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

Volume X No. 2 Macomb Mathematics Science Technology Center 2013-2014

MMSTC CELEBRATES 25 YEARS!

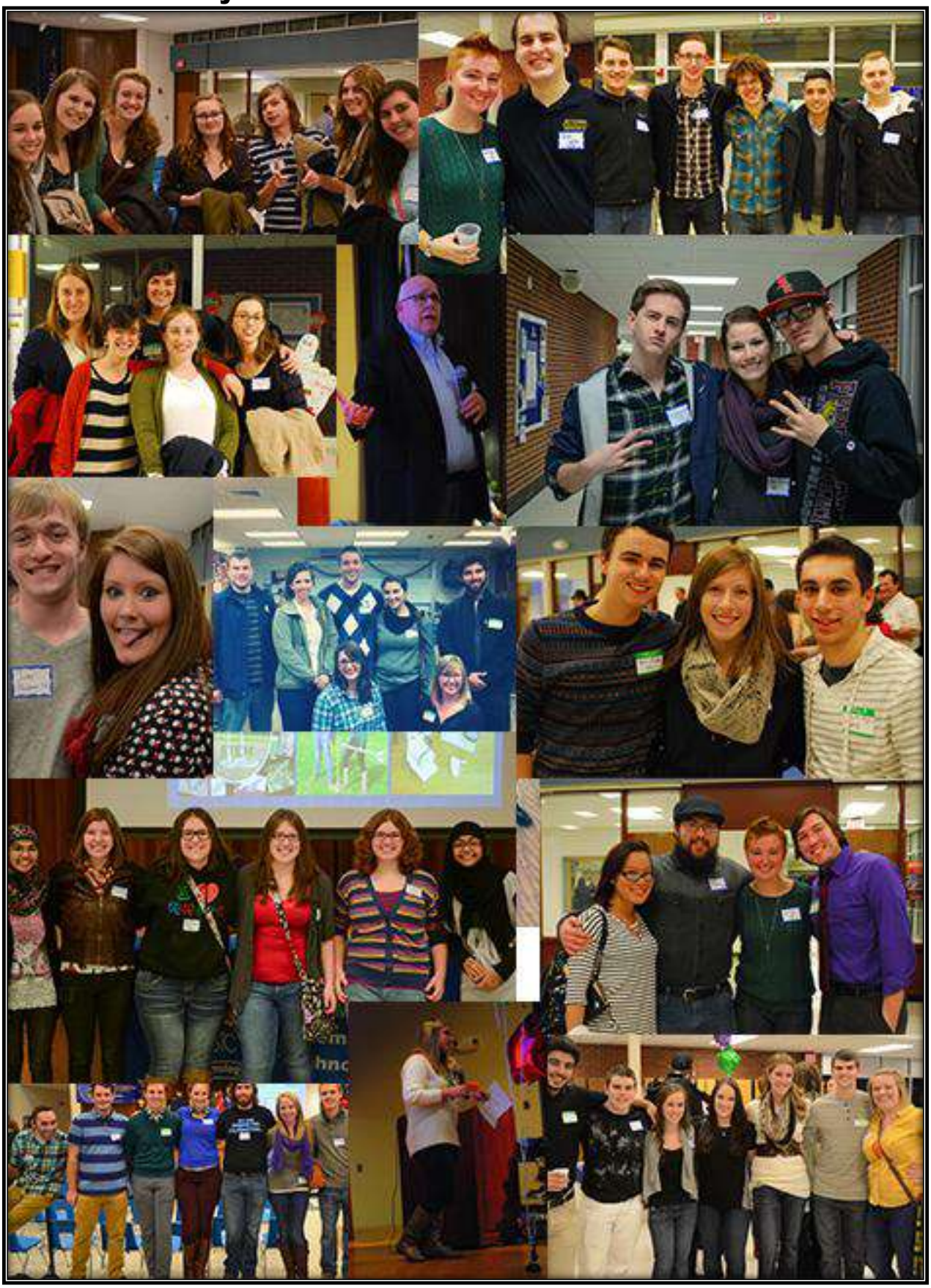
After 25 years of serving over 1,400 students, MMSTC was ready to shine! MMSTC alumni, administrators, and former/current staff began planning the MMSTC 25th Anniversary and propped the doors open wide for +800 guests to attend the Open House on December 23rd!

The hallways were buzzing with the voices of excited former and current classmates who saw each other, some for the second time in a week and others for the first time in decades. All classrooms were open and set up to showcase the past, present and future of MMSTC! Alumni walked up and down the rows of computers in Lab B, some helping their toddlers balance on top of the computer desks running Yeardiscs and Photo Slide Shows. Students posed with a photo booth and guests voted on function art (results pg. 11). Other students brought mementos to put into the memory box and the alumni pinned their current work location to a foam core board. To top the night off, the MMSTC 25th Anniversary keynote address was given by **Mr. Dave Walsh** who was the MMSTC Founding Director.

It was a time to connect and reconnect – a time to celebrate being part of the MMSTC family! Former staff, especially founding teachers Mrs. Copeland and Mrs. Gerling, could be seen brimming with joy and utterly surrounded by students wishing to discuss their latest life updates and career achievements to date. MMSTC's STEM-based curriculum has provided the foundation for doctors, reporters, artists, analysts, lawyers, researchers, engineers, entrepreneurs, executives, and chemists among others. Alumni represent more than +500 organizations in at least 15 different sectors.

This event gave students the opportunity to show how directly MMSTC and the new middle school program, $(MS)^2TC$, positively impacts the lives of students. Many thanks are due to **Christine** and **Ron Dewey**, **Lindsay Loridon (2009)**, **Chris Tallman**, **Carole Gerling**, **Marie Copeland**, **Kaitlyn Beels (2009)**, and **Grace Hsia (2008)** for planning and coordination. But, most of all, many thanks to the current students, alumni, parents, MMSTC former/current faculty and staff, superintendents, and **Dr. Neuhoff** for all the love and support over the past 25 years. We are grateful to the generous financial donors (without whom the event would have been impossible), to **Warren Consolidated Schools** who opened the building during Winter Break, and to the facilities and custodial crew who prepared for our arrival. Thank you all for sharing this special day with us! Who knows what the next 25 years will bring!

25TH Anniversary Celebration Photos!

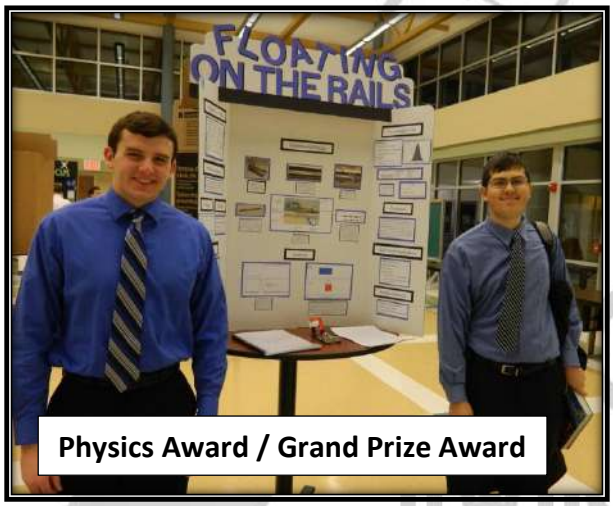


SENIOR RESEARCH ENDS ON A HIGH NOTE: MMSTC SCIENCE SYMPOSIUM

Not even a Polar Vortex can get in the way of the MMSTC Science Symposium! After a record number of snow/cold days, **Mrs. Cybulski** and MMMSTC Staff rallied to coordinate judges and students for our 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.

This year students were able to participate in a new category, the People's Choice Award. To be victorious in this special category, seniors had to convince our Middle School Mathematics Science Technology Center students to invest "Supal Bucks" in their research idea. The project with the most money invested won the People's Choice Award for each science category.

Although these events close 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 and the MS^{2}TC staff for taking time out of their schedules to enrich our program with their knowledge and expertise as well as to celebrate the accomplishments of our outstanding senior class.

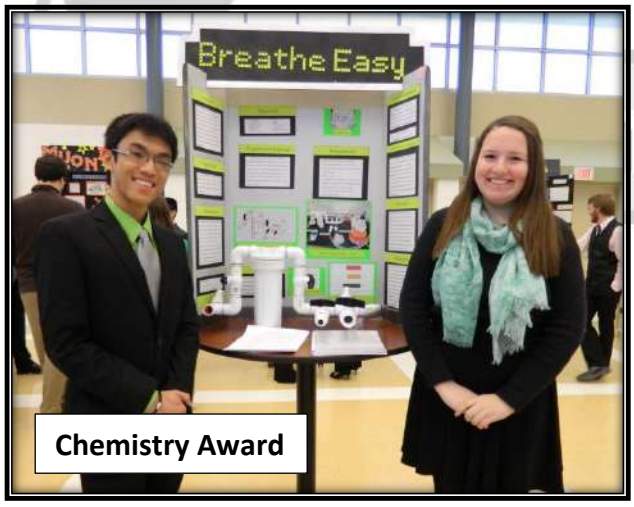


Physics Award / Grand Prize Award

The Effect of Voltage on the Maximum Velocity Achieved by a Cart on a Magnetic Levitation Track

Samuel Habbo-Gavin (Fraser)
David Pokriefka (WWT)

A track and maglev cart was constructed was to determine the effect of voltage on the maximum velocity achieved by a magnetic levitation vehicle. The cart was moved along the track using a solenoid (electromagnet). This propulsion method has not been used before. It was found that voltage did not have an effect on the maximum velocity achieved and that current had a greater effect on the velocity of the cart.



Chemistry Award

The Effect of Humidity Level on the Efficiency of Carbon Dioxide Absorption by Soda Lime

Evan Gonzales (SHHS)
Rachel Quesnelle (WWT)

We sought to improve the quality and efficiency of anesthetic breathing machines by seeing if humidity had an effect on how well soda lime – a substance used to remove carbon dioxide (CO_2) from the air – absorbed CO_2. After late nights at the hospital studying how anesthetic breathing machines filter out CO_2 and leave oxygen to be rebreathed, we created a PVC mockup and ran air through it with varying humidity levels. We determined that humidity has no effect on the absorption efficiency, which means that any humidity level can be used in an anesthetic breathing machine with the same efficiency. This can be used to create a healthier and smoother breathing environment for patients under anesthesia.

Biology Award

The Effect of Carbon Dioxide Gas on the Growth Rate of Oscillatoria Cyanobacteria

Luis Dimech (Cousino)

Maxwell Morgan (Mott)

The effect of carbon dioxide gas on oscillatoria cyanobacteria growth rate was determined to better understand recent, hazardous algae blooms in aquatic environments throughout the world. Algae blooms are hazardous, releasing harmful toxins into the surrounding environment. Two separate cultures of oscillatoria cyanobacteria were grown and one was subjected to excess carbon dioxide gas with another as a control. Samples were extracted and tested for light absorbance using a photo spectrometer. Analysis showed that carbon dioxide gas had a significant effect on the growth rate of oscillatoria cyanobacteria.

PEOPLE'S CHOICE AWARDS:


Chemistry


Biology (Grand Prize)


Physics

The Effect of Silver Nanoparticles in Varying Molarities on the Growth of Escherichia coli

Jacob Arche (SHHS) / Cathleen Saraza (SHHS)

Antibiotic-resistant bacteria have become a serious problem since antibiotics have been overused, so scientists have been researching the use of silver nanoparticles to battle these types of bacteria. Silver nanoparticles are very small particles that have antibacterial properties, and they can be easily created by mixing together and heating two chemical solutions (silver nitrate and sodium alginate). We made different solutions with varying amounts of silver nanoparticles and applied them to E. coli. We found that more silver nanoparticles kill more E. coli.

The Effect of Mass and Length of Hanging Mass from Helicopter on Acceleration of a Helicopter

Abby Bault (WWT) / Megan Satawa (WWT)

The goal of our experiment was to determine which combination of mass and distance of a hanging mass would produce the fastest acceleration of a helicopter. In tense rescue situations it would be helpful to know how quickly one can get away. To do this, we set up a two meter distance and flew the helicopter, recording its path on a video camera. We then found the acceleration using computer software called Logger Pro. To compare our factors we used a two-factor design of experiment (DOE) and found that there were no statistically significant results.

PEOPLE'S CHOICE AWARDS (Continued)

Analyzing How Soil Composition, Grass Amount, and Rate of Pour Affects the Amount of Contamination Found in Groundwater

Brandon Beltz (Cousino) / Tin Mong (Mott)

The purpose of this experiment was to find out how a change in soil composition, amount of grass seed, and rate of pour would affect the final recorded change in the pH level of a simulated groundwater system. This could prevent lead poisoning and other illnesses such as blue baby syndrome. The experiment consisted of soil systems that varied in composition, amount of grass, and rate of pour. A vinegar contaminated water solution was poured into the top layer of each soil system. Then, an electronic pH tester was used to record the change in pH of water that was beneath the soil, which served as an indicator for the amount of contamination. The results were recorded and analyzed with a three-factor DOE.

MMSTC Students Use Their Powers for Good

In December, the MMSTC 9th grade team "adopted" two families in need from the Volunteers of America with the help of ***Mr. Acre.*** *After speaking with each family, a list of needs and holiday wants was compiled. Then, MMSTC students took over! Ninth grade students organized list items on ornaments and covered our Giving Tree with donation items we were hoping to receive. The Giving Tree was brought around to each MMSTC class, and the magic began. Students and teachers took ornaments and donated supplies, gifts, and cards.* ***Freshman Isabel Fiori (Cousino)*** *was one freshman who took a leading role.*
This is what Isabel had to say:

I believe that the giving tree was important because it was a way to give back. We all take a lot for granted. We are lucky have the things we do, and we don't always think about how it would be if we didn't. What if we couldn't get a Christmas gift or have a feast on Thanksgiving? It's something we all just assume will happen, and for some people it doesn't. On Christmas it's every kid's dream to wake up, run over to the tree, and find a pile of presents that magically appear overnight. This dream fills a child's heart with joy and happiness, because he knows someone was thinking about him. I just wanted to give these families the opportunity to experience that dream--To wake up, and feel that special magic.

Our Giving Tree allowed MMSTC students to give back to our community and use our powers for good. Also, it reminded us to be grateful for what we have. We did such an amazing job for a variety of reasons. Everyone is going to have a different muse for buying a gift for someone they will never meet. In the end, what matters is that we did it. We pulled together as a MMSTC family. We got the gifts for the kids. And, most importantly, we managed to make two families' Christmases amazing!

Student Spaceflight Experiments Program Celebration

February 14th wasn't only Valentine's Day around here at MMSTC, nor was it just the last day before winter break. No, at MMSTC it was much, much more. It was our SSEP celebration!

It all started last school year when all our students were asked to come up with an experiment that could fit inside a tube about the size of a pencil and would test the effects of a microgravity environment on the outcome of their experiment. Only one group of students would be lucky enough to have their experiment rocketed up to the International Space Station (ISS) and executed by the astronauts aboard. The project selected was testing if silver crystals grown in space, on the ISS, in a microgravity environment, would have the same properties as crystals grown here on Earth. The student team, **Sydney Waynick**, **Steven Prascius (Mott)**, and **Hunter Montrose (LSHS)**, researched and found that certain crystals on Earth, because of their molecular structure, can be used to hold natural gas, and it was thought that if crystals in space had the same properties they could be used to store natural gas in space, like on the ISS, where 'space' is limited.

To celebrate this extraordinary event we planned an extraordinary day for students in both our morning and afternoon sessions. The day started off with a speaker, **Ken Bertin**, from the Warren Astronomy Association. Next was a presentation by Steven, Sydney and Hunter on their experiment, then a quick video of their experiment being launched into space via the Antares rocket and aboard the Cygnus payload. After this the real fun started as groups of students rotated into sessions where they built and launched stomp rockets, watched a "space-related" cartoon while sipping on root beer floats, and then hit the gym where they bounced around like astronauts in giant moonwalk! It was a Great Celebration and having our students' experiment conducted on the International Space Station is certainly something to celebrate!

The project is scheduled to return to Earth via the Soyuz Monday, March 10th and we will be waiting its return to our building that week. The students will then compare the properties of their crystals they grew here to the crystals grown on the ISS. Stay tuned for results!

Can you hear us now?
(MS)²TC and MMSTC Contacts ISS via Shortwave Radio

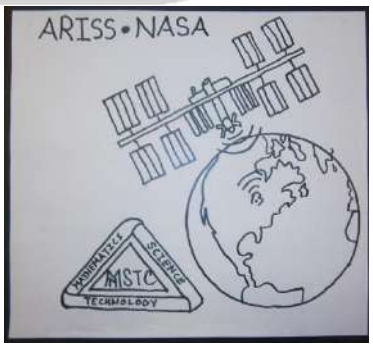
Mr. Mark Supal from MMSTC and **Mrs. Tuyen Duddles** from the Middle School Math Science Technology Center [(MS)^{2}TC] collaborated and submitted a proposal to NASA for an opportunity to communicate with the International Space Station (ISS) via a direct amateur radio contact. MMSTC and (MS)^{2}TC were selected to host an ARISS (Amateur Radio on the International Space Station) Contact! Our schools are among the few schools nation-wide that have been selected through a competitive proposal process for a 10-minute direct radio contact with the ISS. On average only 25 - 30 U.S schools per year get this opportunity.

ARISS is a cooperative venture of the National Aeronautics and Space Administration (NASA), the American Radio Relay League (ARRL), the Radio Amateur Satellite Corporation (AMSAT), and other worldwide amateur radio groups and international space agencies. These ARISS partners organize scheduled 10-minute interactive contacts via amateur radio with the help of experienced amateur radio volunteers.

ARISS contacts use the unique experience of human spaceflight to afford audiences the opportunity to learn first-hand from space explorers what it is like to live and work in space. Teaching From Space, a NASA Education office, facilitates these events which are designed to encourage K-12 students to study and pursue careers in science, technology, engineering, and mathematics (STEM).

We are in partnership with the **Hazel Park Amateur Radio Club (HPARC)** to make the event happen. The equipment and technology to make a direct radio contact will be made possible through the hard work and generosity of the members of HPARC. The members of HPARC have offered their time, equipment, technical expertise, enthusiasm, and know-how to not only make the radio contact possible but to also educate (MS)^{2}TC/ MMSTC students on the intricacies of radio, wireless, and satellite communications and technologies.

In preparation for the contact event, (MS)^{2}TC/ MMSTC students have and will participate in various learning experiences in their math, science, English language arts, and interdisciplinary studies classes centered on space exploration and technologies, and radio and satellite technologies and communications. Thus far, both the MMSTC and (MS)^{2}TC students were offered an opportunity to submit questions that would be asked during the contact as well as compete in separate t-shirt logo design competitions. About 23 students have been chosen to represent the schools during the ARISS contact based upon the quality of the students' questions and their persuasive arguments in support of the relevance of their questions to the ARISS contact. The (MS)^{2}TC t-shirt logo design competition was awarded to 6th grader McKenna Podolak while the MMSTC t-shirt logo design winner is 11th **Kaitlyn Johns (Lakeview)** grader **Najah Mubashira (Mott)**. The ARISS contact is scheduled for Friday, March 14, 2014.



Battery Recycling Drive Nets 751 Pounds

Andrew Damiani (South Lake)

What originally started out as a small idea for National Recycling Week turned into something more than anyone ever imagined!

After mentioning to Mrs. Dewey that I'd like to get involved in the club, she asked if I had any ideas to raise awareness to MMSTC about National Recycling Week. I suggested a small battery recycling drive. We muddled over how it would be organized and to peak everyone's interest, decided a prize should be offered to the class that collected the most batteries. Boxes were placed into each IDS teacher's room and students were encouraged to bring in batteries. The boxes were decorated and posters made with the help of sophomores **Kaitlyn Lumpkins (Mott)**, **Elise Tomaszewski (LSHS)**, and **Ermalinda Ndoka (Cousino)**. The drive lasted through November and created some friendly competition with all of the grades.

We were shocked as the boxes began to fill rapidly, each class trying to outdo one another to bring in the most batteries to win the prize. Soon secondary boxes had to be brought in to accommodate all of the batteries and the PM Ecology Team members helped collecting. By the end of the drive, MMSTC, $(MS)^2TC$, and the Main office had collected a total of **751 lbs** of batteries with the **Freshman Class of 2017** bringing in the most at 280 lbs, followed by a tie by the sophomores and juniors with 165 lbs each, with the seniors collecting 138 lbs.

After the drive, the biggest challenge was now in front of us: Where are we taking these to be recycled, and how are we getting them there? Luckily **Great Lakes Batteries** (St. Clair Shores) generously stepped up to take all of our batteries. **Christina Wark (LSHS)** donated the use of her truck and, along with help from **Jeremy Bojnowski (LSHS),** the batteries were loaded by hand onto a pallet placed into the bed of the truck and were driven down there and dropped off. A big thank you goes out to the MMSTC Ecology Team, Great Lakes Batteries, **Mrs. Kincaid Dewey**, and everyone who participated!

Director's Message:

Greetings parents, students, and alumni! Glancing at the list of events that have taken place since our last newsletter, I am amazed all of this has happened in spite of excessive snow days, an unusual amount of snow and relentlessly cold temperatures. Articles highlight the depth and breadth of commitment our MMSTC instructional and support staff hold for our program. Beyond preparing rigorous, lessons we have staff giving their time for our program's 25th Anniversary Celebration, planning community building activities like Euchre, ice skating, and senior paint ball; organizing student work for the International Science Fair; engaging students' thinking in projects that connect them to real world situations; inspiring students to use their powers for good through philanthropic work; organizing exciting field trips; and making connections between their school research and the International Space Station, Denso Corporation, Purdue and Kettering University programs. As their director, I continued to be inspired by our students, staff, and our alumni.

The outcome of their work this past couple of months strengthens our program's vision and mission to provide innovative, integrated experiences driven by student needs and abilities. Our teachers continue to amaze me with their ambition and pride. Thank you for working with us to develop meaningful experiences for everyone in our MMSTC family.

Dr. Catherine Newhoff

Class of 2015 Visits University of Michigan

On Friday, November 15th the entire junior class visited the University of Michigan campus. This trip has become a tradition at MMSTC among current students and Alumni. The Class of 2015 visited the physics department where they attended a highly visual discussion about Energy in the Universe. Students took a brief tour the central campus and had lunch with MMSTC graduates. With several MMSTC Alumni currently attending the University of Michigan and the free *Jimmy Johns* lunch provided ☺, there is no shortage of former students in attendance

They shared their experiences, gave advice as current college students, and explained how MMSTC helped prepare them for college. After lunch the class visited the MoJo Residence Hall and heard from representatives from the UM Learning Communities about Research and other unique learning opportunities. MMSTC would like to thank the College of Literature Science and the Arts at the University of Michigan for another successful visit and for the support they provide our current and former students.

Sophomores Learn about SMASHING Atomic Nuclei at MSU!

The sophomore class made a pilgrimage to Michigan State University for the first of two college visits; they will visit Lawrence Tech University later this month. This year's campus exploration began at the **National Superconducting Cyclotron Laboratory** (NSCL), a center for world-class rare isotope research and education. Where nuclei are accelerated, smashed, filtered and studied. NSCL is the nation's leading particle acceleration facility. The primary goal of the NSCL is to unravel the mysteries that reside at the center of atoms, in atomic nuclei. Atomic nuclei are ten thousand times smaller than the atom they reside in, but they contain nearly all the atom's mass. Through this research astrophysics make and study atomic nuclei that cannot be found on earth and seek to understand how the elements were formed. They also discuss why basic research is important in forming new science and technologies.

Education Outreach Director **Zack Constain** gave an informative and entertaining presentation for one of his favorite audiences – MMSTC students – about how nuclei are accelerated, smashed, filtered and studied at NSCL. Students were then taken on a personal tour of the NSCL facilities and learned the ins and outs of atom smashing. Later students met with MMSTC alumni **Dagmara Wehr (2008), Chris Bush (2012), Patty Szczepanski (2011), Robin Smith, Kate Dunkle, Alex Gieleghem (2013)** to hear how MMSTC had prepared them for a successful college experience at MSU. Our sophomores really enjoyed hearing from their alumni peers and received some excellent advice from an outstanding group of alumni.

Senior Euchre, A Butcher Tradition

On Tuesday, November 26, seniors participated in the Annual Euchre Tournament! This fun activity is a way for the entire senior class to mix, enjoy some friendly competition, and take a much-needed break from the pressures of Senior Research. Each student was given a personalized schedule of partners and opponents – randomly assigned through a Java program created by MMSTC Alumnus **Joel Tylenda (2012)**. Teachers filled in as needed. The event gave seniors good practice for a game that might be played when they go off to college in the fall!

"Team One Ready? Team Two Ready? Round begins in 5! GO!"

Maxwell Morgan (Mott)

It's hard to imagine why anyone would want small pellets full of paint whizzing toward them at around 275 ft/sec, but I will admit, it can be quite fun. This year, the MMSTC senior's voted that paint ball would be the best activity for the class to participate in. It was mayhem. Although there were barricades scattered throughout the playing field, no one had a chance to avoid being hit, since the rounds lasted until everyone was eliminated. Some planned ahead and wore thick clothing such as hoodies and jeans but others weren't as careful. Either way, it was soon discovered that paintball does in fact hurt… just ask **Timmy Jones (SHHS)** or **Luis Dimech (Cousino)**!

Soon after the referee called the beginning of the round, a sound closest to that of a thunder storm erupted from the battlefield. From a bird's eye view, all that could be seen were dark figures weaving in and out of the obstacles while others threw their hands in the air screaming, "I'M OUT!" But even that couldn't save them. Being tagged out only led to the risk of being pelted additionally as the player was forced to walk through a barrage of paintballs to reach one of the two exit sites.

Regardless of the mayhem, the paintball championship brought out the most competitive spirits of the MMSTC students who had the opportunity to attend, and everyone admitted to having a good time beaming their opponents, their friends, their family.

Math and Art Combine to Form Beautiful Pictures

Students in Mrs. Kincaid Dewey's FST class put their knowledge to use in a creative way in December. Using the functions studied in the first semester, students created a picture ONLY using functions using their TI-Nspire Software or other graphing application. A theme, color, and title made the picture come alive. Some students sought to re-create a beloved character or album cover while others used a Christmas theme. Projects were displayed in the hallway where students from all programs held at Butcher, staff and attendees of the MMSTC 25th Anniversary Celebration got a chance to vote for a "People's Choice Award". **Aaron Espere (SHHS)**, **Jozlyn Lanzar (Cousino)** and **Andrew Liner (WWT)** were the top vote getters. "The students really knocked it out of the ballpark on this project!" said **Mrs. Kincaid Dewey**. "Some of the art used almost 100 different functions! I was very impressed with their creativity. They really were able to show their knowledge of the mathematics behind the project." A selection of projects is below with a slideshow of all student projects available on Mrs. Dewey's website. (http://mmstc-dewey.weebly.com/lessons.html)

****All photo collages in this issue created by Editorial Assistant Senior Karly Gallis (Cousino)**

MMSTC Students Participate in State Mathematics Competition

Sponsored by the Michigan Section of the Mathematical Association of America, the Michigan Mathematics Prize Competition (MMPC) is offered to encourage students to develop their interests and abilities in mathematics.

Part I of the MMPC is open to all students in Michigan high schools. Twenty-nine 10th thru 12th grade students participated this year. This exam consists of 40 multiple-choice questions involving topics from high school mathematics. From approximately 10,000 participants in Part I, the top 1,000 students are invited to take Part II of the MMPC. There students work on five challenging problems and write their solutions providing full justification and proof of their claims. Six of our students qualified to take Part II – **Evan Gonzales (SHHS)**, **Andrew Oughton (Mott)**, **Zach Barringer (Lakeview)** – along with MMSTC top scorers **Matthew Polgar (SHHS)** and **James VanWagnen (Centerline).** The students with the top 100 scores in the two parts of the competition are honored at an awards program.

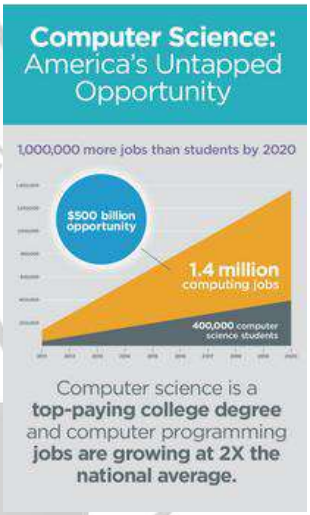
Solving Real World Problems – MMSTC Students Impress Engineering Professionals!

DENSO

February, students from MMSTC met with engineers from DENSO Corporation to learn the process of inventing new products. DENSO Corporation is a global automotive components manufacturer with over a half dozen facilities right here in Michigan. Students worked in groups to understand the process of "brainstorming" and combining ideas into a feasible solution. In this case, students brainstormed on a plan to incorporated technology into an automobile which would reduce distracted teen driving while using a cell phone. Ideas such as restricted phone services, lock-out technology, Faraday cages, special sensory inputs and more were all discussed. Over the course of the afternoon, students worked collectively until a plausible solution was reached. DENSO was very impressed with the technical and presentation skills of our students. The engineers are currently working on a plan to provide our students with all the equipment needed completely develop their ideas into working products. Patents rights to any new intellectual property will be shared between the students and DENSO. Shown from left to right are **Katherine Sobodos (SHHS)**, **Sydni Jordan** and **Olivia Smith (Mott)** discussing their designs.

HOUR OF CODE

To celebrate Computer Science Education Week, students at MMSTC took part in a world-wide event coordinated by Code.org. A variety of tutorials were offered during December 9-15, 2013 on Code.org's website. These self-guided tutorials allowed people of all ages – from kindergarten to adult – to explore programing with no prior experience necessary! Tutorials included video segments from those in STEM careers including Bill Gates and Mark Zuckerberg as well as artwork from popular games Angry Birds and Plants vs. Zombies. All MMSTC freshmen and sophomores, along with Mrs. Gravel and Mrs. Kincaid Dewey, spent a class period completing at least one tutorial. Some students even went home to try out more tutorials – they had so much fun! Hour of Code is an effort to demystify code and change the conversation around computer science. According to Code.org founder Hadi Partovi over 29 million people from around the world (73% in the U.S.) participated in this event.



The Steel Armadillos Lead Alliance 4 at District FIRST Competition!

Team 818, "The Steel Armadillos", traveled to Center Line to compete in their first District Competition of the season February 28th - March 1st. Build season began in January and lasted six weeks. The 40-man team works / builds out of MMSTC, but is comprised of students from Mott, Cousino, Sterling Heights, Lakeview and Fraser High Schools, and is open to all WCS high school students. This year a record 9 freshmen, 14 sophomores, 3 juniors and 4 seniors are on the team from MMSTC. Lead by WCS teacher **Mr. Mike May**, Team 818 enjoys sponsorship from General Motors, Chrysler, Denso, Eaton, Motor City Fastener, and Warren Consolidated Schools.

This year's competition, Aerial Assist, involves building a robot that can catch and pass a 2' exercise ball among three team members, throw it over a truss, and shoot it into a low or 6'high goal. After 18 Qualification matches, and fighting through malfunctions and communication errors, the Steel Armadillos were 8-4 which earned them the title of Alliance Captains. Through their performance, the Armadillos earned roughly half the points required to qualify for the State competition in April. When asked how the competition went, some sophomore team members responded:

"On Friday during qualification matches we went 4-4 and on Saturday we went 4-0 for an overall qualification record of 8-4. This put us into 5th place out of 40 teams. We were captain of Alliance 4 and this allowed us to pick our two other teams for our alliance. We were eliminated during the first round of elimination matches 0-2 (best of 3). Overall I think it was a success and I had a great time." **Daniel Pisarksi (SHHS)**

"[Competition] went really well! I should probably note that our robot wasn't moving due to communications issues for the first three matches (three of the four we lost.) Props to Jack [Banick] and Julius [Estrope] for being an amazing drive team combination!" **Matthew Polgar (SHHS)**

"I danced a bunch…" **Michael LaBarbera (Fraser)**

The students are preparing for their second district event April 4th & 5th at Troy Athens High School in hopes of improving on this performance and reaching the State Championships at Eastern Michigan University. Expect a follow-up article in the Spring newsletter!

MMSTC Alumni Updates / Contributions

(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.)

Stay Connected to Fellow Alumni!

Did you know that there is a MMSTC Alumni group on Facebook for all graduating classes? What about the LinkedIn group (Macomb Mathematics Science Technology Center (MMSTC) Alumni)? Stay connected to your fellow classmates – network personally, professionally or both! Don't forget to update your email address as well as your MMSTC website information. Contact Mrs. Kincaid Dewey at MMSTCAlumni@wcskids.net .

MMSTC Alumna Receives Entrepreneur Innovation Prize

Marketing and information systems management major **Natalia Kumar (MMSTC 2011)** was part of a team of Wayne State University students who have won a $10,000 Mobile/Web award from the Michigan Collegiate Innovation Prize program, a six-month training program that offers students intensive startup training to go from an idea to venture launch. DragAroundMe (www.dragaround.me) provides a simple and easy way to share, transfer and receive files without having to register for an account.

Chosen teams received mentoring and training from Michigan Innovation Corps (I-Corps), a statewide program designed to foster innovation and entrepreneurship in Michigan. "The entire program was an amazing learning experience for our team," said Kumar, who is also the president of the School of Business Administration Student Senate. "We were able to transform our technology startup by applying the knowledge we gained from the process and incorporating the advice we gained from our mentors. The program provided us will all the necessary tools to build our startup, as well as, take it to the next level."

Soon-to-be Alumni Connecting to Their Inner Child

Making the Right Choice for YOU
Advice to Seniors on Choosing a College/University

Choosing where to go to college is a stressful task for most. Should I stay at home and save money first or spread my wings and jump right into a university? A lot of little things play into the decision including pressures from family, friends and the most important for many – finances.

I am biased when I say go to a University, because that is what I chose to do. But before you take the jump, make sure it is the right one for you. I suggest **making a pro and con list** for each school you may attend. Include every little thing from the cost of attendance, the size of the campus, friends who are attending, etc. (This method really helped me narrow it down to choose a university and a graduate school). Also, **visit** everywhere you are accepted. You can only learn so much about a place by what you read off of their website. Make an effort to reach out to people you know that attend that place and ask for suggestions. Different colleges and universities are known for different programs or specialties. **There are many alumni (including me) who would be more than willing to give you a personal tour or reply to an email asking about what university life is like.** I had many people help me through my undergraduate career and I can be a resource for you if you need one. Below is a little excerpt about my journey to choosing a college.

Just like many of you I did decent on my ACT (28) and had around a 4.0 in high school. I was one of the nerds and I accepted it (and was very proud of it). Going to college was a very new and scary thing for me. I would be a first generation college student. That means neither of my parents have a bachelor's degree, so they would be unfamiliar with some of the struggles I came in contact with as an undergrad. I applied to six schools in the mitten. I was accepted to all, and had a tough decision to make. After touring the schools, worrying about finances and talking at length to multiple people, I decided on Central Michigan University. I chose it for its homey feel, in the not so large town of Mount Pleasant, Michigan. They offered a variety of academic programs, a health professions living learning community, a phenomenal honors program, a very large volunteer center.

While visiting this campus I was greeted with so many smiles and welcoming signs, I knew it was where I was meant to be.

Moral of the story, make the decision based on what is best for you and where you feel most comfortable. I do not regret my decision one bit and I am very happy in the choice I made as a high school senior. If you need anyone to talk to or any advice about college life, moving away, dorm life, finances, living on your own or Central Michigan University, I am your girl!

Feel free to shoot me an email with any questions (find my address on the 2010 page of the MMSTC website); I'd love to be a resource for you. Good luck making your decisions seniors!

Rebecca Pittman (MMSTC 2010)
Central Michigan University Bachelors of Science in Kinesiology & Nutrition Class of 2014
Shenandoah University Division of Physician Assistants Class of 2016

Research After MMSTC?
Tips on Finding Undergraduate Research Opportunities

Lyndsey Reich (MMSTC 2009)

By the end of my freshman year of college at Wayne State, I was practically frantic about finding a research advisor and getting started on a project of my own. After my experiences doing research at MMSTC and abroad (thanks to the Detroit Science Fair), I couldn't wait to jump back in and continue with hands-on application of what I learned in my basic science classes. My first step was attending a meeting of the American Society for Microbiology on campus.

Through this organization, I met another student working with a professor at the medical school on her potential Chlamydia vaccine. When I told him about my prior research experiences and interests, he helped me set up a meeting with his advisor, and she "hired" me on the spot. Looking for a research mentor? Here are some tips:

- Network! Attend office hours and student organizations pertaining to your research interests.
- If you've declared your major, peruse your department's faculty pages. Find a professor whose research aligns with your interests or background knowledge. Send this professor an email declaring your genuine interest in their research topic. Include a resume listing your past research experiences.
- Find out if your degree requires a thesis or original research. If it does, make sure that the position you're applying for will count towards your requirements. Does your mentor need to be a full-time faculty member within your department? Must they hold the title of "Professor"?
- Find out if your mentor has the funding to put you on the payroll. If not, look into your university's grant opportunities for undergraduates through your department website.
- In the hard sciences, if you're working on your own project and wish to be published, be prepared to dedicate at the very least 15 hours a week to the lab. Make sure you can balance your classes and extra-curriculars!

When you find a mentor, ask if they have any ongoing projects you can work on. What kind of data do they need? For example, to support the effectiveness of her Chlamydia vaccine, I was asked to run lymphocyte proliferative assays. These were often 8-9 hour experiments! Benchwork has a pretty steep learning curve, so take good notes and don't be afraid to ask questions.

There are so many great opportunities for undergraduate researchers, but you often need to go out of your way to find them. Keep track of grant submission deadlines! This is a great chance to brush up on your organizational skills. My research at Wayne State was funded through the Summer Undergraduate Research Experience (SURE) grant through the school of medicine's graduate programs, and the Undergraduate Research and Creative Projects Award through the Honors College. I was even funded to travel to the National Conference of Undergraduate Research in Utah to present! NCUR also offered a publication opportunity, which I wasn't about to pass up. You can find my article at: http://www.ncurproceedings.org/ojs/index.php/NCUR2012/article/view/251/

Feel free to contact me if you have questions or need some guidance, especially if you're a Wayne State student! (lreich@med.wayne.edu)

ALUMNI CAREER DAY

"I'm good at math, science and technology. What kinds of careers exist for that??"

We are planning a special event on Tuesday, March 25, 2014, to help our students as they think about their future.

MMSTC Alumni in every field have been invited to give a 20-25 minute presentation on their career field (including Q&A) for our students. There will be five sessions in the A.M. and 5 sessions in the P.M. for students to hear about possible careers from alumni in various professions. Current students will be able to select from a variety of career areas, including anthropology, chemistry, medicine, attorney, physician assistant, packaging engineering, fermentation science, financial firms, manufacturing engineering, marketing, and entrepreneurship. There will also be career-planning sessions provided by **Ms. Pat Bonnici** for students to select as well. Several alumni are not in the area and we are arranging a presentation via Skype.

Participating alumni are **Brice Jurban (2008)**, **Jane Sturgell (1998)**, **Ryan Kinch (2002)**, **Chelsea Parman (2007)**, **Katie Nowinski (2009)**, **Bridget Howard (2006)**, **Hayley Laird (2009)**, **Eric Stephenson (2004)**, **Maha Hassan (2004)**, **Stathis Pauls (2012)**, **Ed Yruma (1998)**, **Jennifer McBrien (1995)**, **Lindsay Loridon (2009)**, **Grace Hsia (2008)**, **Courtney Love (2009)**, **Sean Simpson (2009)** and **September Shaw (2003)**.

We are looking forward to this day, as it gives our students an opportunity to hear about possible careers, from Alumni who have shared a similar high school background and preparation. Organizer, **Mrs. Chris Tallman** thanks all the alumni who are graciously sharing their time with current MMSTC students.

Class of	Name	Where are they now?*
1995	**Sara (Hutchens) Warunek**	Whitmore Lake, Legal Assistant at Washtenaw County Prosecutor's Office
2001	**Catherine (Beauduy) Stewart**	PhD in Microbiology (2011) from Northwestern University in Chicago. I am working in R&D at Unilever in Connecticut. I also volunteer and consult with the Yale Peabody Natural History Museum on a science outreach program dealing with infectious disease and climate change.
2004	**Andy Melnyk**	B.S. in Mechanical Engineering (2008) from Villanova University I have been working as a Quality Engineer for The Boeing Company in the Philadelphia area, supporting the two military aircraft manufactured there. I'm also currently working on my MBA
2007	**Kristen (Kokoszka) Hayes**	I am currently living in Tolanaro, Madagascar, working for the International Mission Board on a two year program. My work includes traveling to and mapping villages doing ethnographic research.

*Editor chose a sampling of updates provided at the MMSTC 25th Celebration

MMSTC Life Hacks: Choosing A College –

Tamim Shaker (MMSTC 2009)

There comes a time in our lives where we must choose the direction in which we want to pursue our dreams. How we reach our dreams depends on the environment around us, the skill set we have, and our natural ability to apply those skills effectively. We share a common element that will be a significant contributing factor in your future successes, an education at the Macomb Mathematics Science and Technology Center.

The **first** order of business is to identify what is your goal, directive, or field of study that you would be passionate about pursuing. This should be something you have an interest in intrinsically; my advice would be consider your strengths first, interests second, and extraneous elements last, (i.e where your friends are going to school, family influence, financial resources).

Second, the financial aspect of your collegiate future is of great importance. The difference between having a significant amount of debt or the lack thereof will determine how effectively you can reach financial freedom and success. A great deal of debt will impede the rate at which you can acquire equity. Little or no debt will allow you to start saving money to experiences, places, people, and material goods that can aid you in reaching your goals.

Third, when choosing a college one must consider what notable professors teach at that university, what notable research have they completed, and what degree of access do you have to those individuals. Your future success depends on how you utilize your network and the skills you have acquired. Going to college is not just about taking; It's about refining your skills through application, collaboration, and gaining confidence from that.

This brings up the **fourth** element that you should consider. What culture and credentials does the school in question offer you? What is the school's rank for the subject in question, is the school accredited, and what connotations are associated with a degree from that school? Furthermore, the culture of a university is important to consider. Culture defines what extracurricular activities are available, the magnitude of participation, and how diverse in terms of peoples and experiences the campus is. The more culture a university has the more life experience you have the opportunity to take away.

The **final** element to consider is how marketable you will be at the end of your collegiate experience. You as a student of MMSTC have an amazing advantage. The interdisciplinary skills, research techniques, problem solving skills and team/leadership skills will be the **greatest intellectual assets** you have in the coming years. Professors **will want** you on their teams because you already have background knowledge and skills to work at the collegiate level. You as a graduate of this program will find your transition to college easier due to these skills. You need to strengthen and build on these skills in college and seek out opportunities for scholarship, recognition and broadening your network to take full advantage of your collegiate experience.

Annual MMSTC Ice Skating Adventure a Fun Time for All!

2014 Michigan State Future DOc's Program "Mentoring The Physicians of Tomorrow – Today"

Marco Lin (Lakeshore)

The 2014 Michigan State University's College of Osteopathic Medicine sponsors the Future DOc's Program, which is a medical career exploration for high school students. The program is held at different medical locations every other Saturday. The program begins with a grand banquet/induction ceremony. The main goal of program is to inspire participating youth to pursue a health-related career. The program schedule consist of a session with Michigan State's med-students, a tour of Medstar Ambulances' along with a CPR class, a tour of pathology, Henry Ford's occupational therapy, McLaren Macomb hospital, Fraser Eye Care Center, Lake Shore Ear Nose Throat and finally St. John Providence surgical robotics. In addition to the medical experiences, the participants there come from a wide friendly variety ranging from Dakota High school to International Academy of Macomb. Currently, we just finished at the Macomb medical examiners and it was very interesting and surprising; we actually received the opportunity to hold an actual human brain, liver, kidney, and heart. This experience was unforgettable; I can't wait to see what happens next! Other MMSTC participating students are **Ireland Portalski (WWT)**, **Jackie Orjada (SHHS)** and **Mahir Chowdhury (Mott)**.

MACOMB MATHEMATICS SCIENCE TECHNOLOGY CENTER

27500 Cosgrove | Warren, Michigan 48092 | 586-698-4394 | 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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A focus on measurable student achievement in our Professional Learning Communities.

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

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