



## THE ICING ON SCIENCE & MATH

Once again students & staff took time out on December 19<sup>th</sup> to explore the applications of math and science as related to ice skating at the Troy Sports Center. Physics students experienced the forces of gravity while apprentices of chemistry encountered the changes in state of H<sub>2</sub>O and biology scholars observed the results of this physical activity on the muscular system! Demonstrating the fact that math is indeed everywhere, students also calculated probabilities (of falling!), made calculus come alive with instantaneous rates of change of speed with respect to time and encountered properties of ellipses. Many even joined in a game of broom ball, including all of the male staff members!

Students in the four grade levels had a chance to socialize, practice a skill and even enjoy a cup of hot cocoa, courtesy of profits from the bagel fund. The event was a wonderful way to close out 2006 with the Butcher family.



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## **COUNSELOR'S CORNER: CAMPUS VISITING TIPS**

It is never too early to start looking for the right college; making a campus visit is probably the most important component of the college search process. Actually visiting a campus is probably one of the last components of the college search process as much of the initial leg work should be done without having to leave your home or school.

Consider the factors that will ultimately make your decision -- while a college on the coast sounds wonderful, the "real world" issues such as distance from home, size, cost, and field of study will probably be the most important to you. There are resources in the counseling office, Lab B, and of course the internet that can help you narrow the field by determining which criteria you have established. Be sure to also attend a College Fair or the presentation of a visiting college admission representative to learn about all the different schools.

As you might guess, all of this takes time. That is why it is important to start evaluating schools and yourself early. Many of the students make the mistake of waiting until their senior year to really start thinking about what they are going to do after high school. Since the vast majority of MMSTC students hope to attend college, waiting until senior year may be too late. Many colleges and universities have specific admissions requirements, early deadlines, SAT subject tests requirements, or other prerequisites that students need to know about in order to be prepared to meet them.

Spending time during your junior year learning more about yourself, what you want, and what schools meet your needs, should enable you to narrow your focus and search to three to five schools. Once these schools have been identified, it will be time to actually make a campus visit. Spring break of your junior year is a perfect time.

Continued...

During your senior year, make a second confirming visit to your top-choice school.

One very important thing to be aware of is the timing of your visit. Try to avoid visiting when classes are not in session-- Saturdays, Sundays, or during a college's vacation time. Visit during the week; attend a class; eat lunch in the cafeteria with students; meet with faculty in the academic area of interest to you, ask about financial aid opportunities; ask questions about academic requirements/offerings.

Finally, make sure to plan your visit. Contact the admission office or the campus visit center prior to your trip to insure its success. Most colleges and universities have online registration for campus visits available on their websites.

Have fun!

## **AP EXAM INFORMATION**

The fee for each AP exam this year is \$83.00. Fee reductions are available for students with financial need. If you think you qualify see Mrs. Brown as soon as possible. Registration will take place soon! Exams will take place from May 7-11<sup>th</sup> and May 14-18<sup>th</sup>. All math, science, statistics, and computer science exams will take place at Butcher. Checks are to be made payable to Warren Consolidated Schools. See your math and science instructors for details.

## **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 18<sup>th</sup> birthday. Remain eligible for college scholarships, federal loans and jobs. Register online at [www.ss.gov](http://www.ss.gov).

## SCHOLARSHIP OPPORTUNITIES

Applications for most scholarships are online. Check out the following and/or see Mrs. Brown for details and information.

- Society of Women Engineers Scholarship for High School Senior Women
- Best Buy Scholarship
- SAMMY (Scholar Athlete Milk Mustache of the Year)
- University of Michigan-Dearborn Chancellor's Scholarship
- Re/Max American Dream Scholarship
- MEA Scholarship
- Michigan Society for Medical Research Essay Contest
- Wal-Mart Scholarships
- MSU College of Education Alumni Association Scholarship
- University of Michigan Greater Detroit Scholarship
- American Legion Scholarship
- Skandalaris Family Foundation Scholarship
- Kohl's Kids Who Care
- American Polish Engineering Association Scholarship
- CosmoGIRL! Of the Year Scholarship
- The Keppra Family Epilepsy Scholarship Program
- 2007 Discover Card Tribute Award Scholarship for Juniors
- Rosa Parks Scholarship
- Miss Cheerleader of America High School Scholarship Program

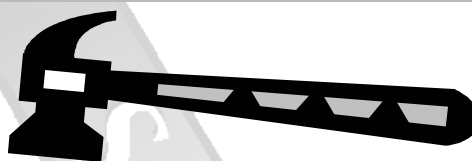
## SENIOR SUMMER LEARNING

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.

## ALUMNI WEBSITE!

In order to facilitate communication between MMSTC students and alumni, a website is in development. Students doing research will be able to search for alumni who work in the field. Students exploring colleges will be able to find alumni who are attending those schools. Additionally, we are hoping that it will serve as a way for alumni to give back to MMSTC, as science exhibit judges, guest speakers, professional contacts, and so on.

Thanks to junior **Jeff Nadeau** for all his work and time in designing the website.



## IMPROVEMENTS

The Macomb Math Science Technology Center has seen its share of improvements with the renovation of the windows, carpet and activity center. The students and staff were welcomed back to the school year with a flurry of activity surrounding the addition of a student café located at the front of the building next to the main office.

Construction workers were hurriedly finishing up the structure to be completed by the December deadline. Students also noticed the high efficiency windows and new carpet added to the math and IDS classrooms. Students and guests alike were using the new café to showcase the second annual MMSTC science symposium hosted by the staff and students of MMSTC. The symposium attracted professionals from the surrounding community to speak and judge the students on research that they independently conducted the first semester.

With the renovations to the vending and activity center it is now possible for the MMSTC to offer daily lunch to our students. The menu includes sandwiches, wraps,, bagels and salads. The students can also purchase nachos, snacks and fruit drinks.

~ Mark Estapa

## SCIENCE SYMPOSIUM

On Tuesday January 23<sup>rd</sup> senior research finally came to an end with our annual science symposium. Our wonderful seniors presented their research to their peers and community in our beautiful new commons area. This was a time for seniors to have the quality of their work evaluated by industry professionals. **Dr. Minling Andler** a radiologist at William Beaumont Hospital and symposium judge was impressed with the caliber of research that our students are conducting here at the center. She went on to say that normally these are projects that would be researched at a graduate level let alone a high school level.

The conclusion of this semester long project is bitter sweet. It is the culmination of four years of academic preparation and a tremendous amount of hard work. Although this event closes a chapter in the senior MMSTC experience it is our hope that these amazing students will be able to look back on this time in their academic career and utilize these skills through out their lives.

We would like thank all of our symposium judges for taking time out of their lives to enrich our program with their knowledge and experience as well as to celebrate the accomplishments of our outstanding senior class.

### 2006-2007 MMSTC Symposium Judges

- **Dr. Minling Andler**, William Beaumont Hospital
- **Alan Baum**, General Motors Research Laboratory
- **Dave Benson**, Wayne State University
- **Mike Carpenter**, Wayne State University
- **Paul Hudy**, General Motors Assembly Engineering
- **Michael Jurban**, City of Detroit Water and Sewerage
- **John Lopes**, Wayne State University
- **Andy Mance**, General Motors Research Laboratory
- **Kim Schweitzer**, General Motors Assembly Engineering
- **Rick Waldo**, General Motors Research Laboratory

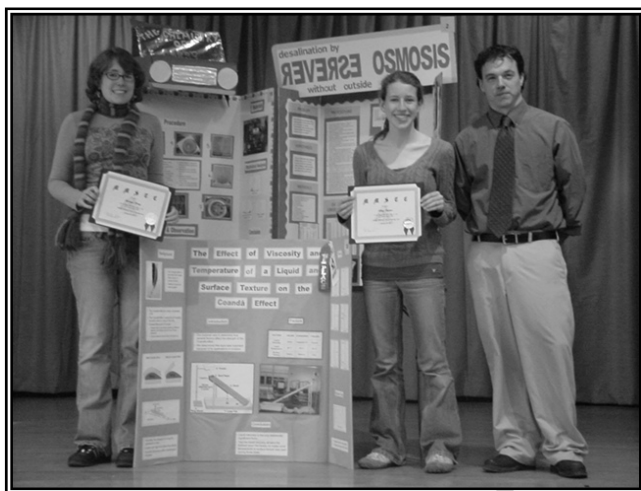
### OVERALL WINNER: Energy Efficiency

The objective of the project was to determine which fuel -- biodiesel, ethanol, or petroleum -- is the most energy efficient. In order to accomplish this, an apparatus was set up to allow the fuel to burn and study the amount of carbon dioxide (CO<sub>2</sub>) released; this is a byproduct of combustion.

Both ethanol and petroleum were burned thirty times; however, biodiesel was not able to be tested because it burns by compression unlike the other fuels which burns by combustion. The time it took the fuel to burn, the time it took for the CO<sub>2</sub> to turn a basic solution acidic, and the pH level of the changed indicator after the fuel completely burned and released its CO<sub>2</sub> was recorded for each trial.

After conducting three *t*-tests, it was concluded that the original hypothesis which stated biodiesel would be the most fuel efficient could not be answered. According to our *t*-tests a conclusion could not be drawn, because each of the tests showed either a different fuel as more energy efficient or that both fuels had the same efficiency.





### PHYSICS WINNER: The Coandă Effect

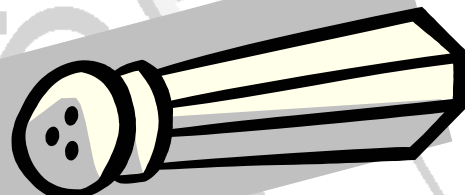
This research project studied the effect viscosity and temperature of a liquid and texture of surface have on the distance that a liquid would travel clinging to the bottom of the surface. The independent variables are viscosity of the liquid (low of water, standard of vegetable oil, and high of glycerin), and temperature of liquid (low of 30° C, standard of 60° C, and high of 90° C), and surface texture (low of fine, standard of medium, and high of coarse). The dependent variable is the percent of the length of the board that the liquid travels down in the ten second time period.

To conduct this experiment, a wood ramp with varying textures of sandpaper was set up at a 30 degree angle with the table. Then the desired liquid was dripped from a funnel at the top of board. The liquid then clung to the bottom surface because of the Coandă effect. The percentage of the total distance that the liquid traveled down in a ten second time period was then recorded.

The data analysis showed that the percentage of the total distance that the liquid traveled down the surface in ten seconds was only affected by the viscosity of the liquid. Water, the liquid with the lowest viscosity, was proven to travel the farthest down the board.

### BIOLOGY WINNER: Desalination without Pressure by Reverse Osmosis

The problem of our experiment was to see if we could desalinate sea water with osmotic membranes without applying outside pressure. The objective of our experiment was to find out how effective osmotic membranes work if outside pressure is not applied. We set up an osmotic membrane attached to a funnel, created sea water, and let this slowly drip through. To see if the membrane had a significant difference, we tested the sea water's salinity (using specific gravity) before and after it ran through the membrane. Our results showed that the after tests had lower salinity levels than we started with. We then ran a matched pairs  $t$  test on the difference in specific gravity. We found that letting sea water drip through the osmotic membranes without applying pressure did have a significant effect.



# SPIRIT WEEK!

During the week of February 12 – 16 we held different events like the aluminum foil beanie deflector day, home school day, class shirt day, and pajama day. On Friday we had a basketball tournament followed by a pizza party. A good time was had by all!



## MOST PIZZA

Students competed to see who could eat the most slices of pizza. And the winners are...

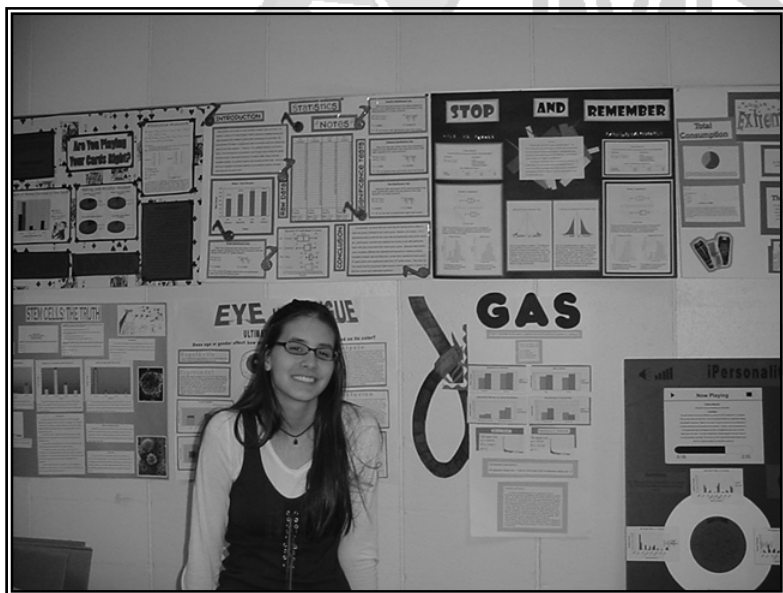


## STATISTICS POSTERS

The Sophomore Class has completed working on their statistics poster project. Students enjoy this project because they may choose a question on any topic of their choice, then conduct research and data collection to support their findings.

Some of the topics of interest to this year's tenth grade class include: *Are school backpacks dangerously heavy?*, *How much do people know about stem cell research?*, *Are teenagers consuming energy drinks for a social lift?* And of course, who wouldn't want know: *Who's better at Guitar Hero, males or females?* If you would like to know the answer to any of these questions, please stop by room 140 before March 2<sup>nd</sup>. After this date the posters will no longer be up for viewing, they will be sent off to a statewide competition sponsored by the American Statistical Association.

The boards of our tenth graders will compete in a category that includes those from tenth, eleventh and twelfth grade students at other math science centers and high schools. Winners will not be notified until May. Good luck to all the students who worked so hard on this project!



## ALUMNI NEWS

### Sean Simpson Class of 2003

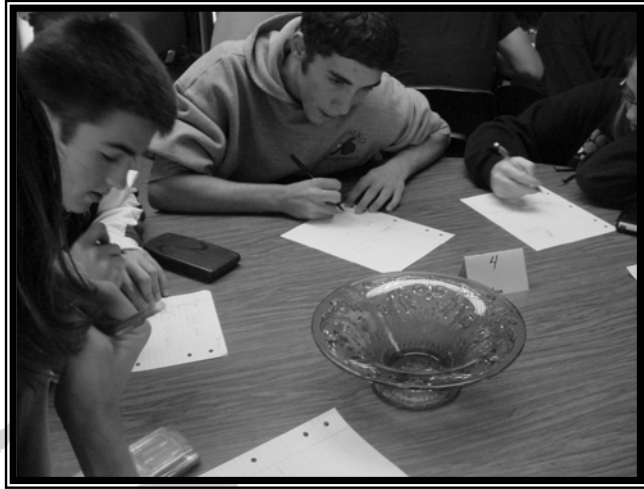
Sean has decided to start a scholarship in his grandfathers' names at Lawrence Technological University where he was a scholarship recipient. "By my junior year, I started thinking I'd like to help somebody like I was helped. Before then, when I would get the scholarship money, I would think, "This is awesome." You don't think about where it's coming from that much. Then I started talking to my friends about all their college debt, and I started realizing how much this scholarship had done for me, that this scholarship money doesn't just appear out of nowhere. So I decided to put the money up to provide the same opportunity to someone else. Sean will make monthly payments on the \$20,000 scholarship until 2011 as he and the school work to make it permanent.

### Daniel Coatta Class of 1999

After high school, he went to the University of Michigan where he graduated with a dual BSEs in Mechanical and Aerospace Engineering. He then earned an MS in Mechanical Engineering from UC Berkeley. Currently he is working as a mechanical engineer at NASA's Jet Propulsion Laboratory in Pasadena, CA. He is working on the entry, descent, and landing of Mars Science Lab, a Mars rover that is scheduled to launch in 2009.

## AP CALCULUS

We have been relating ordinary household items, such as vases, bowls, glasses and weights, as well as the ever popular foods donuts, chocolate kisses, cheese to visualize how calculus is used to find volume of irregular figures.



GAT  
Hexaflexagons  
And  
Cuboctohedrons



### Warren Consolidated Schools

△  
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David Walsh, Associate Superintendent,  
Of Instruction

△  
Macomb Math Science Tech Center  
Lauran Hoven  
Director of Special Programs  
MMSTC Newsletter Committee: A collaboration of  
MMSTC parents and staff  
Printing and Mailing: Secretarial Staff

△  
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#### MMSTC MISSION STATEMENT

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

Warren Consolidated Schools is committed to the concept of equal employment opportunity as a necessary element in its personnel program. It is the policy of the district to prohibit discrimination on the basis of race, color, sex, age, religion, national origin, height, weight, marital status, handicap, or other characteristic in concordance with the law. Compliance inquiries should be addressed to the Assistant Superintendent for Human Resources, 31300 Anita, Warren, MI 48093. (586) 825-2480

### Macomb Mathematics Science Technology Center

27500 Cosgrove  
Warren, Michigan 48092  
586-698-4394  
[www.wcs.k12.us/mmstc/index.htm](http://www.wcs.k12.us/mmstc/index.htm)