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U.S. Army Announces National Winners of eCYBERMISSION Competition

ARLINGTON, Va. — Tuesday, July 2, 2013 — The U.S. Army Research, Development and Engineering Command (RDECOM), on behalf of the Army Educational Outreach Program (AEOP), is proud to announce the 2012-2013 national winning teams in the 11th annual eCYBERMISSION competition.

The national winners were revealed at the awards luncheon last Friday at the National Conference Center in Leesburg, Va. Sponsored by the [U.S. Army](#), eCYBERMISSION, one of several science, technology, engineering and math (STEM) initiatives offered by the Army Educational Outreach Program (AEOP), is administered by the National Science Teachers Association (NSTA). The online collaborative learning competition is designed to cultivate student interest in STEM by encouraging students in grades six through nine to develop solutions to real-world challenges in their local communities.

“The U.S. Army today requires soldiers and personnel to be skilled and savvy in the STEM fields, so we have been committed to providing young people with innovative opportunities and competitions like eCYBERMISSION for over a decade,” said Brig. Gen. Daniel P. Hughes, Deputy Commanding General, US Army RDECOM. “These young people will be the future leaders of America's health, environmental, security and safety initiatives, and we are extremely proud of this year’s national winning teams.”

The four national winning teams were chosen from a select group of 16 finalists after a rigorous evaluation process. A panel of judges consisting of U.S. Army scientists and engineers from the Research Development and Engineering Command, the Army Corps of Engineers, Medical Command, Test and Evaluation Command and the United States Military Academy, selected this year’s national winners on the basis of several criteria, including use of scientific method/inquiry or engineering design process, collaborative effort and benefit to the community.

"Sustaining the Army's capability in the face of an ever increasing dependence on technology is a challenge. It requires a deliberate focus to help grow and sustain the STEM skills and competencies for the Army of the future," said Ms. Mary Miller, Deputy Assistant Secretary of the Army for Research and Technology, Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. "I am excited to see so many of our young technology leaders in this competition and I am honored to be here recognizing their contributions to the science and technology community."

Students, educators and their families from across the country attended the awards luncheon event on Friday, June 21 onsite and online to watch as the national winning teams were announced. Each member of the national winning teams received \$5,000 in U.S. E.E. Savings Bonds (matured value), in addition to the \$1,000 awarded to them as state winners and \$2,000 as regional first-place winners. Since the program's inception in 2002, eCYBERMISSION has awarded state, regional and national competition winners with over \$8 million in U.S. Savings Bonds. More than 100,000 students have participated worldwide.

"It's exciting to see students thinking beyond the science classroom, connecting what they have learned in school to practical applications, while actively engaging their community to make a real difference in the world around them," said Dr. David Evans, NSTA Executive Director. "Congratulations to all of the national winning teams and their advisors for their hard work, dedication, and innovative project ideas."

The 2012-2013 national winning team from each grade is:

Sixth grade: The Falcons

Skyview Middle School, Leominster, Mass.

Team Members: John Liddy, Christopher Mabie, Eric Jenny

Team Advisor: Mary Jenny

After having a friend suffer a concussion as the result of a sporting accident, The Falcons decided to come up with a solution to reduce damaging force to the brain upon an impact hit. The students conducted research and spoke with subject matter experts about the causes of concussions, and the design of helmets. The team came up with five different helmet designs to test, and a method to measure the force inside the helmet when the helmets were dropped (simulating a hit to the helmet). The Falcons used the data collected to produce a prototype that was a hybrid of two of the previous tests. The prototype's data produced better results than the other models. The students shared their results with a helmet manufacturer and a neurologist whom both stated the students should continue exploring their idea.

Seventh grade: STEM Ninjas

Rocky Run Middle School, Chantilly, Va.

Team Members: Divya Mereddy, Sneha Thandra, Rachana Subbanna

Team Advisor: Ranjit Mereddy

Team STEM Ninjas were concerned about our country's reliance on foreign oil consumption and the negative implications on our nation's energy security, economy, and global climate. The students chose to investigate a possible alternative energy source, algal biofuels. The team did extensive research to help them build a biodegradable Floating Photobioreactor for Algal Cultivation (FLO-PAC) system. FLO-PAC allows the growth of algae which then can be converted into biofuels. The students also created a pre and post survey to be used in conjunction with an educational PowerPoint about algal biofuels. The students were able to support their design statement based on the data collected from their FLO-PAC experiments. The students were able to increase the algal oil to produce biodiesel. Team STEM Ninjas hopes to further develop their design on a larger scale on the Chesapeake Bay and eventually help produce renewable algal biofuels at a reduced cost.

Eighth grade: Charger Breath Saver

Providence Day School, Charlotte, N.C.

Team Members: Abigail Cochell, Katherine Holway, Haley Ritchie

Team Advisor: Barbara Morrow

The idea, to develop a device to alert parents/caregivers that their dependant has come in contact with a body of water capable of causing injury or death, came from the experiences of two of the team members who had been exposed to tragic drowning accidents. Team Charger Breath Saver engineered a prototype that would be worn externally and sound an alarm when probes became wet. The students collected data and found their first design did not work as the buzzer did not sound when the probes became wet. Additionally, the caregiver may not hear the device the way the prototype was designed. The students modified their first prototype by using the Failure Modes Effects Analysis (FMEA) system. The second prototype uses a LED as part of the circuit to let the students know that the probes are exposed to water and the circuit is indeed working. The next step in the development of their prototype is to incorporate a relay that will function properly, which allows the buzzer to be triggered, altering the caregiver. The team wants to modify its design to become much smaller (1cm x 1cm).

Ninth grade: TXT U L8R

Thomas Jefferson High School for Science and Technology, Alexandria, VA

Team Members: Valerie Chen, Raghaz Ramraj, Matthew Sun, Jasper Treakle

Team Advisor: Latha Ramraj

All members of Team TXT U L8R have personal stories of how someone they know was affected by distracted driving. The students designed a device to detect a distracted driver and refocus that person. The students interpreted 3D modeling data from a Microsoft Kinect to determine if the driver is distracted by utilizing complex mathematical formulas to derive their program algorithms. Analysis of their experimental data showed that the use of the device multiplied the driver performance by a factor of 150 percent. The students also wanted to find out how informed the community was on distracted driving. The team developed two surveys and an online presentation. They found out what the community knew, and educated the participants of the dangers associated with distracted driving. Team TXT U L8R created a website and brochures to share with the community to make more people aware of their project and the problem of distracted driving.

For more information about the eCYBERMISSION competition, visit www.ecybermission.com or contact Mission Control at 1-866-GO-CYBER (462-9297) or via email at missioncontrol@ecybermission.com.

About eCYBERMISSION

Sponsored by the [U.S. Army](#), one of several science, technology, engineering and math (STEM) initiatives offered by the Army Educational Outreach Program (AEOP) and administered by the [National Science Teachers Association](#), the online collaborative learning competition is designed to cultivate student interest in STEM by encouraging students in grades six through nine to develop solutions to real-world challenges in their local communities.

About Army Educational Outreach Program

The AEOP Cooperative Agreement was formed by the U.S. Army Educational Outreach

Program (AEOP) and includes Virginia Tech as the lead organization, the Academy of Applied Science, American Society for Engineering Education, the Technology Student Association, the University of New Hampshire and, new member, NSTA. AEOP is charged with addressing national needs for a STEM literate citizenry through a portfolio of educational opportunities which includes unique experiences, competitions, and high school internships that aim to spark an interest in STEM and encourage participants to pursue college and careers in STEM fields. The Army is committed to increasing the STEM talent pool in order to ensure our national security and global competitiveness. For more information on AEOP, visit www.usaeop.com.

About RDECOM

RDECOM has the mission to develop technology and engineering solutions for America's Soldiers. It is a major subordinate command of the U.S. Army Materiel Command. AMC is the Army's premier provider of materiel readiness -- technology, acquisition support, materiel development, logistics power projection, and sustainment -- to the total force, across the spectrum of joint military operations. If a Soldier shoots it, drives it, flies it, wears it, eats it or communicates with it, AMC provides it. For more information on RDECOM, visit www.army.mil/rdecom.

About NSTA

The Arlington, VA-based [National Science Teachers Association](http://www.nsta.org) is the largest professional organization in the world promoting excellence and innovation in science teaching and learning for all. NSTA's current membership includes approximately 55,000 science teachers, science supervisors, administrators, scientists, business and industry representatives, and others involved in science education.

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