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# THE CENTER PAGE

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Volume X No. 1 Macomb Mathematics Science Technology Center 2013-2014

## Student Spaceflight Experiment Program: Ready to Lift Off!

In an attempt to incorporate unique, meaningful and inspirational STEM projects into the curriculum, the MMSTC staff spearheaded by **Mr. Supal** and **Mrs. Cybulski** applied for and procured funding to participate in a program that would allow students to design an experiment that would be conducted by astronauts on the International Space Station.

Last school year, the whole MMSTC student body was divided into groups of three by grade level and each group was challenged to come up with an experiment that would test what effect a microgravity environment would have on certain physical phenomena. Three projects were selected from all the entries to move on to a more rigorous inspection from the Student Spaceflight Experiments Program Review Team. The one chosen was curious about crystal formation. Let's hear about this experience from the student researcher's perspective:

"Our experiment deals with the formation of crystals in microgravity. The crystals that are being used are Silver Crystals which are formed in a chemical reaction between copper and silver nitrate. The reason we are testing the formation of crystals in space is because they have been shown to have potential in the storage of natural gas. They are able to store natural gas because of their large surface area and numerous amounts of microscopic pores. If these crystals form in space as they do on earth, they will have the potential to be used in space to store natural gas for fueling spacecraft."

**-Steven Prascius (Mott)**

"The Student Spaceflight Experiments Program, or SSEP, is a great way to further our interests in space and to be a part of something huge. Honestly, it was fun trying to think of a topic and then researching it. The best part, though, was actually testing the experiment after becoming a finalist in our program. Working hands-on was important because it helped us to get a feel of how our experiment was going to work up in space. Nonetheless, we will not know how our experiment will work until we actually get the results back after our experiment returns from the ISS. Along with eight others from around the country, our experiment is tentatively scheduled to launch December 15th – so be sure to watch NASA TV! The SSEP is a great opportunity. Not everyone can say they designed an experiment that was conducted on the International Space Station. I believe I speak for all three of us when I say we are looking forward to the return of our experiment and analyzing the results!"

**-Hunter Montrose (Lakeshore)**

## SSEP National Conference in Washington, D.C. – July, 2013

The Smithsonian National Air and Space Museum, the National Center for Earth and Space Science Education and the Arthur C. Clark Institute for Space Education hosted the 2013 SSEP National Conference at the museum on July 2 - 3, 2013. The conference provided a formal gathering for students from six different SSEP Missions to present their experimental designs as well as results for experiments that have already flown on the International Space Station. Student researcher **Sydney Waynick (Mott)** and her parents attended the event along with **Mr. Supal**. Hear about the conference in Sydney's own words:

"I had an awesome time in Washington D.C. The Smithsonian was unlike anything I've ever seen before. I met so many amazing and smart people from all over the nation. Every student was extremely intelligent – even the fifth graders! I was so nervous to go up on stage and give my presentation, but once I got started, it was a breeze thanks to all the presentations I've given here at MMSTC. Many of the parents told me that my presentation was great and that it was very professional. My favorite part of my trip was simply being in the beautiful city of Washington D.C. – walking around, sight-seeing, and eating some delicious food. I thank Chrysler and MMSTC very much for allowing me to have this opportunity!"

**-Sydney Waynick (Mott)**

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The SSEP (http://ssep.ncesse.org) is undertaken by the National Center for Earth and Space Science Education (NCESSE; 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.

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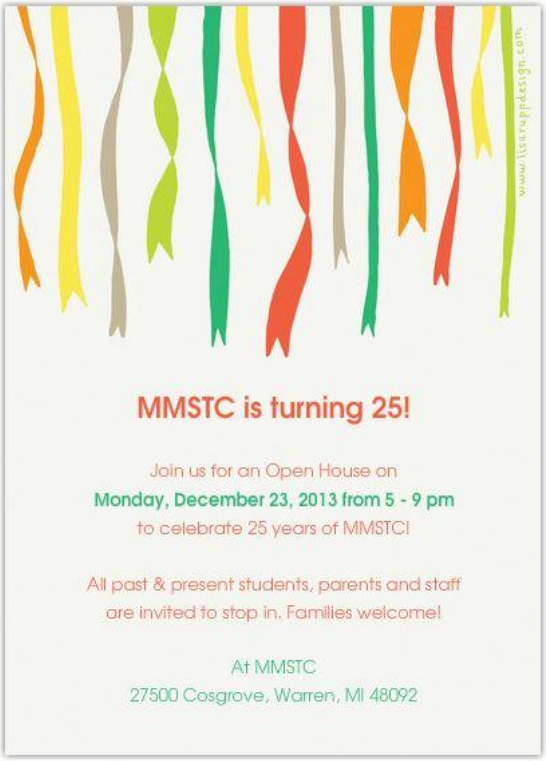
## "STEM and Me" Poster Wins Contest!


To celebrate October as STEM (Science Technology Engineering and Mathematics) Awareness Month in Michigan, the Michigan STEM Partnership sponsored a poster contest. The Michigan STEM Partnership is a statewide, public-private collaborative that includes educators, employers, legislators and others who are concerned about creating the new economy and addressing the current lack of STEM skills in school children and job applicants. The theme of the contest was "STEM and Me" and students from around the state were asked to create a poster or video showing why STEM is cool. The winner of this year's poster contest was the team of **Jackie Orjada (SHHS)** and **Kelly Rayner (Lakeshore)**. The two will be honored at a reception on December 12th in East Lansing and receive a cash prize of $150.




# Happy Birthday MMSTC!

The Macomb Mathematics Science Technology Center first opened its doors for the 1989-1990 school year. That means that this is our 25th year of serving students in Macomb County. So many alumni and current students are passionate about their experiences at MMSTC. **We think 25 years of academic excellence is worth celebrating!**

The 25th Celebration Organizing Committee would like to formally invite all to join us for an open house on **Monday, December 23, 2013 from 5 – 9 p.m. at MMSTC**. All alumni, current students and parents, staff and administration are invited! We are hoping to showcase what the past 25 years of students have accomplished since leaving MMSTC, in addition to all of the amazing new things that are going on there now. RSVP NOW at http://tinyurl.com/MMSTC25th

## From the Director:

Greetings to all! We have had an exceptionally great start to our year as evidenced by the exciting things students are doing at MMSTC presented in this newsletter. During first quarter, your children and our staff have enjoyed new and interesting challenges that include but are not limited to: exciting classroom projects and research endeavors, team building for every grade level, developing senior research, a Halloween Party complete with a craft table, Ecology Team, Innovation Club, Robotics – Team 818. I am very proud of our students and staff at MMSTC.

Still more events are being planned as our newsletter goes to print. Look for upcoming information on MMSTC's 25th Birthday Party scheduled for Monday December 23, 2013 from 5 – 9 p.m. Generated by caring graduates and retired and current staff and made possible by anonymous donors, this celebration invites all students attending the program all the way back to that first class's arrival in 1989 at Warren Mott High School.

With the help of parent volunteers, we hope to establish the first ever Parent Support Group for MMSTC and MS2TC. A parent of one of our 6th graders, Dr. Singleton has asked for the opportunity to bring parents together to assist us with fundraisers and to extend our lines of communication to and with our parents to further enhance and strengthen our programs.

Finally, we pride ourselves on our ability to put together **Plans for Success** for struggling students. We recognize that our program challenges our students – pushing them to develop time management skills, perseverance, and to use their intellectual powers for good. In striving for academic achievement, many students experience stress and frustration. Please encourage your sons and/or daughters to see **Ms. Bonnici**, any of our fine teachers, or me- **Dr. Neuhoff**, if they need our support.

May your holidays be joyful and the New Year bring you peace and good health.

Dr. Catherine Neuhoff

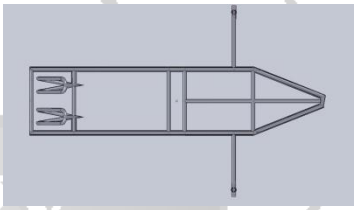
## 9th Teacher Position Restored!
## Welcoming Our New IDS Teacher to the MMSTC Family!

The staff of MMSTC has an exciting new face. **Ms. Kim Gravel** has joined the MMSTC team and is looking forward to working with the best students in Macomb County. When asked what drew her to the center Ms. Gravel replied, "I had heard so much about the exciting opportunities for students going on at MMSTC and wanted to work with and teach highly motivated students." Ms. Gravel focuses on individual student development and creates her lessons to meet the demanding requirements of today's educational, scientific and business communities.

At Grand Valley State University Kim earned a degree in biology and English. While attending GVSU she was a successful member of the women's volleyball team. Ms. Gravel went on to receive a Masters in the Art of Teaching degree from Marygrove College and has also obtained a professional counseling certificate from Central Michigan University. While at CMU, Ms. Gravel focused on learning and perfecting the delicate skills required to drive the educational and counseling process here at the center. Her former educational assignments included being on the teaching staff of Warren Mott High School and Community High School.


She brings this vast experience and deep knowledge base with her to share with the students at MMSTC. When not in the computer lab or classroom, Ms. Gravel focuses on her children and spending time with her husband. When asked about her career move to MMSTC, Ms. Gravel replied, "It's the best move I could have made. As an educator I can't think of a better place to help students obtain their goals." The MMSTC teachers, staff and students are very lucky to have such a fine educator join our ranks.

## MMSTC Students Form
## Innovative Vehicle Design Team



Students at MMSTC are currently working on an electric vehicle design 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.

The MMSTC IVD team is comprised of over twenty-five juniors and seniors but others are welcome. The team has been split into groups including mechanical, electrical, systems, and marketing in order to handle the complex project which is being designed in Solid Works. The competition will be held on May 2-3, 2014, at Michigan International Speedway. Our team is in need of a parent who is an experienced aluminum welder, and who also has the equipment. Contact **Mr. Supal** at marsup@wcskids.net for more information. Any donations are also welcome!

## Halloween Fun!

This fall, MMSTC's annual Halloween party was the place to be! Over 70 students from all four grades showed up wearing their best costumes. **Max Edwards (SHHS)** won the award for the funniest costume, as Helga the Viking Princess. **Zach Haupt (Cousino)** was the scariest as "Plague Doctor," while **Emily Koury (Cousino)** won for most original costume as Zelda. The best overall costume was awarded to **Tyler Mahlmeister** and **Jeremy Maurice** for the **Mott** Band Couple.

Perhaps the most fun part of the evening was all of the games. **Nicole Drylie (Cousino)** won musical chairs. **Emma Burgin (Mott)** was the bobbing for apples queen. **Cierra Smith (Lakeview)** got her limbo on! **Abser Halim (Mott)** got everyone dancing with his creative playlist! Everyone enjoyed **Mrs. Kincaid Dewey**'s luminary jack-o-lantern craft project. A special thanks to the Senior Council, **Najha Mubashira (Mott),** all of the student volunteers, **Mr. Acre** and **Mrs. Bonnici** for making this enjoyable party a success!

## Just Build It!

On Wednesday, October 30, the MMSTC **Junior Class** took trip to "Just Build It" Career Expo at Eastern Michigan University. The Expo is designed to introduce students to opportunities in architecture, engineering, project management, skilled building trades, and other construction industries. Students had the chance to visit University and Trade Organization Representatives such as EMU, Lawrence Tech, MDOT and several others.

Students had the chance to participate in several hands-on activities. Among the most popular was the hammer race. If a student was the first person to hammer a 3" nail completely into a block of wood, they were awarded a toolbox. Each student, however, was competing against professional carpenters. Other activities included learning the fine art of Brick Laying, climbing vertical beams with and without the required tool belt, pipe bending, and operating simulated excavators and bulldozers. Anyone who completed the scavenger hunt received a free t-shirt provided by Washtenaw Contractors Association.

## Freshmen Visit Wayne State University

**Mrs. Patricia Bonnici**

Freshmen had the opportunity to become college students for a day when MMSTC visited Wayne State University in October.

Eighty-four students began their journey into college academia first through a presentation by the Engineering Department at WSU. There, students learned of the many types of engineering programs available and the various careers with specific engineering skills. Afterwards, students journeyed to the WSU Welcome Center auditorium for a presentation on health science programs and career opportunities. Here students learned about the academic and interpersonal skills necessary to work in the field of health care.

A major highlight of the day was the comprehensive tour of the WSU campus conducted by college student guides. Students were impressed with the history of the campus, the architecture, and anecdotal information which makes WSU a special and unique university. Of special interest was the opportunity to visit one of the newer high rise dorms where students were amazed at the spectacular views of the surrounding campus and city and had a brief glimpse of dorm life. Our tour included a walk-through of the undergraduate library and fitness center where students observed college students engaged in rock climbing, fencing, and handball.

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

## Roller Coaster Physics – A Summer Learning Experience Full of Thrills!

I went to the Michigan Math & Science Scholars Program at the University of Michigan. There were about twelve classes there during a two-week session, and each person took one class, which consisted of fifteen people. I stayed on campus and had a dorm room to myself. The class that I took was Roller Coaster Physics. We looked at specific roller coaster elements in class and also looked at braking systems and launch systems. We also took a trip to Cedar Point and took accelerometers and barometers on the Top Thrill Dragster. We made a presentation about ride elements of the coaster, including the launch and braking systems and the only hill on the Dragster. Also, in my class there were people from Korea, China, Venezuela, and six different states, so it was really cool discussing and learning about all the different cultures. Overall, it was a great experience because I really got to experience college life and what it is like being on my own, and I also learned a ton about roller coasters and physics, which are two of my favorite things, so it was really cool! **Sarah Lewandowski (SHHS)**

# Senior Capture the Flag Day

**Brandon Beltz (Cousino)**

It was a chilly, November morning, and Butcher Park was covered in fog. Inside of the hallways of MMSTC, thoughts of victory and glory stirred in the minds of the seniors. Some did not care about winning, but others were more competitive.

Later that day, two groups of seniors faced off in a game of Capture the Flag. One team came together, forming a sea of red that flowed through the hallways of the school. The other team moved through the hallways like a black storm cloud swiftly moving across a blue sky. “I wanted to CRUSH them!” recalled **Cathleen Saraza (SHHS)**, one of the more competitive seniors. **Antonio Liccardello (Center Line)** shared this competitive spirit and said the best part about the game was “strategizing on the field – [with the] terrain, obstacles, and movement.”

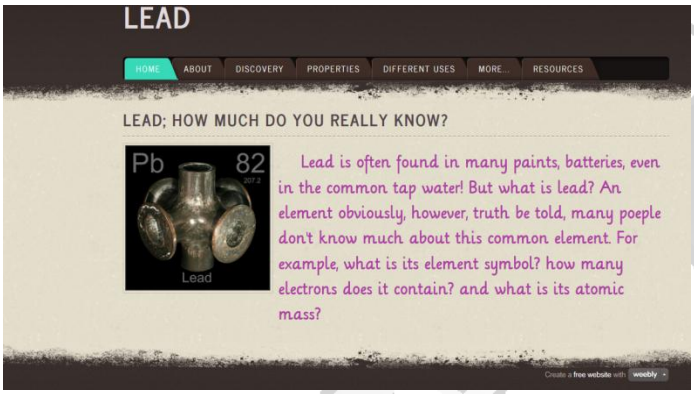
The teams then walked onto the field, waving their flags, and showing off their colors. They lined up on the boundary line, ready to sprint across the field and retrieve the opponent’s flag, and the competition was on.

The game ended in a stalemate after both teams decided that pizza outweighed the benefits of winning. Both teams walked to the pavilion where the pizza was harbored, immediately dropping the rivalry that existed just minutes before. The students then talked to each other and laughed and joked. **Najah Mubashira (Mott)** said “I think the best part of Capture the Flag was that we could all just hang out and have fun.”

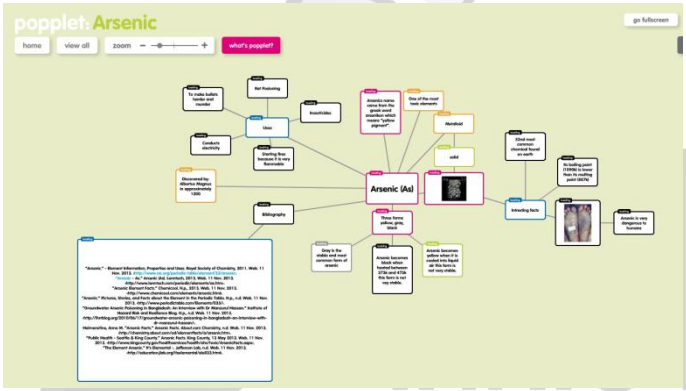
After the students reunited as friends, the sun began to shine and warmth spread around the park. Balance was restored in MMSTC and the battle was over.

# Sophomores Celebrate National Chemistry Week and The Periodic Table

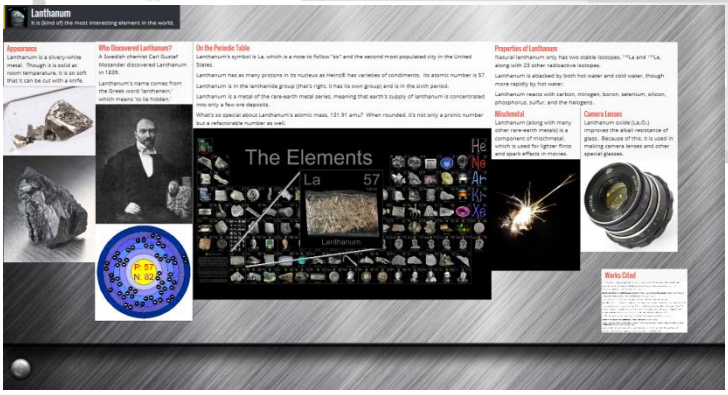
In honor of the National Chemistry Week and the anniversary of the periodic table, tenth grade chemistry students under the guidance of **Mrs. Jamie Hilliard** created a digital tribute to the periodic table. Students had to research their element to gain inspiration so that they could produce an artistic, informative digital interpretation of that element. To present their projects students explored a variety of 21st Century software platforms such as Weebly, Popplet, and Padlet.




Weebly is a user-friendly tool that allows for the creation of personalized websites and blogs. This tool can be used to create websites and blogs for any audience. This website about lead was created by **Kaitlyn Lumpkins (Warren Mott)**. Scan this QR code to visit.




Popplet is a mapping tool that allows users to make visual connections between concepts and ideas. Popplets mapping features are similar to Inspiration but cooler! You can utilize this tool to reflect on concepts and how they may be connected to one another. **Jenna Sassin (WWT)** created a Popplet about Arsenic. You can see the full site by scanning the code at right.




Padlet is an online tool that allows users to respond in real-time to topics in the form of text, videos, graphics, and documents. Padlet provides a virtual medium for students to collaborate in a meaningful way with one another on any topic of interest. **Matthew Polgar (SHHS)** created a Padlet about Lanthanum. Scan the QR code to visit!

# What's Your Learning Style?

**Mrs. Patricia Bonnici**

A few years ago, I ordered a bookcase online for my son's bedroom. The dimensions were perfect and would fit nicely in the 8'x 6' space available on the wall. When the bookcase arrived on my front porch, I was surprised to see that it arrived in a box that would easily fit in the trunk of my car. How this small box transformed into an actual bookcase was an experience I will not soon forget. It was after I called my nephew for some assistance that I truly understood the differences in learning styles.

Most of us know someone who can just look at something and know how to put it together or re-create it; written directions or oral instructions are not necessary. Others can hear something once, such as an address or telephone number, and remember it without writing it down. Then there are those individuals who will understand how to do something only by reading, and in some cases, re-reading information until it takes on meaning.

Learning styles fall into seven basic categories:

**Visual** (spatial, pictures, images)
**Aural** (auditory-musical, hearing)
**Physical** (kinesthetic, using hands, sense of touch)
**Verbal** (linguistics, using words in speech and writing)
**Logical** (mathematical, logic and reasoning)
**Social** (interpersonal, learn best with others, groups)
**Solitary** (intrapersonal, learn best alone)

While we can learn new information through any combination of these categories, there is generally one category that is dominant.

Learning styles refer to the ways in which we prefer to learn information and in most cases, how we best learn new information. Knowing your unique style of learning can be important in how you study. For example, if you know that you are an Auditory Learner, listening to notes, books on tape, and having information read to you, can have a significant impact on learning and retaining new information. Understanding your own style can also help you realize that others may use different methods to accomplish the same goal in a way that is different than your own.

While there is no "right way" to learn, a better understanding of how you learn can help you develop strategies to enhance your learning potential. To find out more about your learning style, there are inventories that will help you assess how you process information. There are many online surveys to explore how you think about your learning style available through search engines. These surveys, though not scientifically based, can provide some insight that can help you reach your learning potential.

## Sophomore Camp

Like any demanding program would do, everyone is worn out and frazzled after a few weeks. The teachers at MMSTC understand this so there are always periodic "breaks" throughout the year. The sophomore tradition in the fall is always Sophomore Camp. It is always a fun experience, but the rowdy class of 2016 made it all the better.

We all got to know each other well last year, but we did not know each other as well as we thought! We participated in activities involving teambuilding with people we do not usually spend time with, learning about ourselves, and making a fabulous mess of tie dye. The day's events also included the annual walk to the bowling alley, where some came out victorious and some not so much.

The most memorable part, however, was probably the Mystery Olympics where everyone is divided into teams by **Mrs. Cybulski, Mrs. Hilliard** and **Mrs Kincaid Dewey**. We then must sign up for a category to "compete in" before even knowing what they mean. Some of the things that occurred involved feeding your partner or getting a little messy with various supplies. All that needs to be said is this part of the day was very embarrassing, fun, and memorable. See more photos on page 20.

**Katlyn Johns (Lakeview)**

### Juniors and Seniors Attend University of Detroit Mercy Research Symposium

On Friday, November 1st, I, along with other MMSTC students, attended the University of Detroit Mercy Research Symposium. My research partner, **Cathleen Saraza (SHHS)**, and I attended in hope of seeing how to improve our own research project by viewing projects performed by college students. And I have to say – it was worth it!

The visit consisted of a question and answer session with a panel of current U of D students, a campus tour, and of course, the Research Symposium. At the beginning of the visit, we were given an envelope of fake money. There was a massive hall with about 60 research projects inside of it. There were posters, demonstrations, models, and we were supposed to "invest" the money we received in projects that we would fund in real life. The project with the most investment money won the competition. There were biomedical projects, engineering project, chemistry projects, social experiments, and everything in between.

The projects that had the most impact on me were the ones that had the actual researchers next to them, explaining what was going on. Many projects had words Cat and I didn't understand, and graphs/tables that made no sense, so it was good to have the researchers there explaining what their project was. Most of our money was invested in these projects.

Most of the projects students at MMSTC *could* do, given the proper equipment. **The level of research our senior year at MMSTC is on par with most of the projects that we saw in the college symposium**. None of the projects were so "out there" that we couldn't think of them ourselves, which highlights the level of thinking we have here at MMSTC. The visit was quite beneficial and interesting. Because of this visit, Cat and I also know how to better our own research experiment.

**Jacob Arche (SHHS)**

## Quarknet Summer Program at WSU


**Marco Lin (Lakeshore)**

The Quarknet Program was one of the most educational programs I have attended. I learned a year's worth of nano physics in two weeks! I learned a variety of topics from string theory to myosins. It was a great honor to work with other students like me from a variety of schools. I conducted a research project on the effect of angle orientation of detectors on muon flux with a partner was from Seymour High School. At the end of the research we had to present our project to the professors. MMSTC has taught me well – the professors were astonished at my presentation skills! We toured Wayne State which I believe is the most underrated school in Michigan. The engineering and research there is top notch – they even have a positron lab in the physics basement! Even though I discovered I want to do research that I can see and touch rather than read results from computers, this was a valuable learning experience I would recommend.

## MMSTC Ecology Team

Under the sponsorship of **Mrs. Kincaid Dewey** and leader **Kelsey Giffin (Mott)**, MMSTC's Ecology Team has been hard at work so far this year. The team consists of returning members **Noah Conner (Cousino)**, **Maria Gallo (SHHS)**, **Kelsey Giffin (Mott), Ann Krause (SHHS)**, **Kalie Tomlinson (SHHS)**, and **Emily Vo (Mott)**, and new members **Melinda Her (Cousino)**, **Brendan Kelley (Fraser)**, **Madeline Manuel (Cousino)**, and **Jenna Sassin (WWT)**. We also have students in the A.M. session who help our team greatly: **Elise Tomaszewski (Lakeshore)**, **Ermelinda Ndoka (Cousino)**, **Madison Werthmann (Lakeshore),** and **Andrew Damiani (South Lake)**.

The team is very active in the school and around the community. In September, the team worked on cleaning up the pond courtyard. This process took many weeks and lots of work, including trimming trees, weeding, and picking grapes. The courtyard maintenance is a yearly job in which the team takes part. In early October, a local resident named **Mr. Grobbel** allowed the team to come and tour his apple orchard. He lectured the students on the different types of apples, sharing many interesting facts along the way. Using this newfound knowledge, the team created a bulletin board near the entrance to MMSTC to share with the other students. **Mrs. Hilliard** taught the team about identifying different types of trees and leaves in Butcher Park on another day. The team is now running the school-wide battery drive through the end of November.

Between volunteering, cleaning up the school, or learning new facts about the environment, the MMSTC Ecology Team is a very active bunch of students. We are a very tight-knit group that is always welcoming new members. We attempt a new project every month and the extra help is always appreciated. If you wish to join, feel free to stop by **Mrs. Dewey**'s room (Room 123, located in sophomore hall) on Wednesdays from 2:15-3:30 p.m. Hope to see you there!

# MMSTC in the Eyes of a Freshman

**Paige Redlin (Lake Shore)** and **Amanda Conlon (Lake Shore)**

Intimidating, challenging, unique, and beneficial are words used by our freshman to describe their new school. "It's a big adjustment," says **Merna Sana (Warren Mott)**. Freshmen at MMSTC are challenged with the task of not only adjusting to regular high school but also adjusting to the challenging atmosphere of MMSTC. "The biggest thing about attending MMSTC as a freshman is getting used to the fast-paced curriculum" said **Imran Rashid (South Lake).** "Adjusting my study habits has been a pretty big thing," added **Rosemary Hermiz (Fitzgerald).**

Although getting used to the culture of MMSTC can be frustrating and challenging at first, ***everyone*** - including staff and upperclassmen - is open to lending a hand to anyone that needs it. The environment is constantly positive and students are encouraged to ask questions. "It really is a family here, even after the 10 short weeks we've been together," said **Logan Mardlin (Lake Shore).**

According to the freshmen, there are many benefits to attending MMSTC. "One of the best things about going to MMSTC is the amount of freedom they give us," said **Kaitlyn Switniak (Center Line). Claire Orlando (Cousino)** shared that another benefit is "meeting new friends that are from all over Macomb County." Kids who have the same mindset on succeeding in school have a much easier time getting along and cooperating.

Something that everyone agrees on is that all of the classes are intertwined. An experiment is completed in biology and the lab report is written in IDS. Freshman year at MMSTC so far has been a great experience with a few road bumps along the way. In the end, freshmen know that attending MMSTC is worth it. Henry David Thoreau once said "What you ***get*** by achieving your goals is not as important as what you ***become*** by achieving your goals." The Class of 2017 has aspirations to do great things and become great people.

## Hear MMSTC Seniors Discuss their Research –

Every fall the seniors at MMSTC have the opportunity to investigate a scientific topic of their choice. These students spend a significant amount of time researching their topics to narrow down and refine the problem they are trying to tackle then design and execute a unique experiment that will test their hypothesis. If you have a smart phone with a QR scanner you can use it to view the following videos. Hear **David Pokriefka (WWT)** and **Sam Habbo-Gavin (Fraser)** explain how they built and tested a magnetic levitation cart and tested how varying the amount of voltage affected its maximum velocity. **Cathleen Saraza and Jacob Arche (SHHS)** explain their research on finding which concentration of silver nanoparticles most successfully inhibits the growth of *Escherichia coli.* (If you have a smart phone but no QR scan reader you can download a QR scan reader for free from the App Store.) Seniors have been documenting their research on blogs. Feel free to View and comment on the process at [www.mrs.gravel.weebly.com/senior-research-blogs.html](www.mrs.gravel.weebly.com/senior-research-blogs.html). Password: mmstc.

Sam & David

Cat & Jacob

# So You Want to Be a Rocket Scientist…

**Lindsay Fricano (Fraser)**

Recently, the MMSTC juniors got their toes wet in the field of amateur rocket building in the spirit of Space Exploration Day. **Mr. Supal** bravely led the students to first build their rockets using the Solid Works CAD package. After those designs were perfected, it was time to physically build the rockets. Humble cardboard tubing, Easter egg halves, plastic trash bags, straws, and foam board magically transformed into each student's rocket. The goal was simple: make your rocket and parachute stay in the air the longest. With a little patience, and a lot of hot glue, everyone's rocket was ready to go by launch day.

It was decided that each class section would be divided into four teams. Mr. Supal chose captains, and those captains, in turn, chose the rest of their teams. Each person would launch his or her rocket head to head with a member of an opposing team. Mr. Supal refereed the calls on whose rocket had the longest air time, and awarded the winner of each challenge match with a point. The team with the highest score at the end would be victorious. The prize? Not having to do the dreaded write-up that comes with most Butcher projects.

On launch day, competitive spirits ran high throughout each class. Everyone watched in anticipation of his or her rocket's success. One by one, the rockets were thrust into the air above the baseball diamonds via a remote ignition system. When it was all said and done, 11A's victorious team consisted of **KJ Buiteweg** (**Cousino**), **Shelby DeBrunye** (**Lakeshore**), **Caroline Jankowski** (**Lakeshore**), **Andrew Damiani** (**South Lake**), **Emily Liu** (**Clintondale**), and **Kathleen Hawkey** (**Warren Mott**). 11B's dark horse team of **Trevor P-Balfour** (**Cousino**), **Chris Harness** (**Sterling**), **Lawrence Wickenhiser** (**Fraser**), **Keegan Laporte** (**Fraser**), and **Randall Stroshein** (**Warren Mott**) rallied for an upset for their class. Last, but certainly not least, 11C students **Ryan Maue** (**Lakeview**), **Danny Havern** (**Warren Mott**), **Alex Henry** (**Warren Mott**), **Madison Kirby** (**Lakeview**), **Brooke Hassig** (**Warren Mott**), and **Ken Braggs** (**Warren Woods Tower**) were their class victors.

After light refreshments, the students rounded out **Space Exploration Day** by doing an orienteering activity with compasses and measuring tape. Answering a space trivia question correctly earned a team the next in a series of four vector directions to an unknown target fence post. A wrong answer earned a 5 foot penalty along with the next direction. The team that came closest to the target won a prize- bragging rights.

Whether a rocket sailed high, or in at least one case, failed to leave the ground, the students enjoyed an afternoon in the fresh air. If for nothing else, the day proved that the juniors *are* smart enough to be rocket scientists.

# MMSTC Alumni Updates

**(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.)**

## MMSTC Skills Come in Handy for Broadcast & Cinematic Arts? YES!

College students often participate in summer internships in their field of study. MMSTC alum **Anna Swando (2010)** is no exception. Anna, currently the manager of **Central Michigan University**'s television station, is due to graduate in 2014 with a major in Broadcast & Cinematic Arts and minors in Media Design, Production, & Technology and Marketing. After seeing her summer picture posts of Anna in New York City – often with celebs the likes of Bill Murray, Rob Delaney and Wil Arnett – the editor asked this Lakeview graduate to share her experiences and advice.

"This summer, I was a programming intern with **Nickelodeon** in **New York City**. Instead of the "typical" Java programming you all know and love, I worked with scheduling the television series that go on air! I organized a few series marathons (for *Full House* and *Fairly Odd Parents*), and I also worked intensely with Word® and especially Excel®. In Excel, I organized the episode details and ratings, as well as made spreadsheets that kept an eye on the competition. I was able to tell my supervisor that I was a pro at Excel (with formulas, formatting and the like) thanks to MMSTC! One thing you will definitely need in the working world is the ability to do research. If your boss asks you to do something and you don't know how, you don't want to annoy them with questions. Do as much research you can to find out the answers (learn to use Google efficiently!), and only go to them with questions you can't find. Additionally, in my spare time, I met and saw some of my heroes and favorite celebrities (again, this is where doing research helped me out!). I loved living in New York, and I recommend making a trip there at some point - if anything to see the new **Museum of Math**!"

## My Summer Vacation from CMU — Sasha Rudow (2011)

Since graduating from MMSTC and Sterling Heights High School in 2011, I've been attending **Central Michigan University** pursuing a degree in secondary education with a double major in mathematics and integrated science. This past summer, I was presented with multiple amazing opportunities that I will remember for the rest of my life. Not only did I take a three week biology course on an island in the middle of Lake Michigan and do research with a professor here at Central Michigan University, but I was also given an opportunity head to Houston, Texas. For an entire week I was able to work with NASA in the **NASA Johnson Space Center Pre-Service Teacher Institute (PSTI) Workshop**. In the future I hope to become a middle school teacher, so this program aligned with my plans perfectly. I worked with NASA staff, talked to one of the first actual rocket scientists, and toured various parts of the large NASA base. On top of that I got to analyze lunar and meteorite samples from space, touch a rock that contained 8 billion year old particles, and even make space food! I also got to meet people from all over the country. Overall, I learned a ton of different ways to implement NASA curriculum into my future classroom and even more about space. I was the youngest person accepted into the program and I have no doubt that my MMSTC background was a large part of the reason I was accepted. A huge thank you goes to **Mrs. Kincaid Dewey** for introducing me to the opportunity!

## Six Weeks in India and Relationships that Last a Lifetime

**Corinne Green (2010)**

Three and a half years ago, when I first stepped foot on Michigan Tech's campus, I was invited to join the **Pavlis Institute for Global Technological Leadership**, an institute which strives to provide its members with a comprehensive leadership experience and the ability to thrive in a global economy. This past summer, my team and I traveled to **Chennai, India**, for six weeks where we met new people, applied the leadership skills I had learned, served the community, and experienced a culture much different from our own.

During our trip, we had a few main projects: the water filter, hand washing and first aid lessons, English lessons, and America day. The water filter, completed three days before we left the country, filters approximately 3000 liters of water per day from the (very disgusting) well at the Vaiyavoor Government Primary School. It is a four barrel filter combining biosand and biochar filtration technologies. We routed piping to pump the water from the well into the school, through the filter, and out a faucet the students and teachers now use to collect water.

Girls from the 5th through 7th standards teaching me the words for various body parts and accessories in Tamil (their native language), as I taught them in English

Helping the people of India was cool and all, but our experience goes far beyond that. We met hundreds of Indians who were more than glad to take time out of their day and help us with anything; one rode on a bus with us for 4 hours (and back!) just to make sure we got somewhere safely. The students at the school were spectacular; they were very respectful of us, their teachers, and each other, and were extremely interested in these "white" people from America (most had never seen a white person before). We learned just how challenging it is to communicate with people of a different culture; the language barrier is one thing, but the difference in morals and social etiquette was even more of a challenge. Throughout the experience, I learned how important it is to have a support network. Our team built a great sense of trust, which helped us adjust to the differences we were facing.

I graduated from MMSTC and Lakeview High School in 2010. At MMSTC, I was able to work closely with students and teachers, building relationships that will last a lifetime. These skills have proven very useful throughout my college career and during my trip to India, and I know that will prove helpful for the rest of my life.

MichiganTech For those of you who are about to go face the real world, and everyone else for that matter, I have one piece of advice for you: **build relationships**. Whether it be friends, family, coworkers, or even people you may not like (at first), invest time in your relationships. Ask questions about how they are feeling and what they are thinking. Call someone you haven't seen in a while and check up on them. Open your eyes to their perceptions of the world, and you might just learn something. **The Michigan Tech vision is "Create Possibilities. Inspire Learning. Exceed Expectations."** This is something to live by, and something you can only do with the help of those around you.

# The Importance of People Skills in Computer Science

**Eddie Ringle (2012)**

I graduated from MMSTC in 2012. My original intention was to move to the other side of the country to Seattle and go to school for game development. However, things happened and that turned out not to be the scenario that played out.

I have been working with computers since I was very young, and I have my parents to thank for that as they were very supportive of my choosing staying indoors to tinker with my computer. I got into programming in late elementary school, and throughout the rest of my school career I spent the majority of my time hacking away on my keyboard making my computer 'do stuff'. When Android was released unto the world, it didn't take me long to make it do something new – I even built an app that talked using a service run by a start-up company in San Francisco.

The curriculum and staff at MMSTC are very open to new approaches of tackling old problems. Whether it was using code to demonstrate an algorithm in a Calculus paper, hacking together a rudimentary Asteroids clone to explain the Separating Axis Theorem, or simply programming my calculator to do trivial but tedious work, it was received well by my teachers. This, in addition to the curriculum's increased emphasis on team collaboration, **made MMSTC a wonderful incubator** for what I was about to experience following high school.

Just a few months after graduating high school, I stumbled across an opportunity to build the official White House application for Android. It took only a few weeks that summer, but little did I know it would pay off in more ways than the nice paycheck I took home. The **White House App**, along with apps I built in my free time, formed the foundation of my portfolio. At MMSTC, we practiced resume building and the correct way to present oneself to new parties. The portfolio I had begun, in addition to the interpersonal skills acquired through attending MMSTC, opened up many more opportunities in the months that followed. (I can't stress the aforementioned interpersonal skills enough. In consulting work, the majority of business will be through repeat clients. It's extremely important that you form a solid relationship with each client and give them a reason to return to you for their next project.)

This August, I was flown out to interview at Facebook's headquarters in Menlo Park, CA. The experience changed my perspective about the caliber of work I have produced. The people skills learned at MMSTC came into play once again during the interview, which I'm grateful for; otherwise, I probably wouldn't have known what to do with myself. (I got some free ice cream out of the trip too, so that was awesome.) Currently, I continue to work on freelance contracts from the comfort of my Detroit apartment and am actively seeking out my next project.

Thanks go out to the **MMSTC 25th Celebration Organizing Committee** for all their hard work in putting this event together! The 44 member committee is led by alumni **Lindsey Loridon (2009)**, **Grace Hsia (2008)** and **Kaitlyn Beels (2009)** along with assistance by former and current staff.

**Alumni Assist MMSTC Staff**: Many thanks to **Cailey Stiteler** & **Mary Whitney (2013)** for their third year of volunteer work at the Math / Science Annual Conference sponsored by The Detroit Area Council of Teachers of Mathematics.

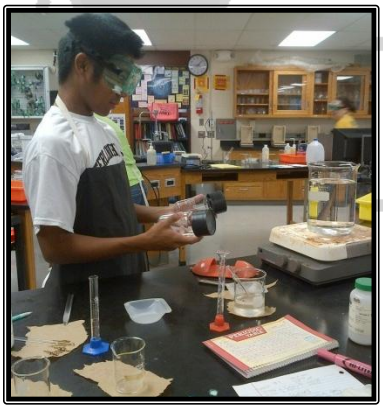
# Senior Research: Class of 2013

**Mr. Mark Estapa**

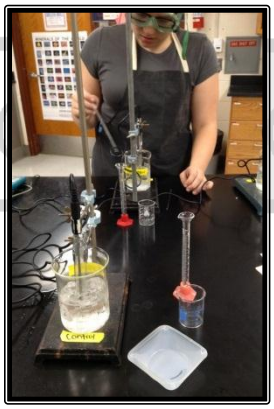
The science community at the MMSTC is currently waiting to receive the ground breaking research data that has made this event a milestone in the senior's academic career. Seniors are currently finishing the test stage of their independent research projects that some began as early as last semester. Biology students **Justin Lumpkins (Mott)** and **Antonio Liccardello (Centerline)** have spent numerous hours collecting and analyzing data. Their results could have an impact on how antibiotics are administered in cooperation with home remedies. The staff and students are all waiting in anticipation for the outcome of their findings. Physics students **Tim Jones (SHHS)** and **Andrew Baran** (**Mott**) are creating and testing high impact cellular phone cases. Let's see if those expensive cases are really worth the extra change. Chemistry seniors **Evan Gonzales (SHHS)** and **Rachel Quesnelle (WWT)** are trying to solve the age old question "How will the addition of water vapor impact the efficiency of soda lime and its absorption carbon dioxide".

This year the biology topics range from perfecting the creation of a water filtration system to testing the growth of different green fuels when exposed to a variety of plant growth stimulants. Physics students are exploring the world of engines and horsepower as well as a variety of other topics. **Mr. McMillan** has on numerous occasions suggested that this year's projects are the best yet and he looks forward to the exciting conclusion of a great research season. **Mrs. Hilliard** has expressed that the chemistry students are pressing the limits of their knowledge by uncovering the hidden world of the molecule and how it interacts with its surroundings. Many of the projects are giving the students a concrete understanding of how applied chemistry has a universal impact on our society. The administration, staff, seniors and underclassmen are fully supportive of the quest that has made the MMSTC a leader in high school student-driven scientific research.

The projects are scheduled to end before the holiday break and presentations commence immediately after their return from the New Year holiday with the annual Senior Science Fair to be held in late January. The entire program is looking forward to an excellent set of research projects and presentations. Special thanks go out the Science, IDS and Math departments at the center for their work with the students in selecting the proper statistical analysis to support their research results.



**Jacob Arche (SHHS)**



**Erin Drylie (Cousino)**

**Rachel Quesnelle (WWT) & Evan Gonzales (Mott)**

# Freshman Homecoming 2013

## The AM Adventure

**Joe Lifshay (Cousino)**

It all started with the birth of the 9A Knights in **Mrs. Gravel's** IDS class. **Alexander Sunga Jr. (SHHS)** created the design. "I thought about all the people in this room, and then I thought of something that would represent everybody at their home school," said **Sunga**. **Tyler Speed (Clintondale)**, **Amanda Conlon (Lake Shore)**, and **Adrianna Monacelli (Cousino)** helped create the brilliant name and fantastic character.

Preparations included decorating shirts and making posters. One day before the big event, **Alexander Sunga Jr.** along with **Caleb Yokel (Fitzgerald)** assembled the band and rehearsed.

On Friday, September 20, the Knights were ready for battle. The 9A Knights gathered in IDS class ploting victory. The Knights then met their opponents and enjoyed a hot dog lunch thanks to the cooking skills of **Mr. Estapa** and **Mr. Acre**. The Sophomores looked determined to win.

Following lunch the two teams gathered in the gym (due to poor weather) for the start of the game. Good defensive stops strung together to give the Knights a chance to raise the lead. **Tyler Speed** caught two touchdown passes from team captain and star quarterback **Joe Lifshay** sealing the victory at 21-0. "I had a great experience because we beat the 10th grade," said **Speed**.

The Knights came out with the win, with help from a strong defense and blazing offence. **Tyler Speed (Clintondale)** received the MVP award because of his tough defense and good play on offense, but **Abigail Girardot (Center Line)** stole the show with a key interception late in the game. As a result of the game, the 9A Knights grew together as a team, and, most importantly, as a family.

## The PM Match Up

**Julie Pisarski** and **Rachelle Buna (SHHS)**

Most people are excited for their home school's homecoming in the beginning of the year. MMSTC students are not only excited for that, but for our very own fun-filled MMSTC-style Homecoming as well!

Homecoming was a day filled with unforgettable memories. Prior to the event, each class came up with a class mascot and motto. Students in 9B became "The 9B Raging Rockets: Discovering New Heights." **Kelsey Heaney (Cousino)** elaborated on the group's inspiration: "We saw a poster about NASA with rockets on it. THAT was our inspiration." Students in 9C became "The 9C DarWinners: Naturally Selected to Kick Butt."Using their class' mascot and motto, freshmen decorated t-shirts. "Making shirts was really fun!" said **Abby Gonzales (Lakeview).**

On Homecoming day, each class divided into groups and had their own band, cheerleaders, and players. Wearing their uniquely-designed t-shirts, the freshmen enjoyed a delicious barbeque, and then played some football! **Ben Maleszyk (Cousino)** took on the QB role with the 9C DarWinners, and with the support of his team, band, and cheerleaders secured the win. Everyone had a blast!

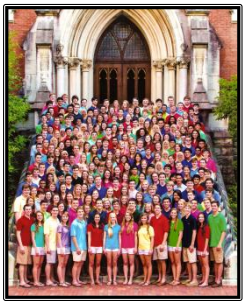
# A Summer Filled with Adventures…

Besides a well-earned rest from a busy school year, MMSTC students were busy learning new skills, meeting like-minded young people and exploring their future career options. Students were invited to fill out a survey about Sumer 2013 and the results find our students going to marching band, music, drum major, leadership and sports camps. But that's not all! They also worked at part time jobs, tutored middle school/high school students, explored college options, went on mission trips with church youth groups, traveled overseas and volunteered in their community. A sampling of other adventures is below:

**Michael Prascius (Mott)** interned at Ford Motor Company in the engine calibration department.

**Evan Gonzales (SHHS)** went to a ten-day engineering camp at the Olin College of Engineering. They spent time prepping for college and delving into different types of engineering, such as aerospace and electrical, by doing projects such as making and programming an Arduino controlled helicopter. Participants gave a final presentation at the end with an elevator pitch. (An elevator pitch? A short summary to be delivered in the time it would take to ride an elevator. The term comes from the scenario of an accidental meeting in an elevator with someone important. What would you say if given the chance?)

Where's **Abby**?



**Tin Mong (Mott)** visited Australia for a month with family.

**Mikolaj Pal (Cousino)** visited family in Poland for six weeks.

**Jessa Webber (Cousino)** Blue Lake Fine Arts Camp

**Abby Bault (Centerline)** attended a six week, pre-college program at Vanderbilt University called PAVE. Besides daily lectures/practice in problem solving, students attended two-week courses. Abby choose Environmental Engineering, Physics and Chemistry. Students also elected mini-courses in computer science and/or humanities. Abby chose MATLAB and the C++ computer program language. Attendees had time to social and get to know their fellow PAVE teammates! See the group picture above.

**Jacob Arche (SHHS)** won the Merl Smith Most Outstanding Drum Major award and led the final performance at a two-week drum major camp. Jacob has been chosen to lead the Macy's Great American Marching Band during the Macy's Thanksgiving Day Parade.

**Michael Milhim (SHHS)** went to the Student Statesmanship Institute this summer in Lansing, MI. Students experience the reality of public office by matching participants with a week-long mentorship with a state where they participate with their mentor in some everyday activities such as staff meetings, caucus meetings, strategy sessions, and hearings.

**Paige Redlin (Lakeshore)** helped her piano instructor teach 4-6 year olds piano basics at Macomb Community College. She did her best to inspire kids to play piano!

**Tyler Speed (Clintondale)** volunteered to install/update technology at his home high school.

**Meredith Hinz (Cousino)** played on a travel softball team. Her final last tournament was the NSA World Series in Columbus, Ohio!

**Parker Authier (Fraser)** participated in the "Duelist" Tournament for fencing held in Ann Arbor. He held his own and learned a lot in his first tournament experience.

**Alex Henry (Mott)** attended the Game Design Camp at Michigan State last summer. He spent the week learning about game production processes. He met many people, including someone from Miami and even Sweden! Because of this program, Alex intends to pursue game design as his future profession.

## More Pictures of Sophomore Camp and Freshmen Homecoming

# MACOMB MATHEMATICS SCIENCE TECHNOLOGY CENTER

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

Dr. Catherine Neuhoff, Dir. of Special Programs
MMSTC Newsletter Committee:
MMSTC students and staff
Editor: Christine Kincaid Dewey

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.

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