



*Inspiring the world's
next generation
of engineers and
societal leaders...*



Innovation & Creativity for 7th-12th Grade Students

W.A. Dart Foundation Day of Innovation & Creativity for 7th-12th Grade Students

FALL 2006 PROGRAM

Time	Ballroom	Parlor B	Green Room	Gold Room A and B	2nd Floor Concourse
9:00	Tower Building	Multi-Use Bridge	MSU students talk about the engineering profession and life on the MSU campus Repeats at 9:45, 10:30, and 11:15	Pre-college students interview MSU teams and select the best machine in the ME 371 class	Materials Science Projects
12:00	LUNCH SECOND AND THIRD FLOOR CONCOURSES				

MEMBERS OF THE ORGANIZING COMMITTEE FOR THE 7th – 12th GRADE CONFERENCE

Jill Bielawski – Michigan State University
 Alison Lewis – Michigan State University
 Russ Pline – Okemos High School
 Kirit Rosario – Michigan State University
 Brian Thompson – Michigan State University
 John Thon – Holt Junior High School

Education would be so much more effective if its purpose were to ensure that by the time they leave school every boy and girl should know how much they don't know, and be imbued with a lifelong desire to know it.
 - Sir William Haley (1901–1987)

SCHOOLS ATTENDING THE CONFERENCE

Bay Area, ARENAC, Bay City
 Dearborn Heights Montessori, Dearborn Heights
 Fowler High School, Fowler
 Holt Junior High School, Holt
 Ingham County Regional School, Mason
 Laingsburg High School, Laingsburg
 Okemos High School, Okemos
 Pleasant View Magnet School, Lansing
 Tuscola Technical Center, Caro
 St. Gerard School, Lansing
 St. Matthew Lutheran School, Holt

9:00–12:00 Second Floor, Parlor B

MULTI-USE BRIDGE

Utilizing a set of given limited resources, students must design and construct a bridge span that is resilient enough to meet multiple constraints and application demands. A successful span will require the integration of form and function. Which is more appropriate? Form following function; or function following form? This is only one of the challenges your group must grapple with. Success will require your team to communicate, subdivide the task, and employ ingenuity. Throughout this build project you will need to keep an eye on the clock, because a great design that can't be built AND tested within the session's duration, may as well not be built at all!



9:00–12:00 Second Floor, Ballroom

TOWER BUILDING

Humans have been building towers since we first started erecting structures thousands of years ago. Are the pyramids simply towers with wide bases necessary to support a structure of their tremendous height and weight? Towers also hold up bridges such as the Mackinaw Bridge and the Golden Gate Bridge. Towers like the Sears Tower in Chicago are capable of housing offices, businesses, or living spaces. We also use towers to project radio signals beyond the curvature of the earth. This is accomplished

by broadcasting the signal from a great height. The higher the tower, the greater the distance of the broadcast without interference from the Earth. This brings us to our challenge today. Given limited amounts of space and material, how does an engineer design a tall tower that is able to support a load while remaining stable? You and your team will need to figure this out!



9:00–12:00 Second Floor, Green Room

MSU $\pi\tau\sigma$ HONOR SOCIETY STUDENTS TALK INFORMALLY ABOUT THE ENGINEERING PROFESSION AND LIFE ON CAMPUS: Moderated by Professor Alejandro Diaz



Students from the Mechanical Engineering Honor Society Pi Tau Sigma will deliver informal question-and-answer presentations on the engineering profession and campus life at 9:00, 9:45, 10:30 and 11:15. These presentations will provide the basis for seventh through twelfth grade students to ask questions and learn firsthand from the experts! So do come with your questions about the impact of engineering on society; the role of science, mathematics, and communication skills in shaping your future; how to develop good study skills; and how to get good tickets to watch the Spartans.

9:00 Session

Ian Bone
Andrew Kruk
Joy Reichenbach
JJ Westover

9:45 Session

Cipto Joegiano
Allison Lewis
Mike Pash
Jackie Rondo

10:30 Session

Agatha Bone
Mike Nicely
Andrew Schafer

11:15 Session

Jimmy Chen
Matt Marriot
Stacie Proctor
Matt Winkley

"Our future lies in some very precious hands..."

Our children are our future. Without the next generation of engineers, scientists and other professionals, the advances we enjoy today would quickly grind to a halt.

At the W.A. Dart Foundation, we are committed to developing scientifically literate students in Michigan. Therefore we are delighted to help fund the MSU Department of Mechanical Engineering's Design Day for pre-collegiate students.

An investment in our children's future will pay big dividends for this generation, and also generations yet unborn, in Michigan, America and ultimately the world.



A Message to Our Pre-collegiate Guests and Their Teachers

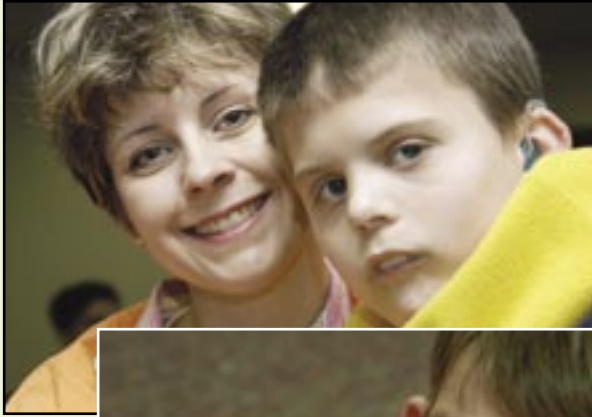
This conference provides numerous unique opportunities for 7th–12th grade students to participate in innovative activities involving experiential learning. They include:

- ◆ An opportunity to creatively solve several hands-on projects requiring the design, construction and subsequent testing of a device. These projects are offered concurrently and each student attendee has the opportunity to participate.
- ◆ An opportunity for collaboration with students from other schools to solve engineering problems.
- ◆ An opportunity to attend an informal question-and-answer session presented by Honor Society students studying engineering. These graduating seniors typically provide motivational remarks on study skills, the rationale for the educational process in schools, and life on a large university campus.
- ◆ An opportunity for 7th–12th grade students to interact with, learn from, evaluate and then assign a grade to teams of engineering students in the ME 371 course. These teams design and build machines and mechanisms to perform various functions such as shredding vegetables or autonomously cooking and flipping a pancake! The winning ME 371 team is awarded the *Sparty Plaque* and the first three teams receive a cash award.
- ◆ An opportunity to attend professional sessions where graduating engineering students deliver formal presentations to a corporate audience of engineers from our industrial partners, parents and other guests.
- ◆ An opportunity to spend a morning on campus learning many new concepts that are difficult to impart in the confines of a traditional school classroom.
- ◆ An opportunity to meet the MSU mascot *Sparty*.
- ◆ An opportunity to indulge in a delicious, free luncheon of pop, subs, pizza and cookies!

Whenever there are beginners and experts, old and young, there is some kind of learning going on, and some sort of teaching. We are all pupils and we are all teachers.

Gilbert Highet
(1906 – 1978)

envision / solve / learn



Innovation & Creativity for 7th-12th Grade Students

challenge / react / thrive



VIGOROUSLY EMBRACE YOUR DREAMS **DARE TO BE BOLD**
PERSEVERE **BE DIFFERENT** SUCCEED **CELEBRATE LIFE**
SURMOUNT THE OBSTACLES REACH FOR THE STARS **DISCOVER YOURSELF**
ATTEMPT THE IMPOSSIBLE CREATE A BRIGHTER TOMORROW
STRETCH YOURSELF

THE POWER WITHIN US **ANTICIPATE** THINK OF THE LIFE THAT LIES AHEAD
SPREAD YOUR WINGS AND SOAR
YOU CAN MAKE A DIFFERENCE **DO THE UNDOABLE** BELIEVE IN YOURSELF
YOU CAN NEVER DREAM TOO BIG PURSUE YOUR PASSIONS
LAUNCH OUT **DO IT ALL WELL** AND **CONCEIVE THE UNCONCEIVABLE**
SAY YES TO LIFE **MAKE THE DISCOVERY** BE TENACIOUS **BE UNAFRAID**
TAKE THE BRUSH AND PAINT THE CANVAS
OF LIFE VIGOROUSLY SEIZE THE DAY NOTHING IS BEYOND YOUR REACH
UNLEASH THAT CREATIVITY FROM
WITHIN SAIL TO THE LAND OF POSSIBILITY **NEVER STOP**
BE COURAGEOUS **BECOME MAGNIFICENT**

SURMOUNT THE CHALLENGES OF LIFE **CONTINUE TO CLIMB** BE INFECTIOUSLY ENTHUSIASTIC
USE YOUR POWER **CLIMB HIGH** **RELISH THE JOY OF**
THE JOURNEY SUCCEED **DO WHAT YOU LOVE** **ALWAYS DO YOUR**
VERY BEST TRANSFORM YOUR DREAMS INTO REALITY BE A SEEKER
YOU HOLD THE KEYS TO THE LOCK THE COURAGE OF
CONVICTION **THE HOPE THAT SURVIVES DISAPPOINTMENT** **BE WILLING TO GIVE**