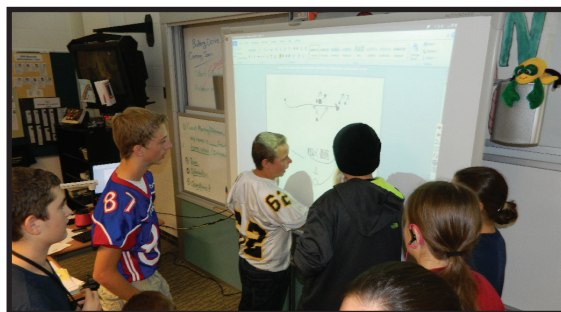
The PM game was not so close, as the Sharks emerged victorious with a score of 28-7.

Griffin Yakey (Fraser HS) of 9C said "I enjoyed squashing the Bees!"

Homecoming was a good time; However, it wasn't just something fun to do. It brought students and staff together. "I got to work together with other kids in my class which caused us to get to know each other better," said **Ian Barber** (Sterling Heights HS).



Jennifer Le '18 (Sterling Heights HS) decorates a class shirt for her favorite biology teacher.



Tyler Johnson '18 (Fraser HS) uses cutting-edge touch-white board technology to review his team's plays for the big Homecoming game.



Anna Jackson '18 (South Lake HS), **Delaney Rivest** '18 (South Lake HS), **Danielle Didia** '18 (Sterling Heights HS), **Jessica Damer** '18 (Lake Shore HS), and **Tommy Kettler** '18 (Lakeshore HS) perform our National Anthem with very little practice. Great Job 9A Band!



Daniella Toma '18 (Warren Mott HS), **Elisa Monteiro** '18 (Warren Mott HS), **Greg Fehmer** '18 (Fraser HS), are wrapped up in the spirit of Homecoming!

Good Times at Sophomore Camp

Right: **Gracie Morris and Kelsey Heaney** (Cousino HS): "Our most memorable moment from camp was the Baby Olympics."

Below: "I used the Plug-and-Chug method to increase our efficiency of drinking from the baby bottle" said **Red Encablo** (Warren Mott HS).



Steven Robinson (Sterling Heights HS) puts on his best baby act.



Sophomores sample baby food. "That was the worst combination of fruit I have ever tasted" said **Garrett Mandel** (Warren Mott HS).



Top: **Megan Phillips** (AKA - Smart and powerful chick) (Lakeview HS), **Nikki Qureshi** (Fitzgerald HS), **Tyler Speed** (Clintondale HS) focus on their Tie Dyed... hands?
Above: **Joe Schmitz** (Lakeshore HS) remembers how to drink from a bottle.

SNAPSHOTS of Senior Research Trials



Rebekah Kettler (Lakeshore HS) & her science partner testing the range of wireless connectivity.



Joey Maleszyk (Cousino HS) taking measurements.



Trevor Polisuk-Balfour (Cousino HS) taking mold samples.



Lindsay Fricano (Fraser HS) & **Haley Le** (Sterling Heights HS) study samples of bacteria in milk.

We U of Detroit Mercy

By: Julie Pisarski & Rachelle Buna '17 Sterling Heights High School

This past October a group of MMSTC students had the privilege of taking a trip to the University of Detroit Mercy campus for Science and Engineering Day.

The students, from freshmen to seniors, **Mrs. Gravel** and **Mrs. Hilliard** joined for the day.

When we arrived we saw various prestigious schools/academies from the area. The U of D staff and students made the hundreds of students all feel important and welcome. We were each handed "ten thousand dollars" (fake of course) to use for a contest. Groups of students came up with different inventions

and advances in their subject field and presented each topic in a traditional science fair format. We used the money we got in a literal sense, to "invest" money in topics that if you personally were an investor, would spend it on.

This interactive aspect really gave the day a hands on approach. After a delicious lunch of hot dogs and chips, we were all taken on a tour of the entire campus. We visited all of the different buildings and parks on campus. We saw everything from the beautiful architecture of the church to the cozy and homey interior of the library.

The campus was really a sight to see. The campus had a lot of necessities that would keep the students living on campus occupied and having fun while earning a great education. The most popular one of these buildings was the recreation center. This is where many students used up their free time playing sports and hanging out.

Overall, being able to visit the campus was a great opportunity. It definitely opened a door as an option for a future place to go to school and earn your education.

Some Victory at Last

By: Mark Supal MMSTC

Two groups of students from MMSTC competed at the University of Michigan's Mars Rover High school Design Contest. The goal of project for 2014 was to design an unmanned vehicle for planetary exploration on Mars.

models to complete their designs. In April they competed against other high schools. They had to present their completed projects to a team of engineers at U of M and explain how their Mars Rover met all the requirements of the challenge. Two senior



The students were required to research atmospheric and geological conditions on Mars and develop their vehicle to navigate the rugged terrain. The theme of the competition was modularity. The rover had to be designed in such a way to easily collect samples of rock and dirt, and also repair circuits and circuit boards. The rover was designed to be an assistant for science missions, which would follow humans and help them carry tools and samples of Martian soil. Students at MMSTC used Solid Works and foam

teams (juniors last year) from MMSTC took second and third places in the Mars Rover Competition and won \$300 and \$100 respectively. The second place winning team was **Parker Authier** '17 (Fraser HS), **Emily Koury** '15 (Cousino HS), **Keagan LaPorte** '15 (Fraser HS) and **Trevor Polisuk-Balfor** '15 (Cousino HS). The third place winning team was **Brooke Hassig** '15 (Warren Mott HS), **Sydney Jordan** '15 (Warren Mott HS), **Olivia Smith** '15 (Warren Mott HS) and **Katie Sobodos** '15 (Sterling Heights HS).



Moles MOLES Moles

Winnie the Pooh



Piglet, **Kaitlyn Switniak** (Centerline HS); Winnie the Pooh, **Rosemary Hermiz** (Fitzgerald HS); Tigger, **Niki Qureshi** (Fitzgerald HS); Eeyore, **Adrianna Monacelli** (Cousino HS).

Teenage Mutant Ninja Turtles



Donatello, **Amanda Conlon** (Lake Shore HS); Raphael, **Paige Redlin** (Lake Shore HS); Michelangelo, **Sara Nevedal** (Lake Shore HS)

Disney



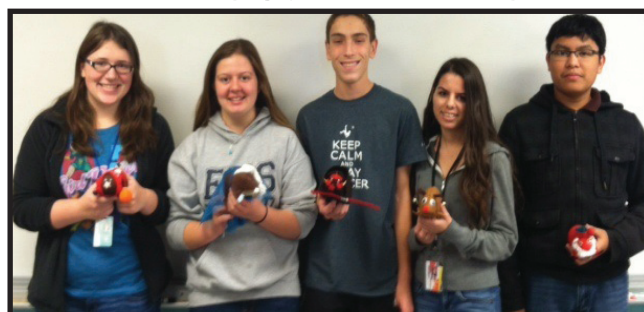
Little Mole-maid, **Julie Pisarski** (Sterling Heights HS); Beast, **Josh Ameye** (Cousino HS) (not pictured); Mickey Mole, **Meredith Hinz** (Cousino HS); Mole-punzel, **Rachelle Buna** (Sterling Heights HS); Cinderella, **Abbey Gonzales**, (Lakeview HS) (not pictured); Mol-an, **Jillian Estrope** (Cousino HS); Cinder-mole-a, **Kelcey Heany** (Cousino HS).

Avengers/Marvel



Captain America, **Joshua Ahearn** (Cousino HS); IronMan, **Aleksandra Gryko** (Cousino HS); The Incredi-mol Hulk, **Maddie Burgin** (Warren Mott HS); Thor, **Emilia Jonic** (Cousino HS); Spider-mole, **Nathan Coles** (Sterling HS).

Misc. MVP's



Troy Moleton, **Nicole Drylie** (Cousino HS); Elsa Mole, **Emily Eskuri** (Fraser HS); Darth Mole, **Aaron Goudie** (Sterling Heights HS); Rudolph, **Frosilda Pushani** (Sterling Heights HS); Santa Mole, **Red Encabo** (Warren Mott HS).

Intelligent Transportation Systems Global Congress Field Trip

By: Mrs. Rose Cybulski MMSTC

Imagine a world where handicapped citizens can make daily commutes independently, imagine a world with less car accidents and less traffic congestion. These are the goals of Intelligent Transportation Systems.

MMSTC Juniors and seniors started the school year off by attending the ITS World Congress this past September.

Companies from all around the world gathered at Cobo Hall to showcase their latest developments in intelligent transportation. Students learned how vehicles equipped with sensors and GPS could

communicate with each other and the infrastructure to determine their relative locations, speed and direction of travel.

The evening before our field trip, General Motors CEO, Mary Barra, was the keynote speaker of this week long event. She spoke about vehicle-to-vehicle communication and vehicle-to-infrastructure communication, emphasizing the importance of autonomous driving technologies that make driving more safe, more enjoyable, more efficient and more accessible to everyone.

Ms. Barra also announced that within

the next two years cars will be equipped with advanced driver assist technologies. Specifically certain 2017 model year Cadillacs will be enabled with Super Cruise, GM's automated driving technology that includes hands-off lane following, braking, and speed control in certain highway driving conditions.

This is an exciting and rapidly growing field and Mary Barra was encouraging other companies to get on board and have their engineers make new developments and innovations so that all cars can communicate with each other. This is also an

exciting time for our students because they will be the ones to continue to develop these ideas and new technologies and turn what ITS imagines, into reality.

Use the QR codes to the right to listen to a shortened version of Mary Barra's speech and the QR code below on the right to see Google's self-driving car in action. Or go to these links: Mary Barra's speech <http://inr.synapticdigital.com/gm/ITS/> and <http://www.google.com/about/careers/lifeatgoogle/self-driving-car-test-steve-mahan.htm> for Google's car in action



Mary Barra's Speech



Google's Car in Action

SNAPSHOTS of School Spirit



Ecology Team

Making a Difference!

By: Kelsey Giffin '15 Warren Mott High School

The MMSTC Ecology Team hit the ground running this school year! Before the school year had even started, some members of the team, along with many non-members as well, participated in the Butcher Summer Courtyard Clean Ups with team advisor **Mrs. Kincaid Dewey**. These summer clean-ups certainly kept our green areas maintained throughout the growing season. Without these wonderful volunteers that gave up some of their own summer free time to come to school "early" in the morning, the Courtyard certainly would not be the beautiful place that it currently is!

We are partnering with the Sterling Heights Nature Center to use technology to enhance a visitor's experience. During the month of October, eight team members,

including **Abbey Auberle** (Mott), **Matt DeSantis** (Cousino), **Kelsey Giffin** (Mott), **Ann Krause** (SHHS), **Jeremy Maurice** (Mott), **Sara Schultz** (SHHS), **Emily Vo** (Mott), and **Madison Werthmann** (LSHS), visited the SHNC to tour the exhibits and gather information on how we could help. While visiting the Nature Center, the team members had the chance to interact with LIVE turtles and snakes! Most of the members were courageous enough to hold the snakes, although some kept a safe distance from the harmless reptiles. Our partnership is expected to last all school year! We will keep you posted on our progress.

Another year-long task is the creation of a Monarch Way Station near the school's flagpole. Fall activities included removing sod (thanks to



Matt Desantis (Cousino), Zach Youkana (Mott), Destiny Kacir (SHHS) and Mr. Dewey) and planting butterfly friendly plants donated by Mrs. Rejc, Mrs. Eileen Byrnes and the Dewey's. We look forward to continuing our efforts in the spring!

Currently, the Ecology Team is having a grade-level competition in which we are collecting plastic grocery bags. The team is having this competition in order to celebrate Americas Recycles Week! In order to

decide who wins the bag recycling competition, the team must individually count ALL of the bags. However, the winning grade level ultimately gets a prize and most of all BRAGGING RIGHTS!

Fundraisers for the Ecology Team include selling \$10.00 raffle tickets for the Little Caesars Amateur Hockey League Raffle with a variety of prizes (see photo). Grand prize is a road trip for two with the Detroit Red Wings on Red Bird III! Also, the Eco Team will sell 4" x 4" MMSTC logo

car stickers for \$3.00. See Mrs. Dewey for purchases.

So far, the MMSTC Ecology Team has been off to a great start this year! There are more than 50 student names on our contact list and a core team of 12 who regularly attend meetings. All grades are represented this year! We have plenty of ideas that will be enacted during the remainder of the school. I hope to see you at a future meeting helping the MMSTC Ecology Team with these projects!



Little Caesars Amateur Hockey League Raffle
\$10.00 Per Ticket
Prize Drawing: 1/23/15 • 12 Noon • Hockeytown Cafe
MI RAFFLE LICENSE #R27682 • WINNER NEED NOT BE PRESENT TO WIN

2014-15 Raffle Prizes:

1. Road Trip with the Detroit Red Wings on Red Bird III for two (2) to a 2015-16 away game*
2. Autographed Henrik Zetterberg Jersey
3. Autographed Pavel Datsyuk Stick and Puck
4. Autographed Justin Verlander Jersey
5. Autographed Miguel Cabrera Bat and Ball
6. Four (4) Tickets to a Fox Theatre Event with dinner on the Loge Level
7. Four (4) tickets to a Detroit Red Wings Home Game during the 2014-15 season**
8. Four (4) tickets to a Detroit Tigers Game plus parking during the 2015 Season
9. Little Caesars Pizza for a year
10. \$100 Gift Certificate to Perani's Hockey World

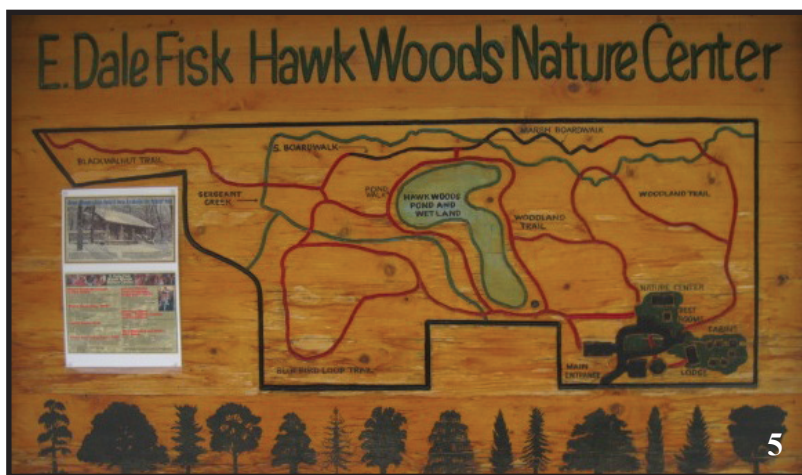
* Includes hotel and two (2) away game tickets. ** Includes dinner for four (4) in the Olympia Club.



Ecology Camp

June 2014

By: Mrs.Christine Kincaid Dewey MMSTC



It seems like ages ago, but fond memories persist for members of the Ecology Team who traveled to Hawk Woods Nature Center for an overnight ecology camp in June after school ended. **Mr. Mike Mansour**, resident naturalist, provided programming for our trip. We even had a workshop on geocaching by **Mrs. Dewey's** colleague **Mr. Murney Bell**. Besides making our own animal tracks from molds, nature walks and environmental activities, we had fun as well visiting the animals at the Center, enjoying a bonfire complete with s'mores and hobo pies, and cooking our own food.

"It feels like we were there longer than just overnight," says now junior **Emily Vo** (Mott) .

"I liked the many activities and getting to spend time with my friends."

The log cabins and lodge really enhanced the outdoor experience. Campers also included **Kelsey Giffin** (Mott), **Lauren Evert**, **Maria Gallo** (SHHS), **Madeline Manual** (Cousino), **Elise Tomaszewski**, **Madison Werthman** (LSHS), and **Jenna Sassin** (WWT). We hope to return some day!

1. A geocache is found! 2. Mr. Bell explains geocaching basics. 3. Look what we found by the pond! 4. Mr. Mansour shares his vast knowledge. 5. A map of the grounds and trails.

A SPOOKY HALLOWEEN

By: Mrs. Kincaid-Dewey MMSTC

What would Halloween be without the annual MMSTC Halloween Party? Senior Council (**Lindsay Fricano** (FHS), **Ryan Gohlke** (SHHS) and **Luke Emery** (Cousino)) worked with advisor **Mr.**

Scot Acre to plan this year's event.

Approximately 90 students attended (a record!) and a great time was had by all as they had fun making their own ghosts (thanks to **Mrs. Pat Bonnici**), playing a

variety of Minute-to-Win-it games, a couple active video games and even a little dancing!

What a fun way to meet with fellow MMSTC students outside of school and have fun!

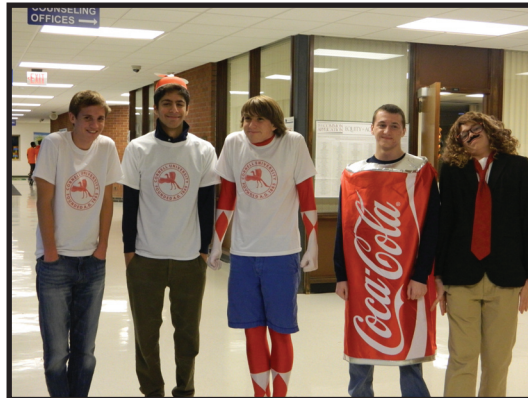
More awesome costumes! **Jillian Estrope** (CHS) and **Zach Haupt** (CHS) Look Great!



Ryan Gohlke '15 (Sterling Heights HS), **Mr. Acre**, and **Luke Emery '16** (Cousino HS) show off their sweet threads.



Maddie Burgin (WMHS) & **Nicole Drylie '17** (CHS) - **Winners!!** I'm glad our costumes make other people laugh. The only drawback is that I don't know how Nicole and I can top this costume next year!" said Burgin.



The nerds **John Estapa** (SCHS), **Zack Youkhana** (WMHS), **Sam Tracy** (SCHS), **Nick Freschette** (FHS), and **Matt DeSantis** (SHS) share a can of Coke (Nick).

MMSTC Plans Science Themed Chicago Trip!



MMSTC is organizing a first ever multi-day trip to CHICAGO for MMSTC students on April 1st - 3rd of 2015. The itinerary includes the Museum of Science & Industry, the Shedd Aquarium, the Adler Planetarium and Museum of Natural History and the Willie (formerly Sears) Tower! Trip fee includes all transportation, food, lodging and admissions. The trip is being organized by Mrs. Kincaid Dewey with Mr. Scot Acre joining us as a chaperone. About 40 parents & students attended the informational meeting on November 13th. Deadline for sign up is November 28, 2014. (Visit www.worldstridesdiscovernow.org to register using Trip ID #113652. A \$30 deposit is required. Questions? Contact **Mrs. Dewey** at 586-698-4394 EXT 20123.

The Gift You Give Yourself

By: Mrs. Pat Bonnici MMSTC Counselor

Volunteering. At some point we all volunteer for something. Typically, volunteering starts out simply enough: helping a friend with a project, assisting grandparents with household chores, babysitting younger siblings, providing support and manpower for holiday drives to help the less fortunate, and the list goes on and on.

As students prepare for the next big step in their educational journey, completing college applications, they are made keenly aware that “community service” is a vital and crucial piece of the application. In short, colleges expect to see some community service that demonstrates an opportunity to answer the questions about how you spend your leisure time. This information is a snapshot of who you are as a person and how you utilize your talents, efforts, and passions into something meaningful. In short, volunteering, community service, whatever else you may call it, is the donation of yourself to a cause that will benefit another. It is something you choose to do and it provides an avenue for you, as an individual, to make a difference.

But, what about the other side of volunteering; what it does for you, the volunteer? Through volunteering we expand our horizons to experience life in a new and different way. While volunteering enriches and promotes the quality of life for others, it is the volunteer who grows, develops, and builds character through their volunteerism.

A recent survey conducted by TimeBank showed that the benefits of volunteering have a positive impact when you enter the workforce. In essence, the study showed that employers would recruit a candidate with volunteering experience over one without. Add to that that volunteering can add to your set of skills and this can help you get a job and possibly earn a higher wage, and even put you in line for a promotion. Through volunteering whether it be as a high school student, college student, or adult there is a definite, long lasting benefit. Not only do you have experiences working with people who may be very different from yourself and your background, but these experiences can help you network and develop personal and professional relationships that can last a lifetime.

Reaching outside of the world you know develops your interpersonal skills, understanding, acceptance of others, and connects you to others in a unique way. There is also the added bonus of having the satisfaction of a job well done. A common phrase at MMSTC is “using your powers for good”, and volunteering is one of the best ways to have an impact on the lives of others as well as your own.



Did You Know...

MMSTC's online apparel store is now open and ready for business. Order t-shirts, hoodies, hats, bags, even blankets! Check it out! MMSTC items make GREAT holiday gifts!! Go to: http://mmstc.qbstores.com/all_products/all-products.html or use the code to the left. There is also a link on our MMSTC Homepage!

Summer Research at U of D Mercy

By: Haley Le '15 Sterling Heights High School

I heard about Detroit Mercy's Summer High School Research Program from **Mrs. Tallman**, who had been introducing several summer programs to our precalculus class one day. Some of these programs involved going to Berkeley or Washington D.C. for over \$3000; I wanted to pursue academic opportunities over the summer, but I didn't know if I could afford any of their costs. When she talked about UDM's research program for only \$400, I knew that it was a steal right away. I found the application link on Mrs. Tallman's website and printed out the application to apply. The qualifications for applicants were fairly easy: the student needed to be a sophomore or junior at the time of applying with a 3.25

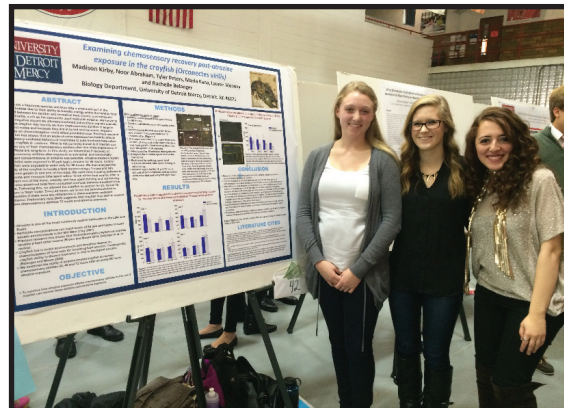
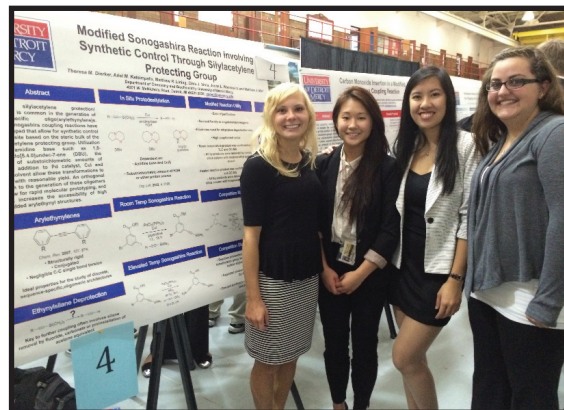
GPA and with 2 or more years of college preparatory science and mathematics courses. As part of the application, I needed to send in a 400-600 word essay describing my motivations for pursuing science research, a letter of recommendation from a science or math teacher, a certified transcript, and standardized test scores.

There were only three high school students in the research program and each student did research on a different topic. I was accepted into the chemistry research program; the other topics were "curing cancer with fruit flies" and neuroscience. To be honest, I was thoroughly confused most of the time during research. Almost all of the UDM's students that I was working with had already taken

organic chemistry at the university, so they had experience in the lab and understood the science behind the processes and results.

As the summer progressed, however, I soon realized that I didn't need to know technical terms or memorize scientific definitions to understand what I was doing. Every Tuesday, the high school students in the research program had a meeting together along with all of their professors and presented what they had done that week. It was clear that none of us had a perfect understanding behind the science of our research, but we were all able to convey in our own words what we believed we were doing.

From this experience, I learned about various labs used to isolate and identify



Haley Le '15 (Sterling Heights HS) and Madison Kirby '15 (Lakeview HS) pose with their college research teams and presentation boards.

compounds, vigorous cleaning methods and strict safety guidelines, and the overall science behind the research: steric contingencies. Apart from the academic experience, I learned to not be afraid to ask questions, and that no matter how young a student is, there isn't

a project too big to handle. By the end of the summer, I made many new friends through my research group, earned a research credit from UDM, and realized that scientific research is something that I definitely do not want to do for the rest of my life.



Senior Research 2014

Want to see **WHAT'S GOING ON** in Senior Research?
Check out **SENIOR RESEARCH BLOGS!**

Feel free to leave suggestions, comments, or simple words of encouragement!

Summertime at the **Oakland University Mathematics Institute**

By: Matt Polgar '16 Sterling Heights High School

Thirty-six students attended the Oakland University Summer Mathematics Institute (OUSMI) last summer, and I was lucky to be among them. After a selective application process, OUSMI gave me the opportunity to take college math courses free of charge, and even gave me college credit for completing them. Over the course of the summer, I ate lunch in the campus cafeteria, met many new people, and attended presentations by esteemed mathematicians like Ronald Graham. It was truly a phenomenal experience.

The courses I took at OUSMI were Number Theory and Linear Algebra, both of which were fascinating and broadened

my mathematical horizons. Linear Algebra has been especially useful to me, as it touched on topics which I am currently learning about in Pre-calculus. Professor Cheng and Professor Lipták gave the lectures (with me in the picture), and the amiable Professor Cheng even provided snacks such as lychee jelly before each of his classes. The environment at OUSMI was immensely positive; professors, counselors, and students were always willing to lend a helping hand.

There's more to OUSMI than the classes, though. As the summer progressed, I developed a deep appreciation for college cafeteria food. The selection was quite extensive, and



Professor Liptak, Matt Polgar '16 (Sterling Heights HS), and Professor Cheng watch final presentations during the closing ceremonies at the Oakland University Summer Mathematics Institute.

the quality was above and beyond anything I'd tasted in a typical school lunch. Between classes, the other students and I discussed our homework and played games to pass the time (Euchre and Hearts were especially popular). Also, some guest speakers came to Oakland and gave presentations on mathematics. Among them was Ronald Graham, who discussed various mathematical problems and the

ways in which computers can and cannot aid in solving them.

The program concluded with a dinner in the Oakland University banquet hall. After the banquet, the other students and I gave short presentations on things we learned over the summer. MMSTC presentation skills are useful everywhere, I learned, as I explained cardinality alongside the other members of my group.

OUSMI

was an amazing and beneficial way to spend my summer. I learned loads about mathematics and its applications, and even got a taste of college life. Best of all, the program is sponsored by an anonymous donor; I was afforded this wonderful opportunity free of charge. I look forward to participating in OUSMI again next year, and I hope to see some familiar faces from MMSTC as well!



Did You Know...

MMSTC's own Mrs. Cybulski and Mrs. Hilliard completed a half-marathon this summer! Great Job Super Women!!



Becoming a Pediatrician

By: **Brooke Hassig '15** Warren Mott High School



Brooke Hassig '15 (Warren Mott HS) holds a pig heart at Wake Forest School of Medicine. Students were not allowed to take pictures with human hearts because of the Hippocratic oath.

This past summer, I attended the Envision Experience: Careers in Medicine program. This medical internship opened up my eyes to a whole new experience.

I was placed in a dorm with six other girls from all over the United States that I did not know. Throughout the week and a half experience, I explored the idea of becoming a doctor.

During this week, we learned the basics of a career in medicine, listened to doctors speak with us on their experiences, watched

a few surgeries, and encountered some hands on experiences.

I stayed at the University of North Carolina at Chapel Hill. I met many experienced doctors and learned many new and exciting things that week. This experience was amazing. We toured Wake Forest School of Medicine where we were allowed to touch and explore human and pig hearts. We learned what to do when a patient (a dummy) was having a heart attack. We learned about the boards exams and MCATS and a little

bit of what college would be like for us.

Most importantly, I learned what I would like to do in my life. That week was the highlight of my summer. I learned so many things and made friendships that will last forever. It was an amazing experience and I recommend that anyone who is interested in the medical field to experience that as well.

That week made my decision to follow through with my dreams of becoming a Pediatrician.

Off the Beaten Path

By: **Joe Setchell** MMSTC Class of 2007

After graduating from MMSTC in 2007, I assumed my career path would follow the route that was "engineered" for me, staying with a heavy math and science curriculum to build off my strengths as a student. Instead I branched out and took an intro Psychology course, and found that people and personali-

ties interested me far more than numbers and mathematical theorems. I stayed the course in the social sciences and earned a B.A. in Psychology, a degree which has allowed me to work as a Mental Health Worker with both adult and adolescent patient populations in an in-patient setting.

My experience

from Butcher doing routine presentations and thinking analytically has greatly aided my work; teaching cognitive coping skills and distress tolerance in an acute care setting requires me to lead a group discussion to a diverse range of intellectual and emotional abilities. I was able to quell my fears of public speaking freshman year in Mrs. Gerling's class, doing a simple, 5 minute PowerPoint on cars.

These experiences of research and

presentation, coupled with the feedback provided by staff and peers, allowed me to grow more confident in my abilities. When I have researched facts and am sure of my stance on a subject I am free to keep my attention in the moment to help those in need, taking complex psychological concepts and simplifying them into analogies or story problems for people to better understand.

As for advice to students, the world needs engineers and

STEM field disciples, just know the skills you have learned are transferable to any field and have enabled you to be better equipped to follow your passions.

If you had asked me in 11th grade what I would have studied in school, I would have replied "Physics." Am I worse off for straying from that path? Absolutely not.

What was YOUR Summer Like?

MMSTC Students Share Summer STEM/Leadership Experiences

Besides re-charging and re-energizing over the summer, MMSTC students often participate in STEM programs and other leadership/educational experiences. From traveling to foreign countries and attending summer sports & music camps to visiting colleges, volunteering in the community and getting a jump on classes, MMSTC students are active and involved all year long! See samples of student endeavors take from our annual Summer Experiences Survey.

Emily Chapman '16 Warren Woods Tower High School

I went on a mission trip with a team from my church youth group to El Salvador. We were there for nine days doing work in communities around the city of El Congo. Our team worked with leaders and youth from our partner church to help rebuild houses for three different families and bought a bunk bed for one of those houses. We were able to meet the families that lived in the homes. My church also works with Compassion, an international child sponsorship program. This program allows families to sponsor children and help them pay for school, medical help, and other needs they may have. While we were in El Salvador, I had the opportunity to meet my family's sponsor child and visit his home and his family. Our group was able to connect on a one day youth retreat, as well as zip lining down through a jungle. This trip was a life-changing experience, and I am so grateful I had the opportunity to go.

Madison Kirby '15 Lakeview High School & Haley Le '15 Sterling Heights High School

We participated in a High School Summer Research Program at the University of Detroit Mercy. We assisted professors at the university in their research with undergrad students. Also, we prepared to present posters of the research at the UDM Research Symposium in October. It was a great opportunity where we got to receive a dual enrollment credit and experience undergrad research a few years early. I would definitely suggest other MMSTC students apply and participate if they plan on doing research in the future and to help with Butcher research!

John Estapa '15 St. Clair High School

I signed up for dual enrollment in the spring of 2014. I then began to take college classes a week before my normal classes and school started. Once school began I took both the MMSTC classes and my Saint Clair classes. Its a rigorous schedule but the outcomes are definitely worth the troubles.

Matt DeSantis '15 Cousino High School

I participated in a program called FrogWatch, which is sponsored by the Association of Zoos and Aquariums. It involves going to a specific site and monitoring the calls of the local amphibians. It is used as an economic indicator to generally infer how the population is doing.

Lindsay Fricano '15 Fraser High School

I went to the Women in Engineering camp at Michigan Tech University. We explored various engineering careers with women professionals and completed many hands on activities.

Sade Lemons '15 Sterling Heights High School

I was involved with the Alpha Kappa Alpha Teens Leadership Organization for a year learning about financial literacy, community service, entrepreneurship, life skills, citizenship building, college readiness, and financial aid and scholarships.

The Research Continues

By: **Michelle Kane** MMSTC Class of 2012

Since graduating from MMSTC and Cousino, I have been pursuing a degree in fisheries and wildlife management at Lake Superior State University (LSSU) in Sault Ste. Marie, Michigan. Last summer, I had a great opportunity to participate in wildlife management by interning as a Piping Plover Monitor. Piping plovers (*Charadrius melodus*) are a species of small, sandy-colored shorebirds. Their existence has been threatened in recent years by loss of habitat due to development of many beach front properties as well as disruption of nesting areas due to increased beach-front usage. There are three populations of piping plovers in the US: the Atlantic Coast plovers, the

Great Plains plovers, and the Great Lake plovers. The Great Lake plover population is so low, that it is a federally endangered species. In 1985 the population dropped to 12 nesting pairs, which almost led to the extinction of this population. Through a large conservation effort (including recovery planning, habitat protection, public education, and research), the Great Lakes population has started to recover. Last summer the population reached 70 nesting pairs. While this is a good start, it is still a long way from the 150 nesting pairs required for their removal from the endangered species list. Last summer, I had the opportunity of being part of the piping



Michelle Kane, MMSTC Class of 2012 graduate helping to save the dwindling Piping plovers along the Great Lakes.

plover conservation effort. During my internship as a Piping Plover Monitor, I was able to work to protect plovers on 18 miles of Lake Superior shoreline, from Whitefish Point to Crisp Point. As part of my work, I had to identify all piping plovers in the area and study them through courtship, nesting, and chick rearing. I was responsible for educating the public about the plovers in the area and protecting the nests from human disruption. I studied 4 nesting pairs this summer which produced 18 eggs.

One of the nests was abandoned because of the predation of one of the parents, so I had to collect the eggs from the nest and get them to a captive rearing station where they were cared for and taught life skills by zookeepers. Twelve chicks hatched from the remaining nests, and four survived until they were capable of flying. I was able to work with the banding team from the University of Minnesota to place a unique color combination of bands on each chick so that they can be monitored in future years.

This work was an amazing experience. I was able to use many of the skills that I learned at MMSTC to protect an endangered species while networking with professionals in my field. I loved the work so much, that I have decided to work with the Great Lake plovers again next summer, and I will be studying the effect of nesting investment of the parents on fledging rate of chicks as my senior research project at LSSU. The research skills that I learned at MMSTC were one of the key factors that qualified me for this position.



Did You Know...

MMSTC's most popular bachelor got hitched this past summer! Mr. Greg McMillan married his love, Lara on a sandy white Lake Michigan beach, with daughter Stephanie, and friends and family in attendance.

Teaching More than Math in **Math Corps**

By: **Lyndsey Reich** MMSTC Class of 2009

For the past two summers, I've had the privilege of serving as an instructor for the Math Corps program at Wayne State.

Each year we teach 240 middle school students (7th, 8th, and 9th graders) and employ another couple hundred high school students as assistants. While training to be an instructor for Math Corps, you're often reminded that the

math curriculum, while taken seriously, is not the only goal of the program.

By spending the summer with students from Detroit Public and charter schools, we have the opportunity to make them feel safe and appreciated and to encourage them to set goals for their education.

Working with these students is as rewarding for me as it is for them. They're

very appreciative of Math Corps, often showing up early to get homework help, sneak a peek at some higher math, or to seek advice about their futures.

The Math Corps environment of respect is contagious, seeping into local high schools through our students as well as into the university through our college student instructors.

Furthermore, the connections I've

made with university faculty through Math Corps have led to a position at Wayne teaching remedial math courses to students who need review of basic concepts, like older students returning to college.

The academic and personal support Math Corps provides to its students also extends to the college students that serve as instructors. Our university faculty

members make themselves available to us during the academic year to encourage another level of mentorship.

While I don't intend to go into education, I'm glad I've taken the time to be a part of this program – it's great to do some career exploring, and I've gained a lot along the way.



Lindsey Reich, MMSTC Class of 2009 graduate helping to educate the youth of the Detroit Area through Math Corps.

20 Year Reunion for MMSTC CLASS OF 1994

By: Mrs. Christine Kincaid Dewey MMSTC

On Sunday 12 October, 2014, members of the Class of 1994 held a reunion at the Sterling Inn. At the time these students graduated, there were six participating high schools – Center Line High School, Cousino High School, Fitzgerald High School, Sterling Heights High School, Warren Mott High School, and Warren Woods Tower High School. When they graduated, each student agreed to do everything possible to make it to a 20-year reunion. Retired MMSTC staff members **Mrs. Carole Gerling** and **Mrs. Darlene Beltz** were able to attend the evening as well.

Twenty-four of the 39 graduates

shared information about their lives post-MMSTC in a booklet produced by **Linda Woo Liang**. Graduates are working in a variety of fields ranging from education, engineering and law to medicine, forensics and computers.

Non-STEM careers are also represented with business entrepreneurs and the arts.

Attendees came from Michigan, Maryland and Massachusetts as well as Illinois, Indiana and California.

Alison (Shaw) Kreft and **Dennis Kreft** met here at MMSTC and later married!

This second graduating class of MMSTC also

contains those who are involved in community organization, who travel for pleasure and to help others, and who are involved in community bands. Many have children – in fact, the twenty-four respondents have a total of 45 children in all!

Graduates also identified memorable moments and the impact of MMSTC on his/her life.

Allison (Schmid) Stefanski: “MMSTC impacted my life because it provided me with a model for excellent teaching and learning. I probably didn’t realize at the time, but I really love math and I try to convey that to my students. I always remember **Mrs. Copeland’s**

enthusiasm and **Mr. Ervin’s** deadpan humor. On a personal level, I treasure the friendships we made and the time spent together.”

Jennifer (Colombo) Buckmaster: “I remember many things about MMSTC like eating Fluffernutter sandwiches and Kathy & I losing our report on the computer and having to start all over again.”

Todd Brzybylo said that “the hands on approach that we learned in high school carried right over to my college work. It’s also shaped me into a strong leader of my team at work by learning to appreciate each individual’s role in the process.”

Kimberly

(Candido) Smith: “The most important thing that MMSTC taught me was how to think through complex problems. Or maybe it is that carrots dehydrate and rehydrate. I still tell people about that experiment and use the information a surprising amount...”

Lisa (Rose) Marinkovic: “I loved going to MMSTC. I think it helped me learn how to think outside the box. I’ve worked for three start-up companies and I believe the independence and creativity I developed while attending MMSTC have helped to make me successful in those ventures.”

Event Organizers:

Sarah (Teachworth) Boehs
Carmen Wah Liang
Prem Mukherjee
Bill Kilpatrick



Class of 1994



BACK: Jason Padyiasek, Dennis Kreft, Michael Zdravkoski, Prem Mukherjee, Adam Novak, Jennifer (Colombo) Buckmaster, Bill Kilpatrick, Carole Gerling (teacher), Darlene Beltz (teacher), Aaron Setlak
FRONT: Kathy (Wagner) Bozek, Alison (Shaw) Kreft, Sarah (Teachworth) Boehs, Leslie (Boisvenu) Zawada, Allison (Schmid) Stefanski, Sean Foradori, Tim Neveau, Kristen (Compton) Gribbin, Carmen Wah Liang

Did You Know...



The Annual Math/Science Conference for Detroit Area Council of Teachers of Mathematics / Metro Detroit Science Teacher Association was held on November 8, 2104 at Woodhaven High School. MMSTC was represented by speakers Mr. Scot Acre, Dr. Catherine Neuhoﬀ, Mrs. Jamie Hilliard and Mrs. Rose Cybulski. Mrs. Christine Kincaid Dewey was a member of the Conference Planning Committee as well.

From the Director

Catherine Neuhoﬀ, Ph.D.
Director of Programs

Greetings!

As you can see by the depth and breadth of our newsletter, MMSTC students and staff have been particularly busy this year. It has been my pleasure to visit their classrooms daily observing the good work both do each day on behalf of our students.

When students are not busy interacting with one another in classrooms, they are engaged in field trips, small study groups, special projects, and organized social activities. Students continue to enjoy touring Wayne State, University of Michigan and Michigan State meeting up with alumni; new field trips so far include the University of Detroit, the Intelligent Transportation Field trip, STEM EXPO, and a

Chicago Trip!

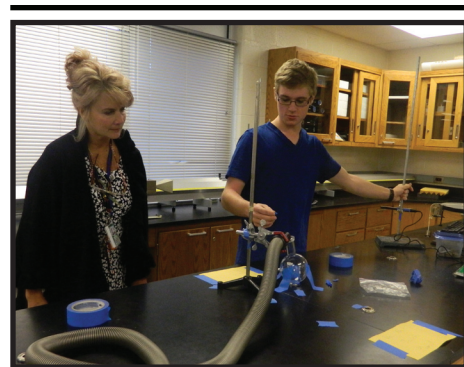
Staff and students are enjoying the expansion of special project adventures like the electric car through Square One, the US Army National Stem League small car competitions, the Verizon App Challenge, the NAC Challenge, Senior Research Blogs, and the Ecology Club Activities.

Established community building activities continue like Freshmen Homecoming, Sophomore Camp, and the Halloween Party; new this year was the MMSTC Haunted House. Juniors and Mr. Supal assembled for neighbors and our middle school students at Butcher. The Haunted House became a great venue for our juniors to interact with our younger students and the community.

Our newsletter activities and articles really capture what sets MMSTC apart: students and staff working

together to develop a family environment framed around an academically challenging program committed to empowering our students to do great things for themselves, their families, and the broader community.

Sending wishes to all of our readers for a joyful holiday season.



Ryan Goekhe '15 (Sterling Heights High School) explains his physics research project on wind resonance to **Dr. Neuhoﬀ**.

MACOMB MATHEMATICS SCIENCE TECHNOLOGY CENTER

27500 Cosgrove | Warren, Michigan 48092 | www.wcskids.net/mmstc

Dr. Catherine Neuhoﬀ, Dir. of Special Programs
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MMSTC students and staff
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Kimberly Gravel Muma
Printing and Distribution: Secretarial Staff
& Mr. Bill Shreeve- Administration Building



MMSTC MISSION STATEMENT

The mission of the Macomb Mathematics Science Technology Center, in partnership with families and community, is to create the best innovative environment which fosters excellence and vision in teaching, learning, and discovering the relationships of mathematics, science, technology, and society.

WARREN CONSOLIDATED SCHOOLS

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A focus on measurable student achievement in our Professional Learning Communities.

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Clear expectations for every stakeholder, including students, staff and parents.

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Strong relationships among all stakeholders, including: teacher-student, parent-teacher, principal-teacher, and superintendent-board member.

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