

SENIOR RESEARCH

Senior research is the crown jewel of a student's four-year academic experience at MMSTC. This semester long, cross curricular project includes a bound research paper, 20 minute oral presentation to staff and peers, and a science symposium where projects are presented and defended to industry professionals. It requires MMSTC seniors to demonstrate the academic, laboratory, time management, and cooperative skills that they have gained over the course of their time at MMSTC.

This year's category winners demonstrated an exceptional mastery of the above skills.

Physics 1st Place Grand Prize Winners

Chris Kot, Warren Mott HS
Jovan Popovich, Cousino HS

The team of Kot and Popovich created a small electric generator that converts the mechanical energy of wind induced resonance vibrations of strip of fabric into electrical energy. Their project entitled Windbelts: Design, Performance, and Application



This experiment was focused on the new, simpler, non-turbine alternative in wind power generation known as Windbelts™. The objective of the experiment was to find how the orientation of a Windbelt to the airflow of a ventilator fan, divided into vertical and horizontal orientation, and belt width affect its voltage output through a 3-factor Design of Experiment. Data was collected using a multimeter to measure voltage output (AC mV), risers to raise and lower either end of the belt for the vertical angle, and a ventilator fan providing wind power.

Table of Contents

Senior Research	p. 1- 2	Teacher of Year.....	p. 4
Euchre.....	p. 2	Wayne State Tour.....	p. 5
Stats Poster Contest.....	p. 3	Ice Skating.....	p. 5 & 8
Science Saturdays.....	p. 3	GREEN Club.....	p. 6
Freshmen Research.....	p. 4	Counseling Corner.....	p. 7



Biology 1st Place Winners

Mike Daugherty, Lake Shore HS
Kevin McCarty, Lake Shore HS

Our research project was designed to determine how different concentrations of fertilizer affected the lipid content of lemna. Lemna is more commonly known as duckweed and is found on the surface of still water. It is often just thrown out so the aim of this experiment was to find useful purpose for the waste. The results found that there was no significant change in the

amount of oil in the plant when different concentrations were applied. Nor was there an appreciable amount of oil obtained in any case.



Chemistry 1st Place Winners

Anna Myers, Sterling Heights HS
Rebecca Pittman, Sterling Hts. HS

We examined the effectiveness of chemical road deicers. We teamed up with the City of Madison Heights Public Works Department to test the effectiveness of four common chemical deicers (including two environmentally-friendly deicers) via a

change in volume experiment completed outdoors. The chemicals were applied to plastic tubs of frozen ice that were placed outdoors at night to mimic the conditions when road deicers are actually applied. Through an ANOVA statistical analysis, they found that the magnesium-chloride-based deicer, Caliber M1000, significantly melted the most ice, while the two environmentally-friendly deicers, composed primarily of beet juice, melted the least.



It was the half-day before Thanksgiving Break, and the Seniors needed a break from the difficulties of research. What to do? A Euchre Tournament! This has become an annual tradition for the seniors at MMSTC. It gives them welcome break, and builds camaraderie for the Class of 2010. MMSTC staff filled in for absent students. The Sportsman Award went to **Cristian Ciabaturu** (SHHS, 2010). MMSTC alumni, **Lisa Kwiatkowski**, Class of 2007 and **Mandy Buchowski**, Class of 2009, stopped by for a visit, and joined in the fun as well!

SOPHOMORE IDS: MICHIGAN STATISTICS POSTER COMPETITION

Every year Grand Valley State University hosts the *Michigan Statistics Poster Competition*. Tenth grade students here at MMSTC finished up their first semester IDS class by creating posters to enter into this competition. This is a great way to culminate the semester lessons because students take what they've learned and apply it to a real problem specific to their interests. Students are allowed to investigate a topic of their choice and collect the data they need to answer their question. They need to decide what statistical methods are appropriate and what type of graph best displays their results. It's a lot more difficult than just doing a problem in a book where they know to use a certain method because it is in that section of the book.

A lot of work must be done to collect all the data they need, but students enjoy being able to pick their own topic. Topics this year have ranged from "Teen Texting" to "Economy: It Affects Us Too." Once the posters are done everyone loves to stop by and read the results of all the posters.

Over 500 posters are entered into the competition from grades K-12. "I am always proud of our students' entries and I wish our students the best of luck; they are already winners because they have learned some statistics!" said **Mrs. Cybulski**.



SCIENCE SATURDAYS AT U of M

Following up on an opportunity shared by **Mrs. Hilliard**, **Ashley Gerebics** (Fraser HS, class of 2012) attended a four session chemistry/ astronomy camp at the University of Michigan called Science Saturdays. At one session she learned how chemistry and astronomy are related and how the work of chemist and astronomers are similar. For example, both use scientific notation to measure size of the particle they're working with. This picture shows Ashley's group looking into a light beam to sort of the color spectrum.

SUMMER PLANS:

Summer is a perfect time to indulge your interests, engage in your passions, try out different career paths or take a new or required class in summer school or at Macomb Community College. There are many summer opportunities available at varying costs and locations. Watch the message board, check out the summer interest bulletin, or see Mrs. Brown for further information.



SELECTIVE SERVICE REGISTRATION:

It's quick. It's easy. It's the law. Young men are required to register with the Selective Service within three months of their 18th birthday. Remain eligible for college scholarships, federal loans and jobs. Register online at www.ss.go



FRESHMEN CLASS RESEARCH

The I.D.S., Math and Science departments are happy to report that the Freshmen research is underway. The student groups of two are required to professionally produce a presentation that communicates the findings of their semester long research project. The projects are scheduled for completion during early June and presentations commence immediately.

With the guidance of **Mr. Estapa**, students have chosen a variety of topics. This year the ninth grade biology topics range from determining the tensile strength of human hair after the exposure to various hair care products to testing the effect of temperature variations and pH changes on influencing the mutation rates of bacteria. Many of the students selected plants as their main topic of research due their ease as a testing subject. All of the research is sure to inspire some new scientific discoveries.

Students will also prepared their first formal scientific research paper and presentation in I.D.S. Once again **Mrs. Gerling** will do an excellent job of preparing the students for this task as well as the rigorous question and answer session that follows their presentations.

A special thanks goes out to our superior math department especially **Mr. Acre** for his work with the students in selecting the proper statistical analysis to support their scientific research results.

MMSTC TEACHER NAMED WARREN CONSOLIDATED SCHOOLS HIGH SCHOOL TEACHER OF THE YEAR

The Warren Consolidated Schools Outstanding Teacher of the Year awards are given annually to honor teachers who have achieved the highest standards of excellence in their profession. These awards are created out of a conviction that quality public education is essential to our community.

Based on the measures provided by the Macomb Intermediate School District, teachers were nominated by their colleagues, administrators, students, and parents. Once the nominations were received, the nominees were asked to submit a "Teacher Testimony" that focused on Planning and Preparation, Classroom Environment, Instruction, and Professional Responsibilities. A panel of judges made up of administrators, teachers, and parents spent time reading the testimonies and choosing a winner.



Christine Kincaid Dewey

Mrs. Dewey teaches the sophomore Functions, Statistics and Trigonometry course as well as senior calculus. Her classroom is a welcome haven for all -- especially on Bagel Days! In addition to her responsibilities & involvement at MMSTC, Mrs. Dewey is a long-time, active member of the Detroit Area Council of Teachers of Mathematics (DACTM), currently serving as President.

Freshmen Tour Wayne State

The Class of 2013 visited the campus of Wayne State University on November 23. The exploration of campus began at the Eugene Applebaum College of Pharmacy and Health Sciences. Students toured the building and heard from the many programs housed there besides pharmacy, such as physical and occupational therapy.

The next stop was at the College of Engineering where we met in a large lecture auditorium to hear about the various programs within that college. Students saw alternative powered automobiles, robotic arms designed for surgeries, and robots designed to seek out explosives! We were then shown through a student dormitory and ran into MMSTC Class of 2007 alum **Monica Tadros**, who currently is residing there.



After a short walk across the main part of the campus, we went through their huge library and into the Student Union building, where we experienced the plethora of food choices for lunch. After lunch we met with more MMSTC alumni

Class of 2009 **Tamim Shaker**, and **Courtney Love**
Class of 2008 **Jessica Corner**
Class of 2006 **Alison Ross**

The freshmen had the opportunity to listen to and ask questions of our alumni regarding college, college life, programs of study, scholarships earned, and how the preparation received at MMSTC translates to the “actual” college experience!



HANDS-ON SCIENCE AT THE RINK!

On Friday December 18, the entire MMSTC community went to the Troy Ice Arena for the Annual Holiday Ice Skating Activity. Student activities including testing gravity in an attempt to stay upright on skates, maintaining one's center of mass while changing directions, and observing the effects of friction while sliding to a stop. The Doppler Effect was demonstrated while veteran hockey players and figure skaters skated past first time skaters trying to stop. Several pick-up games of “broom ball” were organized and played by both students and staff --- and dominated by the staff. Please see the last page of the newsletter for photographs of this yearly event!



MMSTC GREEN Club Is On The Go

The MMSTC GREEN Club (Global Research of Energy and Environmental Needs) has been mighty busy lately with several projects around the school. Recently, they have distributed special "Green" (although they're really red) recycling bins to teachers around the school to encourage paper and bottle collection in the classrooms. The bins are collected regularly and picked up through the city's recycling program. Shown are many active member of GREEN



showing off their collection bins with custom imprinted logos. The GREEN club is also involved in the construction of a 250 watt solar panel to be installed in the courtyard with the Windspire. The solar panel will serve as a research tool for studying energy output during different months of the year. In addition the solar panel will be used to provide electricity for night lighting of the courtyard. Students have determined the solar wattage needed and storage battery requirements necessary to

keep the courtyard lights glowing all night. Shown below are a couple of GREEN members assembling the aluminum frame to hold the solar panels. Also shown is the completed solar module. Interested members can contact 11th graders, **Patricia Pasque** (Cousino), or **Juzzlyn Perry** (Mott) if they wish to become a member of GREEN. GREEN welcomes any monetary donations from the community to keep the activities moving forward.



THE COUNSELING CORNER

COMPARING FINANCIAL AID AWARDS: Seniors will soon be getting letters from colleges that will detail their financial aid offers. Most aid packages consist of some combination of scholarship, grant, educational loan, and student employment. Evaluating and comparing offers can be tricky. First be sure you understand the three main categories of financial aid.

Scholarships and grants are freely given and don't have to be repaid. However, conditions such as maintaining a specific grade point average may be needed to renew the scholarship. In the case of a grant, it may be adjusted if the student gets aid from other sources.

Loans are expected to be repaid at some point.

Need-based student loans are subsidized, meaning they do not have to be repaid until the student graduates.

Supplemental or unsubsidized loans are also available for tuition. These are not based on need, and families must make yearly interest payments on these loans. (It's best for students to leave these supplemental loans out of the picture when considering and evaluating their aid awards)

Work-study may be offered to qualified students. The financial aid office will usually help the student find a position that fits her course load and needs.

Compare your award at College Board's online Compare Your Aid Awards tool. An excellent resource and easy to use comparison chart. All you have to do is enter information about the college costs and aid offers.

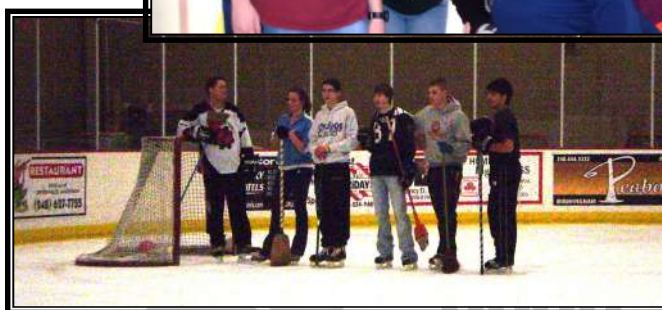
To Get Answers it is recommended that you call the university financial aid office. Since many of these offices are extremely busy in the weeks and months after admission letters are sent out it will require you to be both patient and persistent. If necessary, families should schedule a visit in person to discuss follow-up questions.

A Financial Aid appeal may be an option in some circumstances. Changes in financial status due to layoff, divorce, death in the family or medical expenses should be reported and can be easily documented. In some cases where a student has received a more attractive **offer from another school**, the family may wish to appeal and see if the college can improve on their initial award. This outcome is by no means certain as aid offices will have worked hard to fairly determine their offers. It is important that this appeal be presented as a respectful request and not a negotiation tactic.

Just
remember
stay
positive and
don't give
up!

Seniors & Guest ticket holders:
The Class of 2010 Senior Dinner and Honors Banquet
Monday April 26, 2010 (Doors open at 6:30 pm)
Best Western Sterling Inn Banquet and Conference Center
(34911 Van Dyke in Sterling Heights)

PICTURES AT THE RINK



WARREN CONSOLIDATED SCHOOLS

Dr. Robert D. Livernois, Ph.D.
Brian Walmsley, Chief Academic Officer

Macomb Math Science Tech Center
Lauran Hoven, Director of Special Programs
MMSTC Newsletter Committee: MMSTC staff
Printing and Distribution: Secretarial Staff

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The Macomb Mathematics Science Technology
27500 Cosgrove | Warren, Michigan 48092 | 586-698-4394 |
www.wcskids.net/mmstc/

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.

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

Student Achievement

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

Clear Expectations

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

Strong Relationships

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