



△ Center Line △ Clintondale △ Fraser  
Cousino △ Fitzgerald △ Lake Shore △ Lakeview  
**The CENTER PAGE**  
△ Lakeview △ South Lake △ St. Clair △ Warren  
Mott △ Sterling Heights △ Warren Woods △

Volume IX No. 1

Macomb Mathematics Science Technology Center

2012-2013

## Class of 2013: MMSTC Science Symposium

On Friday, January 25<sup>th</sup> 2013, senior research projects came to an end with the annual MMSTC Science Symposium. The seniors presented their research and answered questions for industry professionals, engineers and university professors. A winner was chosen in each subject area and an overall winner was chosen from the subject winners. The symposium represented the culmination of four years learning and hard work for the students. Although this event closes a chapter in the senior MMSTC experience it is our hope that these amazing students will be able to look back on this time in their academic career and utilize these skills throughout their lives. We would like thank all of our symposium judges for taking time out of their lives to enrich our program with their knowledge and experience as well as to celebrate the accomplishments of our outstanding senior class.

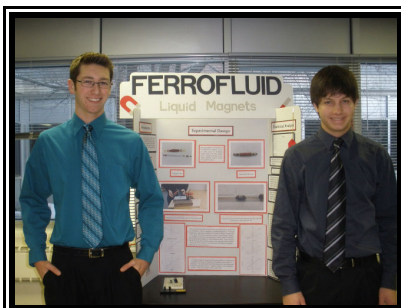
**\*First Place: Chemistry**  
**Mary Whitney** *Fraser HS*  
**Marla Nazee** *SHHS*

**First Place: Physics**  
**Brent Zablocki** *Fraser HS*  
**Shane Schulte** *Fraser HS*

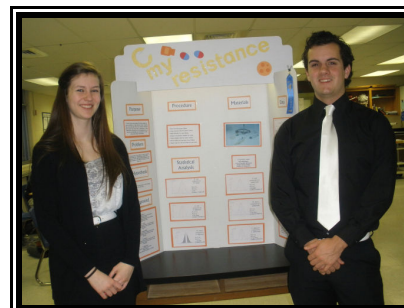
**First Place: Biology**  
**Alex Mahler** *Lakeview HS*  
**Maryia Duffy** *WWT HS*



Using a Small Scale Biodigester to Measure and Compare Methane Gas Production from Cow, Goat, and Sheep Dung



The Effect of Coefficient of Friction, Angle of Elevation, and Frequency of Oscillation on the DC Voltage Output of a Ferrofluid-Enhanced Generator



The Resistance of E-Coli to Vitamin C

**\*GRAND CHAMPIONS\***



## MMSTC Students Enter 56<sup>th</sup> Annual Science and Engineering Fair of Metro Detroit

Under the guidance of **Mrs. Hilliard**, ten student teams have entered their senior projects in this Fair to be held in March. Projects range from radiation emissions from cell phones to golf. For the first time, students will be competing in their individual science categories, instead of an overall team category. Good luck!

## Symposium Winning Project Descriptions:

“Using a Small Scale Biodigester to Measure and Compare Methane Gas Production from Cow, Goat, and Sheep Dung”

**Mary Whitney Fraser HS & Marla Nazee SHHS**

The purpose of the experiment was to determine what type of farm animal dung – cow, goat, or sheep – would emit the most methane gas to be used as an alternative fuel source for financially weak regions. A manometer was constructed to measure the displacement of water by methane gas that was emitted from slurry made of animal dung and tap water. Both an ANOVA test and descriptive statistics were used to analyze the data. The animal dung that emitted the most methane gas was the goat followed by the sheep, and lastly the cow.

“The Effect of Coefficient of Friction, Angle of Elevation, and Frequency of Oscillation on the DC Voltage Output of a Ferrofluid-Enhanced Generator”

**Brent Zablocki Fraser HS & Shane Schulte Fraser HS**

Using neodymium magnets, copper wire, and a tube electricity was generated in the wire when the magnets move through the coils. Several factors were instated (the coefficient of friction, angle of elevation, and frequency) to see how this setup could be optimized. A 3 factor Design of Experiment (DOE) was performed, and it was determined that every factor but the interaction between coefficient of friction and frequency was significant.

“The Resistance of E-Coli to Vitamin C”

**Alex Mahler Lakeview HS & Maryia Duffy WWT HS**

The goal of this experiment was to determine which one of various bacteria would become resistant to Vitamin C in the shortest period of time. Being compared were the number days it took for the bacteria to grow back to their original size. The experiment resulted in Escherichia coli being the species with the longest period of resistance with Staphylococcus epidermidis following closely. Micrococcus luteus displayed no growth difference, on average, while Penicillium digitatum showed increased growth rates with the application.

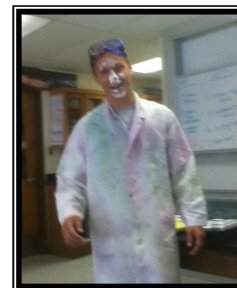


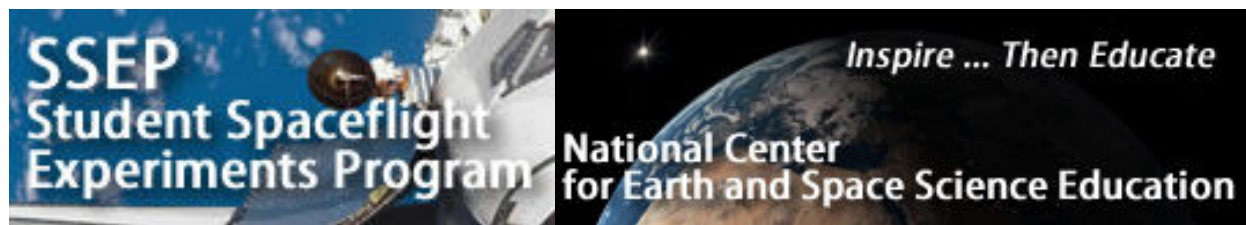
Alumna **Carrie Zechmeister**, MMSTC Class of 2004, spoke to the seniors about Pharmacy. She gave an excellent presentation, focusing on how MMSTC prepared her for the rigors of university studies, and how research skills and statistics learned at MMSTC continues to be applied in her career field. As students were finishing their senior research projects, writing essays, applying to colleges, and so on in the fall, it was helpful for them to hear from a former student that all their hard work will pay off!



## CHEMISTRY SAFETY 101!

A big thank you to the brave students who volunteered to demonstrate how effective safety goggles can be in the chemistry laboratory. Can you guess who these students are?





## Student Experiment to Fly on International Space Station

This spring MMSTC students will compete for a chance to fly an experiment on the International Space Station. One MMSTC experiment will be among the 11 selected nationally for astronauts to conduct next fall. The **Student Spaceflight Experiments Program (SSEP)** is spearheaded by the **National Center for Earth and Space Science Education (NCSSE)**, a non-profit organization that inspires the next generation of scientists and engineers through activities that foster students' curiosity and encourages scientific exploration. MMSTC's participation in this project is being funded through generous donations made by **The Chrysler Foundation** (\$17,500), **DTE Energy Foundation** (\$3,000), and **Beaumont Health System** (\$2,000). Without their support, this exciting opportunity would not be possible.

*"We believe that learners must see themselves in the stories we tell, and experience scientific exploration through their own involvement."* In keeping with this core belief of NCSSE, student teams will write proposals to fly an experiment in low Earth orbit in a real research mini-laboratory reserved just for MMSTC. This experimental payload will consist of the next generation mini-laboratory, the **NanoRacks** Fluids Mixing Enclosure (FME) II. In addition, there will be a mission patch design competition that will not only involve all students at Butcher but students in our feeder middle schools as well. The winning mission patch design will fly with the experiment on the International Space Station.

Just like professional scientists, student teams' experimental designs must consider the constraints posed by the apparatus, the microgravity environmental conditions, and current research in their chosen topic. Students will hone their communication skills in the formal proposal process and will also go through a two set proposal review process and a flight safety review – just like last school year's Convection Current experiment for the MicroGX Experience in which all MMSTC students participated – but on an individual project level.

**Mr. Supal** lead the application process and is Director of this program for MMST with **Mrs. Kincaid Dewey** acting as Assistant Director.

The SSEP (<http://ssep.ncesse.org>) is undertaken by the National Center for Earth and Space Science Education (NCSSE; <http://ncesse.org>) in partnership with Nanoracks, LLC. This on-orbit educational research opportunity is enabled through NanoRacks, LLC, which is working in partnership with NASA under a Space Act Agreement as part of the utilization of the International Space Station as a National Laboratory.



## Senior Capture The Flag



This event came about eight years ago as a way to lighten the stress of the ongoing senior research projects. Not only that, but this school year is the first time that the morning and afternoon members of the Class of 2013 have been together in the classroom, so the goal was to help seniors get to know their classmates. Under the guidance of senior council members **Mary Whitney** (Fraser), **Matt Forsgren** (Southlake) and **Sarah Meyers** (Sterling) the teams were divided into the BLUE team and the RED team.

On the sunny morning of September 27<sup>th</sup>, classes were dismissed halfway into the day. After group photos, both teams were given their colored flags to hide around Butcher Park. The game was a success! Everyone participated and the thought of pressing homework disappeared...at least for a little while. The red team had high hopes placed upon **Henry Kernen** (Fraser), unfortunately he was attacked by a squirrel and thus was left debilitated. This opened the door for the blue team. Due to a combination of superior strategizing and **Drew Martin's** (Sterling) ninja-like approach to game, the blue team captured two flags and shutout their opponent! For the after party, students brought in a plethora of snacks and goodies. The hit was a breakfast burrito! Everyone wanted the game to last longer, and in a way, it always will. Just ask **Austin Serraiocco** (Cousino).

### Freshmen Visit Wayne State University



On a beautiful October day, seventy-two freshmen had the opportunity to experience Wayne State University. The day began with a visit to the area of campus which houses medical programs. There, students attended presentations on the use of Radiology in identifying and diagnosing conditions and illnesses in patients and the role of Physical and Occupational Therapists in assisting individuals in developing or regaining skills that lead to a better quality of life.

Following these presentations, the students visited the Engineering building where they were able to tour a bio-medical research lab and viewed a demonstration on how robotic technology is used during surgery. They learned how engineering concepts can be applied to create and develop devices that replace or enhance parts of the body that have been affected by injury or loss of function. Of special note, students learned that a former MMSTC student is currently a research assistant in this lab and is working on a project that may lead to innovative technology.

A beautiful day made for an enjoyable walk through campus and along the way a quick trip through one of the libraries. One of the highlights of the walk was an opportunity to view one of the fitness centers and newer high rise dorms.

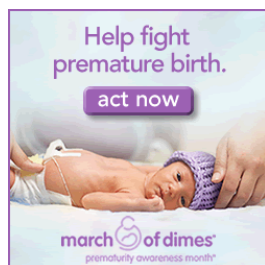
A quick lunch at the Student Center was followed by a panel discussion of former MMSTC students who attend WSU. The Freshmen asked insightful questions and were pleased to hear that the former students felt well-prepared for the rigors of a college curriculum. Regardless of their college major or future career plans, all students stated that they believed their preparation at MMSTC had made a significant impact on their college experience. Additionally, every former MMSTC student on the panel is attending WSU on a scholarship. Keep those grades up Freshmen!

## SOPHOMORE CAMP WITH THE CLASS OF 2015!



There are many rites of passage at MMSTC. Eating lunch on a moving bus, becoming emotionally invested with a thirty page research paper, and Aluminum Foil Deflector Bean Day, just to name a few. This past fall, the sophomore class experienced yet another MMSTC rite of passage, Sophomore

Camp. Sophomore camp is an all-day activity that includes team building and self-exploration activities and lots of fun. **Mrs. Kincaid Dewey** lead the students in team building activities where they practiced listening skills, demonstrated leadership abilities, and learned about working as a team to accomplish one goal. **Mrs. Cybulski** gave students an opportunity to explore and even discover their own academic strengths and weaknesses. **Mrs. Hilliard** introduced students to the chemistry, and mess of tie dying. This amazing experience culminates with the traditional march to the local bowling alley where students learn about the physics of a bowling ball. At the end of the day students have learned perhaps the most important rite of passage, how to be a part of the MMSTC Family. See more pictures on page \_\_ of the newsletter!



### SENIORS WALK TO HELP FIGHT PREMATURE BIRTH:

MMSTC Seniors will be walking in the March of Dimes March for Babies on April 28<sup>th</sup> at Metro Beach. Please Scan the QR code for details on how to donate, or join our team.



## Freshmen Seek to Solve Real Community Issues VIA National Competition

MMSTC ninth graders participated in web based challenge called eCYBERMISSION offered by the Army Educational Outreach Program (AEOP). The U.S. Army is committed to answering the nation's need for increased literacy in Science, Technology, Engineering and Mathematics (STEM) through contests which encourage student research such as eCYBERMISSION. Expanding STEM education opportunities across the country will not only improve our global competitiveness and national security; it will open doors to new career paths for American students that lead to a brighter tomorrow.

During second quarter IDS classes, freshmen teamed up in groups of three to complete a research project aimed at solving real problems in their community. Teams were required to select from topics such as alternative energy, health, and national security. The ninth grade teams are competing with other teams from around the country to win prizes on the order of thousands of dollars. Regional winners will be announced in late April and National winners will be announced in late June.



**COUNSELOR'S CORNER – Mrs. Pat Bonnici****How do I Find the Time?**

Rarely, do we have too much. For most of us there is too little, and what we do have goes too quickly, and sometimes we even run out of it. You may think it is money, but it isn't. What if we all have an equal allotment; the same amount for everybody? No one person gets less or more, we are all given the same amount, but how we spend it differs greatly. If it's not money, what is it? This commodity is time.

Twenty-four hours in a day is all that anyone can have. Yet, for most of us it is never enough. Balancing the demands of two high schools, participating in sports and extra-curricular activities, and possibly the addition of a part-time job into the weekly schedule, can wreak havoc on any student's time management.

We all know people who seem to have plenty of time to get everything done, never stress about deadlines, and seem to take assignments and projects in stride. For many of us however, there is the last minute rush, the frantic time crunch to get it all done in the waning hours before it is due. We promise that it will never happen again, but unless we change what we do, in most cases, we will repeat this cycle.

How can the last minute rush be avoided? Planning! One of the biggest deterrents to getting things done easily and with time to spare is that there is actually too much time allotted until the due date. Distant deadlines and procrastination are perfect partners. It's easy to take care of the day to day demands on our time and talents. Homework gets done routinely; band practice is never missed, you show up for your job on time because there is an immediate and profound impact of these daily routines and expectations are not met. But what about the project that's due three weeks from Tuesday? Chances are because it is not due immediately, it will not get immediate attention, and so, it gets postponed and pre-empted by the things that cannot wait. So what do we do to keep the big projects and assignments from overwhelming us at the last minute? The answer is ORGANIZATION and here are some suggestions for meeting stress-free deadlines:

1. **Create a Timeline** – Start a calendar for the project or assignment. Plan to do something every day, even for a short time.
2. **Get Motivated** - Sometimes getting started is the most difficult task. Start off simple, even assembling materials needed and writing a list of what you will need to complete the project or assignment is productive.
3. **Consider Moving Up the Deadline** – If the project or assignment is due, for example, on March 20<sup>th</sup>, make your deadline for completion March 13<sup>th</sup>. This avoids last minute rushing and the problems that can cause.
4. **Plan for the Unexpected** – Life happens! You may have a family emergency, illness, unexpected homework in another class. Give your timeline enough flexibility to allow for these realities of life.
5. **Make-up Time** - If the unexpected happens and you find you are getting behind, add additional time to your timeline schedule. Even an extra 15-20 minutes per day, can make a difference. Keep adding time until you are back on track.
6. **Check-up. Check-up, Check-up** – Keep your timeline where you can see it and check your progress frequently. This will help to reduce last minute stress and assure that you are submitting your best work.



## Mars Rover Experience

This year two MMSTC teams made it to the finals of the Michigan Mars Rover Design Competition. A junior team made up of **Timothy Jones, Jacob Archie, Evan Gonzales, and Kristen Lidwell** (SHHS), took home fourth place in their first year of competition and a senior team of **Sarah Myers, Marla Nazee, and Gretchen Grade** (SHHS) took home first place, which included a team cash prize of \$600. Congratulations! The following was written by the senior team:

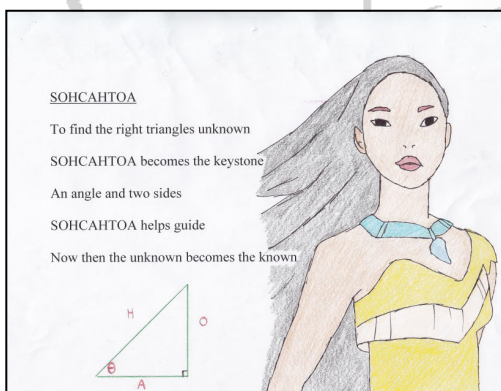


“Through the University of Michigan Mars Rover Design Competition, we have had to challenge ourselves in unfamiliar topics, such as space exploration and robotic engineering. Each year, we received a different task to accomplish, such as creating a base station or a rover. Using our research skills, we put together a well-thought out paper and then presented our ideas to the judges, the University of Michigan Mars Rover Team. The panel of judges was composed of aerospace and engineering students. Throughout the three years of competition, we were able to work our way to the top, receiving third place our first year, second place our second year, and first place our third year! The research and presentation skills that we acquired from attending MMSTC were one of the main reasons that we were top contenders for prizes each year. We received many comments on how impressed the judges were with our presentation skills. We urge all MMSTC students who have an interest in engineering or space research to take part in this competition, as MMSTC is always held as one of the best competitors. As seniors, we believe that this experience prepared us for college because we became more confident presenters. We want to thank **Mrs. Kincaid Dewey** and **Mr. Supal** for being helpful and encouraging these past three years and encourage the other MMSTC students and teams to continue challenging themselves through this competition.”

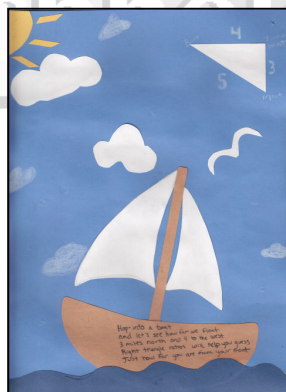


## Mathematical Limericks? You Bet!

Students in **Mrs. Kincaid Dewey's** Sophomore FST class composed mathematical limericks on a variety of topics including trigonometry, parent functions, and other fun topics ☺. Limericks were displayed for all to see and students voted on ones they liked best. Here they are:



**Emily Lui** (Clintondale)



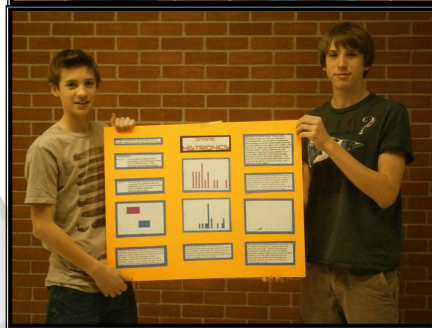
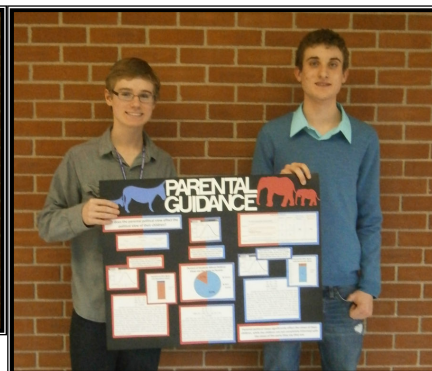
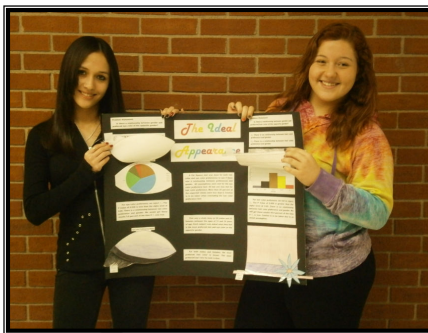
**Kelly Rayner** (LSHS)

First take the sine of just pi  
Then the cosine of two pi  
The first will be none  
Subtract your found one  
Then half pi's sine will drop by.  
--- **Marcus Grayvold** (SHHS)

The age of Mr. Acre  
Plus the dozen of a baker --  
The number you'll see  
Is quite fifty-three,  
The normal age of a Quaker.  
----**Alex Henry** (Mott HS)

## Have You Ever Wondered --- Data Collection and Statistical Analysis

Have you ever wondered what color hair or eyes the opposite gender prefers? If your parents political views influence your own? Or if certain personality disorders affect one gender more than another? The tenth grade students here at MMSTC asked these questions and were given the opportunity to work with a friend to go out and find the answers!



These students created surveys, collected and tallied responses analyzed their data to find if their results were statistically significant and then displayed their analysis and results on a poster. Not only did they find answers to their questions, but they may also be able win monetary prizes. How so? Well, soon their posters will be entered into a statewide competition hosted by Grand Valley State University and the ASA (American Statistical Association) – **The Michigan Statistics Poster Competition**. Statistics professors and graduate students from GVSU along with other statisticians will judge the posters on their statistical merit with winners notified in May. I wish all of our tenth grade teams good luck, as they have all worked very hard on this project. ---Mrs. Cybulski

Pictured: **Desiree Boyd, Christina Wark** (LSHS), **Ryan Gohlke** (SHHS), **Ryan Caligure** (Mott HS), **John Estapa** and **Sam Tracy** (St. Clair HS)

## MMSTC's Ecology Club

This school year **Nick Higgins, Dylan Twardy, Erin Drylie, Noah Conner, Trevor Polisuk-Balfour** (Cousino HS), **Ann Krause, Maria Gallo, Kalie Tomlinson** (SHHS), **Liz Diviney, Emily Vo and Kelsey Giffin** (Mott HS) make up MMSTC's Envirothon Team...or should we say Teams? This year we have two teams participating in the Michigan Envirothon Competition – the returning Green Turtles and the brand new Bio-Degradable Hamsters!



The Envirothon Team is an ecology club that is working to make MMSTC a more efficient and environmentally friendly school. The team is currently preparing for the Envirothon Competition (a test of environmental knowledge held by the Canon Envirothon Organization). To increase the community involvement in nature, the team is also working on a bat house project for local parks. To prepare for the regional competition, members of the team visited the Sterling Heights Nature Center the Saturday after mid-term exams. Team members on the field trip are pictured above.



## Welcome to the MMSTC Family!!

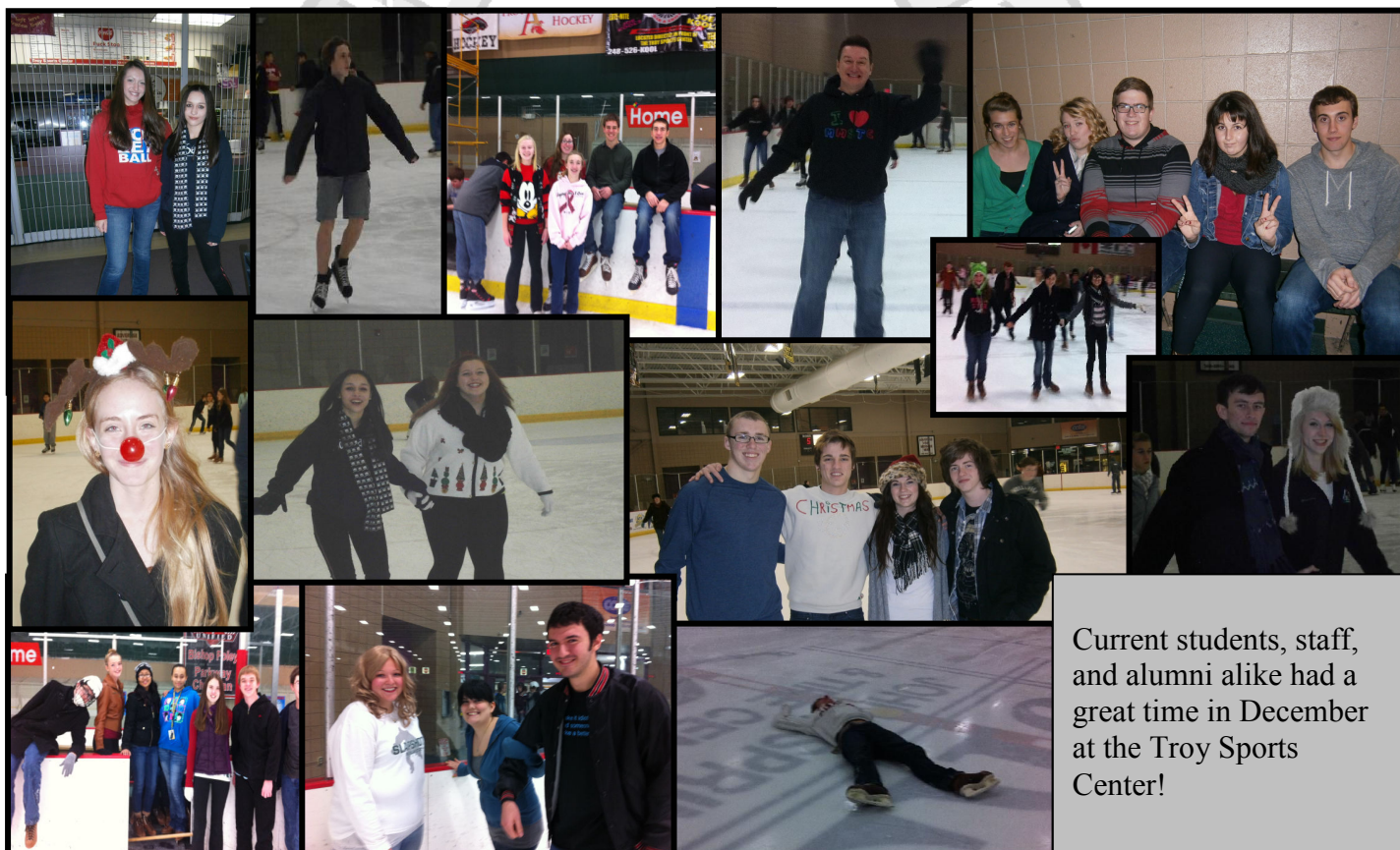
Have you seen her? The bundle of energy with long flowing hair, an irremovable smile, and the hip Chicos wardrobe? She is **Mrs. Patricia Bonnici**, our new guidance counselor extraordinaire!



Mrs. Bonnici comes to MMSTC from Carter Middle School with a wealth of experience and knowledge. She earned her bachelor's degree from Northern Michigan University and her two masters' degrees from Oakland University. She decided to come to the center as she valued the high standards and goals set forth by staff and students. Thus far she has been impressed by the caliber of students. After watching research presentations, she has been amazed at what MMSTC students are capable of. She attributes this product to her fellow colleagues. "I have so much respect for the dedication of the MMSTC staff. They go above and beyond the call of duty."

Mrs. Bonnici grew up in Birmingham, Michigan with her sister Barbara. She has three magnificent children (Kelly, Katie, and C.J.) whom she adores! Growing up Pat was drawn towards helping others. In high school, Sister Marie Chantal was influential in "guiding" her towards her career path. Mrs. Bonnici feels fortunate to have a career that she loves. Her goal is to help students achieve beyond their own expectations. Welcome to the family!!!

## ICE SKATING 2012



Current students, staff, and alumni alike had a great time in December at the Troy Sports Center!

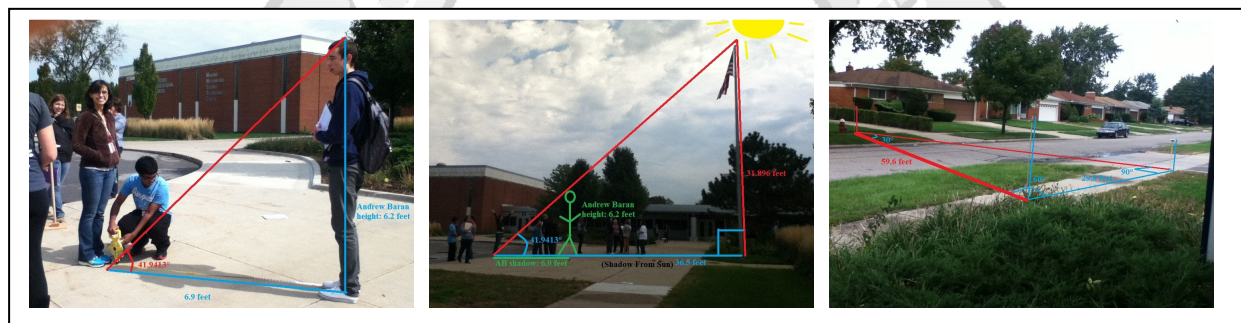
## JUNIOR UPDATE:

First semester for the juniors was loaded with lots of learning opportunities. From vectors in Physics to vectors in Math.....



On November 9, the junior class took their annual field trip to the University of Michigan. It was a long way getting there, as construction and a wrong turn led to a long detour. Luckily **Jessa Webber** (Cousino) navigated us there with the GPS on her phone. Good thing for technology! The day began with a lecture on energy from the legendary physics Professor Greg Tarle. Ask **Alex Wielbinski** (LSHS) how difficult it is to power a light bulb by pedaling a bicycle! The A.M. class won all the door prizes. What is the probability of that happening?! Then there was a tour of the campus and a lunchtime panel discussion from a number of MMSTC alumni, studying various fields. Finally, there was a presentation of the various Learning Communities and a tour of some dorms. It is always a great field trip as juniors start thinking about college plans in their near future.

As part of our never-ending quest to look at real-world applications of mathematics, the Juniors went outside on a glorious fall day to apply vectors in a variety of ways. They practiced using a transom and orienting themselves using bearings. They measured the height of the flagpole (using **Andrew Baran**, (Mott HS) as a convenient reference measurement!) and measured distances indirectly using clever application of trigonometry. They were also tasked with finding the circumference of Earth. If Erathosthenes could do it in 240 B.C., certainly our talented MMSTC students, armed with Google Maps, GPS, and TI-nSpires, can figure out a way to do it!

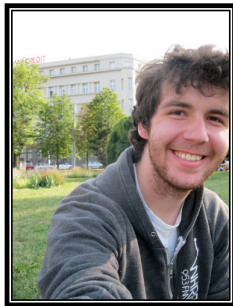


## HALLOWEEN FUN!

This fall, MMSTC's annual Halloween party was the place to be. Many students from all four grades showed up wearing their best costumes. There were Pokemon trainers, rabbits, hippies, and much more. A costume contest took place to judge the best of these costumes and a limbo contest judged who was the most flexible. Many games took place like musical chairs, Just Dance and a ball pass game. A special thanks to the Senior Council and volunteers for making this enjoyable party a success!





**MMSTC Alumni Updates****Christopher Hopper (MMSTC 2009)**

*Last summer I collected data for my undergraduate thesis in Linguistics at **Harvard College**. I was in the Czech Republic for eight weeks performing interviews all over the country. Not only did my Czech language skills get a work out, but I discovered that field research can be trying sometimes. I was curious to find out about what strides, if any, that the Czech Republic had made in the Roma Education sector since independence of the Czech Republic in 1992. Roma education is important to me because I am a Czech Roma myself. My great-grandmother immigrated to North America before WWI.*

*Roma (also called Gypsies or Romani) are one of the biggest minority ethnic groups in Eastern Europe. Roma have faced discrimination for hundreds of years. The biggest factors that have worked against the Roma effort to integrate into the majority society involve isolated housing localities, educational disparity, and the discouragement of use of the Romani language in schooling.*

*My thesis specifically addresses the issue of education as an equalizer in Czech society. I found three effective ways to address this issue in Czech Society: (1) integrate the mainstream and special schools in order to provide ample opportunities for the interaction of Roma and white Czechs; (2) offer Romani language and culture classes to all Czechs, specifically areas where high Roma populations live; and (3) provide access to preparatory years before primary school for language acquisition.*

*MMSTC prepared me to do my deep digging into this subject. Quite often, I had to consult many different sources and cross-reference them because the topic of Roma education is very disjointed and obscure. However, I found that with perseverance and focus I could draw sensible, reasonable conclusions supported by the myriad data that exists, though hard to find. I thank MMSTC for instilling in me the discipline and drive to seek out answers and not give up!*

**Sean Simpson (MMSTC 2003)**

AutoBike, Inc. is designing and producing an automatic shifting bicycle that delivers the simplest, smoothest, most comfortable riding experience ever. One of AutoBike's co-founders is Sean Simpson, a 2003 graduate of MMSTC and Cousino High School in Warren, Michigan.

MMSTC's advanced coursework helped Sean receive an academic full-ride to Lawrence Technological University and also allowed him to graduate early because of college credits earned while at MMSTC. By skipping some of the general "weeder" classes, Sean was able to immediately start taking classes that will have had a meaningful impact on his post-college career. Sean also credits MMSTC for getting him to take school seriously and prepare for the "real world" that arrives way sooner than a typical high school student imagines.

Pictured: Sean Simpson with co-founder Kevin Smith at a trade show.



(MMSTC Newsletters are electronically distributed to Alumni. The editor is always looking for alumni updates or articles from alumni about relevant topics for current students.)



**Kristin (King) Holland (MMSTC 2005)**

I majored in Mechanical Engineering at the **University of Michigan**, graduating with honors in 2009. I used the research skills I learned at MMSTC and applied them to a paid research position my freshman year. I had an internship with Chrysler and another with Michigan Automotive Compressor Inc. during my summers, and also ended up getting paid to do some tutoring my senior year. I absolutely loved U of M and would recommend it to any graduating seniors, especially on the engineering route.

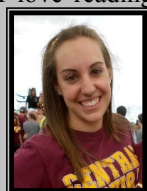


I was truly blessed and ended up with a generous job offer by November of my senior year. I moved to Pittsburgh, PA to work for Westinghouse Electric Company as a Mechanical Engineer in the Nuclear Piping and Supports group. Since my move, I've passed my fundamentals of engineering exam, bought a house, and got married! Recently, however, I have taken a job with Chrysler and am back in the Warren area.

My time at MMSTC really set me up to be successful in college and in my first job. The good habits learned in high school: the willingness to learn, to try new things, and to work hard become very beneficial as you enter the real world.

**Alyssa Brown (MMSTC 2010)**

Now in my junior year at **Central Michigan University**, I am majoring in Communication Disorders with a minor in Child Development in order to become a Speech Pathologist. I have begun my Honors research project. I have come to appreciate MMSTC more than ever! It was such a great experience. All of the friends I made there are more like family, and I still to keep in touch with them! Going to Butcher was such a blessing and I am so grateful for the experience. I love reading the updates in the newsletters. Hearing what other alums are doing makes me even more excited for my future to come!

**Nick Murphy (MMSTC 1999)**

Nick graduated from the University of Michigan in Ann Arbor in 2003 with majors in physics, astronomy, and mathematics. He then went to graduate school at the University of Wisconsin in Madison. After finishing his Ph.D. in astronomy in 2009, he moved to the Boston area to work as a solar physicist at the Harvard-Smithsonian Center for Astrophysics. His research is primarily on solar flares and coronal mass ejections, with a broader interest in plasma astrophysics. The physical processes he studies are also very relevant for magnetically confined laboratory plasmas such as tokamaks. However, being an astronomer is only his day job. He also enjoys vegan cooking, reading feminist science fiction, and telling puns bad enough to endanger the very fabric of space-time!

**THANK YOU 2013 SENIOR SCIENCE SYMPOSIUM JUDGES!**

Judges included industry & education professionals among whose ranks MMSTC Alumni proudly stand!

**Dr. Drew B. Buchanan**, Director: Office of Research & Sponsored Programs

**Mr. Byron Hotchkiss**, Attorney IBM, MMSTC Class of 2002

**Mr. Nathan Hughes**, Founder of Detroit Labs, MMSTC Class of 1993

**Mr. Mike Klein**, Macomb Intermediate Schools Curriculum Director,

**Ms. Reana Kyprianides**, Behavioral Therapist, Henry Ford Health System & Macomb County Community Mental Health, MMSTC Class of 2003

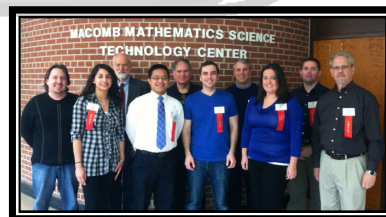
**Dr. Andy Mance**, GM Research Labs

**Mr. Nghiem Nguyen**, Mathematics Teacher Everest Collegiate High School, MMSTC Class of 2001

**Dr. Daniel Rosenvasser**, Commercial Manager, Huntsman

**Mrs. Kim (Roers) Soderstrom**, Clinical Director of Education Prezio Health, MMSTC Class of 1997

**Dr. Martin Sulic**, Research Scientist General Motors R&D



## FRESHMEN HOMECOMING 2012

The 2012 freshmen homecoming complete with a football game, cheerleaders and marching band was held in October to the delight of the entire ninth grade and tenth grade morning classes.

**Brent Bulgarelli** (Fitzgerald) morning freshmen football star found it hard to fend off the attacking tenth grade team. As quarterback Bulgarelli was swarmed by the attacking tenth grade rush. Completing only three passes in the tenth grade route 35-0. **Jack Banick** morning freshmen football captain said after the game, "Our team struggled to fend off the more powerful and better prepared tenth grade team".

The freshmen stilled scared from the series of plays that lead to the defeat are looking to revenge their loss in the 2013 homecoming set for this fall.

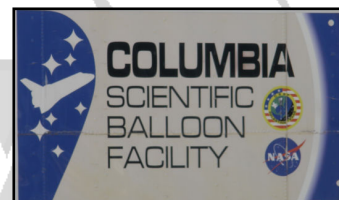


The afternoon classes at the MMSTC produced our first freshmen championship team of the day when the Gatnam Style players took on the Pirates. In a back and forth match up the Pirates pulled it out with only seconds remaining on the clock to seal their victory. **Katlyn Johns** Lakeview student and cheer leading captain said the game was "pure excitement from beginning to end". With a guest appearances by the MMSTC Marching Machine and hotdogs prepared on the

BBQ grill the festivities keep the freshmen fired up until the very last snap of the football game. Special thanks go out to all the parents and students for making this a special event!

### Follow up: WBEE (Wallops Balloon Experience for Educators)

Three MMSTC teachers participated in a NASA program called the Wallops Balloon Experience for Education (WBEE) in July 2012 at the Columbia Scientific Balloon Facility in Palestine, TX. Physics teacher **Mr. McMillan**, FST teacher **Mrs. Kincaid Dewey**, and **Mrs. Duddles** (now teaching science/ELA at Beer Middle School) traveled to Palestine, Texas. They worked with other participants to build,



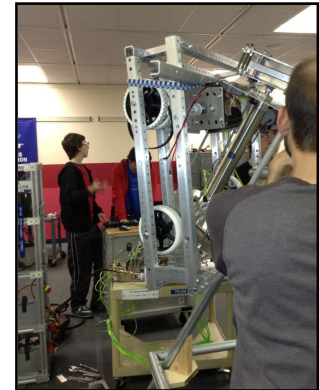
launch, retrieve and analyze data from a high altitude balloon payload that measured pressure, temperature and altitude. Balloons can help NASA inspire and train the next generation of engineers and scientists. WBEE was based on a undergraduate college program called High Altitude Student Project (HASP) which has flown 44 payloads involving more than 200 undergraduate students from across the United States. Both Mr. McMillan and Mrs. Kincaid Dewey have incorporated what their learned into their respective curriculums. FST students interpreted raw data about pressure and altitude to create and justify a mathematical model based on functions they studied in class.

## Fighting Armadillos – Ready to Rumble!

### MMSTC Students Integral Part of WCS FIRST Robotics Team 818

Emma Burgin (Mott HS)

As build season comes to a close and competitions rapidly approach, Warren Con's FIRST Robotics Team 818 is busily preparing for this year's task. MMSTC is well represented in this year's team with one senior, five juniors, two sophomores, and six freshmen on board! [Pictured: **Matthew Polgar** and **Julius Caesar Estrope** (SHHS)] Each year, the competitions are based around a different type of game. This time, the game is the Ultimate Ascent.



Ultimate Ascent is a game based on ultimate Frisbee. The main challenge is to aim discs into variously sized and shaped openings in the wall which gain various amounts of points. The winner would be the team that wins the greatest amount of points.

That is not the only task at hand, however; another challenge is to get a robot to climb up a steel pyramid and suspend itself there. Doing so would achieve several bonus points, depending on which level the robot stayed in. Hanging in Level 3, the highest level, would get the team 30 bonus points and a huge leg up on the opposing team.

The past has taught the team that attempting to build a robot to complete every task doesn't get us very far. This year's motto for building was "keep it simple," and in order to do this it was decided to only do one task. The team chose to build a robot that would climb up the pyramid to gain our alliance the 30 bonus points.

To do this, we would need to build a lightweight robot that can climb the steel poles with ease. The subgroups set to work designing different models that would accomplish this task. After several long days of planning and talking things over, we came to the conclusion that we would use a system of hydraulic claws to climb the pyramid.

The electronics and programming subgroups played huge roles in making this design come to life. In just a few short weeks, a fully-programmed and running prototype was able to climb our model pyramid. After ironing out some of the larger problems, the robot was ready to be bagged for competition. Team 818 is participating in two competitions this year where the hard work and dedication the team has shown during build season will most definitely be present. Good luck, Armadillos!



## Symmetry in Snowflakes

Just before the Winter Break, students at MMSTC made snowflakes to send to Newtown, Connecticut to help brighten up the new elementary school that Sandy Hook students would be attending upon return to school. Students appreciated the opportunity to do something to show their concern for the community that experienced such loss.



## Book Grant to Enhance FST and Calculus

Mrs. Kincaid Dewey was awarded a \$500 grant from the Detroit Area Council of Teachers of Mathematics to purchase literature books. Now FST students will not have to share a book when they read and complete a project based on *The Number Devil: A Mathematical Adventure*, a text that contains much of the content learned in 2<sup>nd</sup>

semester. Calculus students in Mrs. Dewey's class complete a book project each semester where students choose a math related text, and use a blog to post about their readings as well as discuss their book with other students. Books purchased for that class include *Science Fair Season* by Judy Dutton, *The Calculus Diaries: How Math Can Help You Lose Weight, Win in Vegas, and Survive a Zombie Apocalypse* by Jennifer Ouellette, and *The Numerati* by Stephen Baker.



## Staff Changes at MMSTC

In addition to welcoming Mrs. Pat Bonnici to MMSTC, students and staff are very happy to see the return of **Mr. Supal** to our ranks! Mr. Supal returned from a one year assignment to Washington, D.C. where he worked for the National Science Foundation as an Albert Einstein Distinguished Educator Fellow. Due to the fact that our staff allocation remains at eight again this year, **Mrs. Duddles** were reassigned to Beer Middle School and is teaching 6<sup>th</sup> and 7<sup>th</sup> grade science and English language arts. Our freshmen IDS classes and one senior IDS class are being split among the entire class.

## Audience and Participants Alike Rave About MMSTC Talent Showcase

Recently, MMSTC hosted our third talent event; this year we expanded to include both performance and non-performance arts. Talent show acts ranged from dances and instrumental music pieces to senior **Nick Thomas** (Cousino) both juggling and playing the Theremin. (Yes, it's worth a google to see a demonstration if you missed the show!) The final act by a well-rehearsed group of young men from the class of 2014, ended the show on a high note with their very own version of "Gangnam Style." Roughly one-sixth of our program - 55 students - was involved pulling off this exciting event. Displays included artwork and photography as well as **Hannah Mico's** (LSHS) decorated cakes and information about **Noah Conner's** (Cousino) Eagle Scout project. **Josh Denzler** (LSHS) and **David Prokriefka** (WWT) served as MCs for the evening. Teacher sponsors Mrs. Bonnici and Mrs. Kincaid Dewey are especially grateful to the volunteers, stage crew and organizing assistant **Patty Rempala** (LSHS) for their hard work. Proceeds from the Showcase go to state competition costs for the MMSTC Envirothon Teams.



**YOLO.....You Only Live Once!****MACOMB MATHEMATICS SCIENCE TECHNOLOGY CENTER**27500 Cosgrove | Warren, Michigan 48092 | [www.wcskids.net/mmstc](http://www.wcskids.net/mmstc)

Dr. Catherine Neuhoﬀ, Dir. of Special Programs  
 MMSTC Newsletter Committee: MMSTC staff  
 Editor: Christine Kincaid Dewey  
 Editorial Assistant: Patricia Rempala (LSHS)  
 Printing and Distribution: Secretarial Staff

**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**31300 Anita | Warren, Michigan 48093 | 1-888-4WCS-KIDS | [www.wcskids.net](http://www.wcskids.net)**Student Achievement**

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

**Clear Expectations**

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

**Strong Relationships**

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

**2012-2013 Board of Education**

Brian White, President  
 Elaine G. Martin, Vice President  
 Susan M. Jozwik, Secretary  
 Megan E. Papasian-Broadwell, Treasurer  
 I. Susan Kattula, Trustee  
 Benjamin I. Lazarus, Trustee  
 Susan G. Trombley, Trustee



Dr. Robert D. Livernois, Superintendent

In compliance with Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, the Americans with Disability Act of 1990, and the Elliott-Larsen Civil Rights Act of 1977, it is the policy of the Warren Consolidated Schools that no person shall, on the basis of race, color, religion, national origin or ancestry, gender, age, disability, age, height, weight, or marital status be excluded from participation in, be denied the benefits of, or be subjected to, discrimination during any program, activity, service or in employment. Inquiries should be addressed to the Chief Human Resource Officer, 31300 Anita, Warren, Michigan 48093, (586) 825-2400, ext 63110.