



# Pre-Engineering Newsletter

December 2009

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## Kent School Robotics FIRST Robotics Competition

Team 2785



Team 2785's robot in action at the 2009 Connecticut Regional Competition. Team 2785 finished in 50th place out of 60 competitors; finished third among the five rookie teams present; and won team 716's UNARA award, given to a rookie team with the most promise and dedication.

## Purpose

The purpose of the Robotics activity is to field a team to compete in the FIRST Robotics Competition (FRC). We believe in the FIRST mission: "...to inspire young people to be science and technology leaders, by engaging them in exciting mentor-based programs that build science, engineering and technology skills, that inspire innovation, and that foster well-rounded life capabilities including self-confidence, communication, and leadership."

Dear Kent School student,

- 1) Congratulations to Mr. Austin and to Kent School Robotics team for being awarded a \$5,000 NASA grant this year! To see the list of awardees, visit: [http://robotics.arc.nasa.gov/events/2010\\_sponsorship.php](http://robotics.arc.nasa.gov/events/2010_sponsorship.php)
- 2) Congratulations to Mr. Austin and to Kent School Robotics team for being chosen to receive a UTC rookie team year 2 continuation grant. The award entitles their Team Prometheus to a \$6,000 grant to participate in a 2010 FIRST Robotics Regional Competition and eligibility for \$3,000 next year.
- 3) As many of you are aware, last week President Obama launched the Educate to Innovate Campaign for Excellence in STEM Education. Visit the website at <http://www.whitehouse.gov/the-press-office/president-obama-launches-educate-innovate-campaign-excellence-science-technology-en> to learn more.

## "National Lab Day Launches -

### President Obama Applauds Initiative, Calls for New Era In Hands-On Science, Technology Learning -200 Organizations, 6.5 Million Professionals Partner In Effort

WASHINGTON, D.C. Nov. 23, 2009 - A coalition of educators, science and engineering associations, philanthropies and other organizations today announced the launch of National Lab Day, a new grassroots initiative designed to reinvigorate science and math education in the nation's schools and after-school programs and lead to increased U.S. competitiveness.

President Obama applauded the education initiative and others in a speech at the White House today.

"Lifting American students from the middle to the top of the pack in STEM (science, technology, engineering and math) achievement over the next decade will not be attained by government alone," he said. "I applaud the substantial commitments made today by the leaders of companies, universities, foundations, non-profits and organizations representing millions of scientists, engineers and teachers from across the country."

National Lab Day aims to inspire a wave of future innovators and foster U.S. competitiveness by improving the quality STEM education in America. A collaboration between government and more than 200 public- and private-sector organizations, National Lab Day will connect students in grades 6- 12 to hands-on learning experiences and promote tinkering in laboratory settings.

Among the organizations that have pledged support for National Lab Day are the John D. and Catherine T. MacArthur Foundation, the National Science Teachers Association, the National Science Foundation, the Bill and Melinda Gates Foundation, the Jack D. Hidary Foundation, the American Chemistry Society, the National Institutes of Health; and the Business Roundtable. Together they represent more than 6.5 million professionals and educators.

National Lab Day will promote hands-on learning throughout the year and culminate each year with special events the first week of May. Volunteer science and technology professionals and educators will work together with students to improve America's science labs and offer inquiry-based STEM experiences in classrooms, learning labs, and after-school programs.

"We wouldn't teach football from a textbook," said John P. Holdren, President advisor. "It is even more important that America's youth have the opportunity to learn math and science by doing. The President and I strongly support efforts to raise the level of project-based learning, to help cultivate the next generation of doers and makers."

## FRC Schedule

On January 9, 2010, FIRST will release a newly-designed game to the world.

On February 23, 2010 we must ship our robot to its regional competition.

## The Robotics Activity

**Advisor: Mr. Austin**

### Season Schedule

12/1/09: Robotics Activity begins

12/15/09: Last meeting before Christmas recess

1/5/10: Classes and activities resume

1/9/10: Kickoff - game and Kit of Parts released

2/20/10: Suffield HS (FRC176) Shakedown Scrimmage (presumed date)

2/23/10 Ship Date

3/24/10- 3/28/10 SPBLI Regional Competition (at Hofstra University)

3/28/10: Rock climbing trip, mall trip.

### Weekly/Daily Schedule

Robotics meets Monday-Saturday in SH411.

Meeting times are:

Monday, Tuesday, Thursday, Friday...3:30-5:00

Wednesday, Saturday.....2:00-5:00

During December Wednesday and Saturday meetings are omitted

During build season (1/9-2/23) Saturday times may be extended - never weekday times, though.

Each day the team begins with a SCRUM: a stand-up 5-10 minute meeting where every team member indicates what they will work on that day, help they may need, and a tangible goal/result for the day. Mondays have a slightly longer SCRUM to re-evaluate strategies, system development, timetables, weekly goals, &c.

## What is a lab?

According to <http://www.nationallabday.org/>, the term "lab" is defined quite broadly: a place where students can explore, experiment, test, and get their hands dirty and their minds engaged. It's not just test tubes and beakers. A lab could be a laptop to a software designer, a mountaintop to a geologist, a computer link to a distant particle accelerator to a physicist, or a factory floor to an industrial engineer. It's a place where hands-on lessons in science, engineering, and technology can be designed to happen, or where math can come alive, and it could be anywhere in the physical or virtual world.

## Technology Companies Promote National Lab Day

"We all have a vested interest in advancing our country's proficiency in the disciplines of science, technology, engineering and math as a means to driving innovation and jobs - which are key to fueling our economic growth and global competitiveness," said Steve Ballmer, CEO of Microsoft. "Microsoft applauds President Obama for making STEM a priority, and we are committed to working with others in business, government and the educational field to enhance and leverage U.S. leadership in information technology."

"Science and engineering hold the key to economic growth and to solving the challenges facing our country in areas like energy, health care, and national security," said Rich Templeton, CEO of Texas Instruments. "The President's STEM initiative is an important step forward in addressing these challenges. National Lab Day is a creative approach to engaging young minds on these critical disciplines."

John Donovan, chief technology officer of AT&T, said: "AT&T is pleased to pledge its support to National Lab Day and its mission to advance math and science education. The more than 1,200 researchers and engineers of AT&T Labs have a long history of university collaboration and volunteer support of educational programs at all levels. Through the National Lab Day initiative, our researchers will have new opportunities to share their passion for knowledge with a new generation, serving as direct resources for educators in developing and delivering high-impact lessons and lab experiences."

Several companies are helping with the National Lab Day web platform, including Pivotal Labs, which develops online platforms that foster innovation, ePals Inc., a social network optimized for K-12 learning, Donors Choose, an online platform for teachers to connect directly with donors, and Maker Faire, which is supplying project designs and ideas for the site. Thank you for your time and feel free to contact me if you need more information.

**"The Engineering Education for the Innovation Economy Act" or the "E<sup>2</sup> for Innovation Act"** (An act to facilitate the planning, implementation, and evaluation of K-12 engineering education in states that choose to apply.)

**From a draft bill for K-12 Engineering as a follow up to the National Academy of Engineering report on K-12 Engineering and the Science Subcommittee hearing.**

### SEC. 1. FINDINGS.

Congress finds that -

(1) There is a national concern that the nation's preeminence in innovation is eroding. A recent report by the Organization for Economic Cooperation and Development noted the American share of "highly influential" papers published in peer-reviewed journals fell to 58 percent in 2003, from 63 percent in 1998. The report also discussed how only 4 percent of American college graduates major in engineering, compared with 13 percent of European students and 20 percent of those in Asia. In addition, the United States ranks 10th in the world in the proportion of its adults ages 25 to 34 who hold at least an associate degree.

(2) The introduction of K-12 engineering education has the potential to improve student learning and achievement in science and mathematics, increase awareness about what engineers do and of engineering as a potential career, and boost students' technological literacy, according to a new report, Engineering in K-12 Education, from the National Academy of

(3) The report also identifies three core principles for K-12 engineering education: 1) emphasize engineering design process; 2) incorporate important and developmentally appropriate mathematics, science, and technology knowledge and skills; and, 3) promote engineering habits of mind including systems thinking, creativity, collaboration, communication and attention to ethical considerations.

(4) While exposure to formal engineering education has increased dramatically over the past 15 years, reaching several million K-12 students, most students in the United States have never experienced an engineering course or lesson.

(5) There is also a lack of diversity in these existing K-12 engineering education opportunities. The number of girls and underrepresented minorities participating in K-12 engineering education does not correspond to their proportion of the general population.

(6) Only a handful of states, such as Massachusetts and Tennessee, have adopted Science, Technology, and Engineering standards.

(7) K-12 engineering education in the United States is supported by a relatively small number of curricular and teacher professional development programs.

(8) While STEM education is viewed as a national education policy, often the implementation of policies and initiatives focuses exclusively on mathematics and science and overlooks the engineering and technology education components.

(9) Schools, policy makers, and other stakeholders often narrowly refer to the term “technology literate” as the ability to use educational technologies. Although educational technology is important, it is far from the only type of technology we depend on in a modern society. The National Academies, among many other groups, advocate a broader view of “technological literacy”, one more consistent with how scientists, engineers, and technologists see the world. In this view, technological literacy includes: 1) knowledge of technology, the engineering design process, and impacts on society; 2) critical thinking and decision making weighing benefits, risks, costs, and tradeoffs; and, 3) capability to use a variety of technologies, apply the design process, fix simple technological problems, and obtain and understand information about technological issues. The Standards for Technological Literacy, developed by International Technology Education Association and passed by a formal review by the NAE and NRC, closely align to the Academies concept.

(10) To support an innovation economy and maintain our country’s vitality and security, we must expand students’ understanding of technology and engineering and widen the pipeline to careers in these fields so that a diverse array of talented students can pursue them.

(11) Recently the federal government has taken an interest in expanding K-12 engineering and technology education. Testing of technological design skills will be assessed as part of the new NAEP Science 2009 assessment to be given to students throughout the United States. The National Assessment Governing Board is currently developing a NAEP Technological Literacy probe study to be administered in 2012 that will assess design and systems, information and communication technology, and technology and society.

(12) To further expand K-12 engineering education, the E2 for Innovation Act seeks to support planning and implementing grants for state educational agencies to invest in programs and activities to integrate engineering education into K-12 classrooms and to fund research and evaluation programs of such efforts.

**Thank you for your time and feel free to contact me if you need more information.**

Sincerely,

Dr. Nadire  
Wentz Pre-Engineering Program Director  
Kent School