



Aerospace Education

Summer 2012

News

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Aerospace Education News
Aerospace Education News is the official aerospace education quarterly publication of the Civil Air Patrol at CAP National Headquarters, Maxwell Air Force Base, Alabama.

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If you have news, events, or ideas we might consider for the newsletter, please submit them electronically to jstone@capnhq.gov.

Engineering: Make a Difference



From sustainability of resources to health to security to making life better and more enjoyable, engineering is creating the future. Encouraging young people to make a difference by applying their curiosity and problem solving abilities, educators can open doors to career opportunities.

There are many types of engineers and spin-off careers that come from an interest in the STEM (science, technology, engineering, and mathematics) subjects. These subjects are interrelated and are present in the following engineering fields:

- Aeronautical
 - Biomedical
 - Mechanical
 - Chemical
 - Civil
 - Sustainability design
 - Systems
 - Biomechanical
 - Photonics
 - Computer software
 - Computer hardware
 - Nuclear
 - Mineral
 - Agricultural
- ...and many more!



To find out about these fields and what it takes to pursue a career in engineering, visit the website at <http://www.futureengineering.com/what.php?id=2>.

Questions:

(Answers on page 12.)

1. What are some ways engineers can make a difference?
2. Name two types of engineers that may interest you and find out more about those career fields. Share your findings with your class.



Aerospace Education Member (AEM) Spotlight ...

Cynthia Taylor - SC



Even though Cynthia Taylor has been a CAP Aerospace Education Member (AEM) for only one year, she joined CAP in 2001. Progressing in rank to Major, Cynthia held the position of Aerospace Education Officer (AEO) for SC 803 as well as SC Wing Internal Aerospace Education Officer. In 2011, Cynthia's duties as band director and aerospace education and technology teacher at W.A. Perry Middle School took her CAP experience in a different direction. Cynthia became an Aerospace Education Member (AEM) and carried her knowledge, enthusiasm, and skills to her students in the classroom.

Cynthia has experienced many professional opportunities with many different ages of students, as well as many different venues, to touch the lives of students. She taught aerospace education classes for the North Presbyterian Learning Center After School 4 and 5 year-old program and taught cadets and students at W.A. Perry Middle School of Aerospace. Cynthia's other experiences include serving as the SEMAA (Science, Engineering, Mathematics, and Aerospace Academy) instructor as well as being a member of the Education Outreach Program for the Spann Watson Chapter of Tuskegee Airmen, Inc.

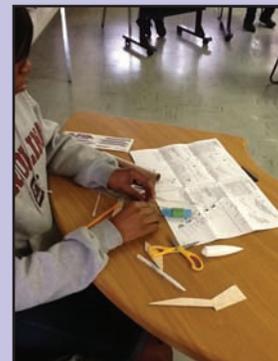
Cynthia Taylor's educational credentials include: Master of Technology from Lesley University; Master of Education in Curriculum

and Instruction from the Citadel; and University of South Carolina School of Music Bachelor of Music Education. Cynthia has been recognized by both Civil Air Patrol as an Aerospace Education Officer of the Year from SC and by W.A. Perry Middle School as Teacher of the Year.

Students at W.A. Perry Middle School know Ms. Taylor's classes are places where learning and fun go hand-in-hand. Students have commented: "I remember most when Ms. Taylor says 'Build IT' and we build the Alpha rockets to launch." Another student remembers Aerospace Education Night. Students had to plan and do everything themselves

for each demonstration station.

Cynthia Taylor possesses talent and a passion for teaching young people to aspire to succeed in this technological world with the STEM (science, technology, engineering, and math) skills she teaches them every day. We congratulate her and wish her the best in the rewarding profession she has chosen. CAP is truly blessed to have Cynthia in the ranks of aerospace.



Students in Cynthia Taylor's aerospace classes build and launch model rockets.



"The USE of knowledge is powerful!"
--- Cynthia Taylor



Aerospace Education Officer (AEO) Spotlight..... Capt Kurt Lichtenwald, WI WG



Wisconsin Wing has much more than an Internal Aerospace Education Officer in Capt Kurt Lichtenwald....they have an ambassador for STEM and the Aerospace Education program in CAP. Capt Lichtenwald has combined a career awareness program with CAP Aerospace Education curriculum materials and his own personal experiences. Along with a fifth grade teacher at Helen Keller Elementary School in Green Bay, Wisconsin, Capt Lichtenwald uses the AE Dimensions curriculum, including flight videos from his recent sorties, in conjunction with CAP's core values and three missions, to create this opportunity for these fifth grade students.

Capt Lichtenwald has been a school psychologist for 24 years with the last 18 being in the Green Bay Area Public School District. Not only does Capt Lichtenwald have the professional credentials to work with students in the classroom, he also has the CAP training to use those credentials with CAP cadets. Over the years Capt Lichtenwald has coordinated with multiple agencies to obtain permission for cadets and students to join together in opportunities that stimulate their interest in STEM careers such as observing air traffic controllers at the Federal Aviation control tower and careers associated with visits to the Transportation Security Agency, Airport Public Safety, and Delta. All of these experiences give cadets and students a feel for real-world applications of concepts they are learning in the classroom.

The most exciting part of Capt Lichtenwald's program is the culmination activity involving orientation flights for cadets and Teacher Orientation Program flights for teachers. Being the

recipient of a CAP AFA grant of \$250 helped Capt Lichtenwald fund activities for the flight program.

Capt Kurt Lichtenwald is not only dedicated to his students, cadets and teachers, but is also dedicated to his support team. Being a humble individual, the first thing he attributes the success of this program to is his team. He wants all of the credit to go to them and, in turn, inspires loyalty and

support. We commend him on his leadership qualities and wish him the best as he reaches many other young people and educators in the future.



Top: CAP pilot flight planning with two school administrators
Center: Capt Lichtenwald briefing cadets
Bottom: Capt Lichtenwald instructing fifth grade students

"I ask my students if they have heard the phrase 'Reach for the Stars.' I then add: 'Reach beyond the stars because if you fall short you achieve them.'"

---Capt Kurt Lichtenwald, CAP



K-6 Aerospace Connections in Education (ACE) Program's Best of 2011-2012

For stimulating hands-on and minds-on science, technology, engineering, and math (STEM) lessons, along with emphasis on good character and physical fitness, elementary educators participate in CAP's Aerospace Connections in Education (ACE) program. Almost 700 educators participating in the 2011-2012 ACE Program brought the aerospace-themed program to nearly 18,000 K-6 students representing 92 schools in 27 states. Each year, a small committee has the difficult task of selecting the "best of the best" in the national ACE Program.

National ACE Student of the Year



The 2011-2012 National ACE Student of the Year is **Matthew Cratem**, a 6th grade student at **San Jose Catholic School in Jacksonville, FL**. As part of a Space Camp contest, Matthew wrote, "Ever since I was little, I loved science and NASA. When I was younger, I would sneak on to the Internet and look up cool space facts on NASA (shhh-don't tell my mom!). When assigned to read my first biography, I chose John Glenn. In 3rd grade, a nighttime shuttle launch became the most spectacular event I have ever seen. In 5th grade, we learned that the Space Shuttle program would be discontinued and all funding for the new Ares program would be cut. It was

devastating. I was truly heartbroken, and I wrote my first persuasive essay on this topic. In 6th grade, I couldn't wait to be in Mrs. Chin's class because her room has a NASA theme. She is the only person I know who loves science and space as much as I do."

Mrs. Carla Chin, Matthew's 6th grade teacher, explained, "Matthew brings enthusiasm and passion into everything he does, and he has discussed his love for science and math since the beginning of the school year." Mrs. Chin reported that he was a true inspiration to his fellow students when he refused to forego participating in ACE physical fitness lessons for an extended period of time due to a health issue. Mrs. Chin stated, "Matthew struggled with modified activities and refused to leave a single ACE lesson incomplete. I admire his attitude, and he truly embodies Civil Air Patrol's mantra of, 'Your attitude reflects altitude.'"

National ACE Teacher of the Year



Mrs. Beppie Walerius, whose passion for aerospace began as a young child "watching Sputnik wink across the sky," is a 5th grade teacher at **Van Buren Elementary School in Van Buren, OH**, and CAP's 2011-2012 National ACE Teacher of the Year. The ACE program complements her required curricula in addition to the

aerospace lessons she has used and perfected for her classroom over many years. Mrs. Walerius was the lead editor for the current 5th grade ACE curriculum guide and has inspired several other teachers at her school to participate in CAP's ACE program. In addition to participating in numerous aerospace-related professional development experiences, she is a teacher participant in Southwest's Adopt-a-Pilot program; coordinates an annual field trip for her students to the U.S. Air Force Museum in Dayton; is a teacher liaison for the U.S. Space Foundation and NASA; presents aerospace lessons/activities at workshops; and promotes CAP and the ACE program wherever she has an opportunity to do so. Beppie's love for aerospace even inspired her to take some flying lessons several years ago to help enhance her understanding and teaching of aviation.

Beppie stated, "I have felt for so long that if only teachers knew how much fun aerospace activities were, and how much such activities engaged and inspired the kids, the teachers wouldn't hesitate to jump on board. I think far too many teachers feel that they don't have enough knowledge to be effective teaching about aerospace. CAP's ACE curriculum has done an absolutely wonderful job of providing user-friendly lesson plans along with adequate background information so teachers can present excellent hands-on activities and materials to their students with confidence." Mrs. Walerius also knows that effective teachers who incorporate aerospace education into their classroom instruction get results. Mrs. Walerius' students continually score well on Ohio's state achievement test for science, having the highest science scores in the county more than once.

Van Buren's principal, Richard Lehman, explained in his letter of recommendation, "For as long as I have known Beppie, her passion and enthusiasm for science, especially



ACE Best Continued.....

aerospace science, has excited and inspired a host of students. Many of these students have gone on to pursue careers in aviation or other related sciences.” Without doubt, Beppie provides educational experiences to students that will help them take their own small steps and giant leaps as they become the workforce and leaders of tomorrow.

National ACE School of the Year



Launching to the top this year with the school-wide implementation of the ACE Program is the 2011-2012 National ACE School of the Year: **Antioch Elementary School in Crestview, FL.** Under the leadership of Principal Wanda Avery and the school’s ACE coordinator, Laura Pink, Antioch’s K-5 educators impacted their student body of approximately 800 students! Antioch hosted an ACE workshop for teachers last summer, and Ms. Pink helped coordinate an ACE lift-off event that included a helicopter landing at the school’s sports field. On average, students received 13 ACE lessons during the year, and two teachers documented that their students received all 21 grade-level ACE lessons.

Eight teachers invited guests to help present some ACE lessons, and one guest was an airport executive who visited two 3rd grade classes to explain how an airplane flies. As a local online news source reported, “Mr. Hall explained, ‘We overcome the force of drag by increasing the force of thrust.’ When one of his assistants, portraying thrust, tried unsuccessfully to pull away from another (drag), Hall called up three girls who teamed up to be a stronger thrust, successfully pulling two ‘drag’

boys forward, accompanied by peals of excited laughter from their classmates.” Congratulations to Antioch’s faculty and local community representatives for their efforts to make the ACE program a worthwhile and memorable experience for their students.

Additional ACE Awards



In addition to the annual ACE awards, CAP also provided an **ACE Coordinator of the Year** award to **Ms. Christi Keith from Wrights Mill Road Elementary School in Auburn, AL.** Ms. Keith did an exceptional job ensuring all 19 teachers registered and submitted completion forms expeditiously. In addition, she organized both a lift-off and culminating ACE event for their student body of almost 500 students.

CAP recognized a couple of repeat outstanding ACE educators to receive ACE Accolade Awards. These honorable mention awards were provided to: **Brandi DeSandro, K-6 educator in Goshen, AL, and Tracy Huemoeller, 3rd grade teacher in Anthem, AZ.** Congratulations to all of the ACE participants, award nominees, and winners.

Program Results

The 2011-2012 ACE program lessons, evaluated by ACE teachers, received an overall average score of 4.3 out of a possible 5.0. For grades K-6, the average percentage of increase for each student’s post-test score was about 40% this year, with the average pre-test grade of 51 and the post-test grade of 72. Other interesting program results from ACE teachers who completed the program explain why many ACE educators are repeat participants:

- 88% agreed that the ACE lessons fit

well, overall with the skills, concepts, and/or standards that they were required to teach.

- 95% reported that the ACE lessons, particularly the academic lessons, supported STEM education.
- 89% agreed that the ACE lessons positively affected/reinforced good behavior in their classroom.
- 92% noted that teaching ACE lessons was a valuable use of their time.
- 93% of ACE educators who completed the program would recommend the ACE Program to other elementary educators.

CAP’s ACE program continues to thrive due to quality material and wonderful educators who bring the program to life. For more information about CAP’s ACE program, including how to register in September, visit www.capmembers.com/ace. Electronic copies of the ACE curriculum guides are available online through eServices at <https://www.capnhq.gov> for any CAP member. For more information, please contact Angie St. John at astjohn@capnhq.gov, or ace@capnhq.gov.

Civil Air Patrol continues to thank organizations that sponsor the ACE Program: Prattville, AL Rotary Club; the Air Force Association; FLIR Systems, Inc.; and Lightspeed Aviation Foundation.

VOTE FOR CAP!

CAP is one of twenty finalists for the third consecutive year vying for the most popular votes to receive \$10,000 to support the ACE Program. CAP has been a winning recipient for two years; let’s make it three in a row! **PLEASE VOTE TODAY** at www.lightspeedaviationfoundation.org. View the video about CAP at that site and encourage others to vote for our youth!





CURRICULUM CORNER.....GRADES K-4

ZIP LINE CHALLENGE

FROM PBS DESIGN SQUAD AT PBSKIDS.ORG/DESIGNSQUAD/

Objective: Students will follow the engineering design process to build a device to carry a ping-pong ball from the top of a zip line to the bottom in four seconds or less.

National Science Education Standards:

- Content Standard A: Science as Inquiry
 - Abilities necessary to do scientific inquiry
 - Understanding about scientific inquiry
- Content Standard B: Physical Science
 - Motions and forces
- Content Standard E: Science and Technology
 - Abilities of technological design
 - Understandings about science and technology
- Content Standard G: History and Nature of Science
 - Science as a human endeavor

Grade Level(s): K-4

Background Information:

As the Space Shuttle becomes a historical part of NASA and U. S. involvement in the Space Program, a small but visible sign of the times occurred in March 2011 when the seven slidewire baskets were removed by technicians from Kennedy Space Center's launch pad 39A. The baskets were part of the emergency escape system for space shuttle astronauts if some situation occurred that caused them to have to leave the shuttle while on the launch pad.

The baskets were released from the 195-foot level of the launch pad's service tower to travel down the wires to the landing zone 1,200 feet to the west. A braking system catch net and drag chain slowed and then halted the baskets sliding down the wire approximately 55 miles per hour in about half a minute. The baskets were the heart of the pad

evacuation plan if an emergency arose. Crews would have egressed (go out of or leave) the orbiter, hurried to the other side of the tower, and hopped into the carriers to be whisked off the launch gantry and down to the ground bunker. Each basket could hold up to three suited astronauts.

Fortunately, during the 30 years of space shuttle history, these baskets were not needed. However, this concept may be used in future space ideas for manned space flight or robotic exploration of other planets.

The zip line activity helps students understand how friction and balance help to accomplish the engineering challenge.

Materials:

(For each group of 3-4 students)

- cardboard (from a cereal box or back of a notepad)
- 2-4 small paper cups (3-ounce)
- ping-pong ball
- 4 plastic straws
- scissors
- single-hole hole punch
- tape (duct or masking)
- 4 standard, flat steel washers (1 inch in diameter or larger)
- 4 wooden skewers

(For class to test their carriers)

- 4 feet of smooth line (fishing line or unwaxed dental floss)
- two connection points for zip line (such as chair and table leg - line should slant about 30 degrees)
- stopwatch

Procedure: (Divide class into teams of 3-4 students each)

1. Introduce the challenge: Set up the zip line as described in the Materials section. Tell the students the challenge is to build something that will carry a ping-pong ball (astronaut) from the top of a zip line (point to the line that was set up in the room) to the bottom in four seconds (or less).
2. Explain the engineering design process to the students. They will brainstorm an idea and design the device. Then they will build, test, evaluate, and redesign before presenting their solution to the class.
3. To introduce the challenge, rest a straw on top of the zip line. Hold it across the line so that the line touches the straw at its middle. Ask the following questions:
 - What will happen if I let go of this straw? (Answer: It will fall. When the straw is straight, it's hard to balance it on the line.)



Pictures above show the baskets moving down the zip lines



- What can we do to help the straw stay balanced on the line? (Answer: Try any ideas kids suggest, such as bending the straw in half and setting the crease on the line. If they don't suggest adding weight, show them how weights can balance the straw. Bend the straw in half and set the crease on the line. The two washers will balance the straw.)
- How do the washers help the straw stay on the line? (Answer: The washers pull the straw down, keeping it firmly on the line. Also, when there is the same amount of weight on each side of the straw, the washers balance each other and keep the straw stable.)

4. Tell students to look at the materials they are given and come up with a device that will carry a ping-pong ball quickly down a zip line. After discussing their ideas in their groups, have them sketch their designs on a piece of paper or in their science notebooks.

5. Distribute the challenge sheet and have kids begin building. Ask students to answer the questions on the challenge sheet and tell how they solved problems that arose.

6. Discuss what happened with each group and how balance and friction (the force that resists motion) affect the movement of the device on the zip line.

7. Have a contest to see which group's device will be the fastest on the zip line.

Summary: In this activity, students will learn how to work in teams using the engineering design process. They will also learn some science terms like friction and balance.

Evaluation: Use the students explanations and design process they recorded on the challenge sheet as the evaluation tool.

Extension:

- Have students build a carrier that takes ten seconds to travel the length of the zip line by slowing down the carrier.
- Have students make a carrier that can hold several ping-pong balls at the same time.
- Have students find a way to launch the ping-pong ball when the carrier gets to the end of the zip line.
- Have student teams race each other using two zip lines positioned side by side.

Answers to Challenge Sheet Questions and Troubleshooting

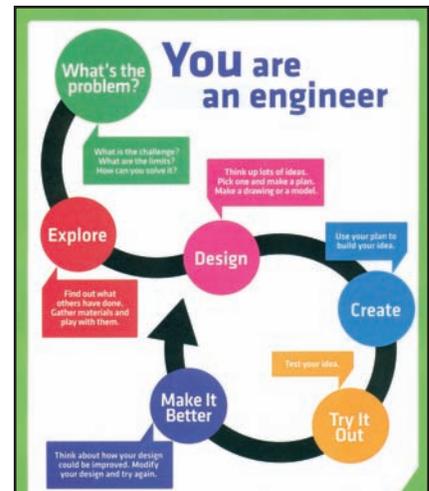
1. Ball carriers go faster when they're evenly weighted and when there is little friction between the sliding surface of the ball carrier and the line.
2. Answers will vary.
3. Answers will vary.
(If the ball carrier doesn't balance, check that each side is equally weighted and that the middle of the carrier touches the line. Make sure students use enough weight.)

Zip Line Challenge Sheet

Team Name: _____

Using the Engineering Design Process of Brainstorm, Design, Build, Test, Evaluate, and Redesign, build something to carry a ping-pong ball from the top of a zip line to the bottom in four seconds (or less).

Draw your design here:



Answer the following questions in your group (write the answers on the back of this sheet):

1. What helped your ping-pong ball carrier travel quickly down the zip line?
2. How did you minimize friction in your ping-pong ball carrier?
3. What was the hardest part of making a ping-pong ball carrier with good balance? With little friction? With a secure way to carry the ball?



CURRICULUM CORNER.....GRADES 5-12

BANANA MAN GLIDER

NORTH CAROLINA COOPERATIVE EXTENSION STUDENT LESSON PLAN AT

http://www.ces.ncsu.edu/depts/fourth/old/greenlight/afterschool/Banana_Man_Glider.pdf

Objective: Students will build a glider that will safely transport a banana to the ground. By doing this, students will apply principles of flight and the engineering design process.

National Science Standards:

Content Standard A: Science as Inquiry
• Abilities necessary to do scientific inquiry

Content Standard B: Physical Science
• Motion and forces

Content Standard E: Science and Technology

• Abilities of technological design

Grade Level: 5-12

Background Information:

When gliders transport people or weight in them, they have to meet certain requirements to make this happen. One consideration is the center of gravity for placement of the weight to be carried. Another is the special shape of the airfoil of the wing. As the wing moves through the air, the air around the wing passes over and under the wing. The wing's upper surface is shaped so the air rushing over the top is moving faster than the air moving under the wing. This creates lower pressure above the wing and higher pressure under the wing, causing lift. The faster a glider moves, the more lift there is. And when the force of lift is greater than the force of gravity, the glider is able to fly.

Materials:

- balsa wood of various sizes
- hot glue
- various fabric swatches
- string
- tape
- one small banana per group
- toothpicks

- tissue paper
 - Elmer's Glue
 - manilla folder
 - foam chunks
 - Styrofoam insulation sheets
 - stopwatches and measuring tape
- Make sure you have a wide variety of building materials. The more materials the students have to choose from, the more diverse the gliders will be.

Procedure:

1. Divide the class up into teams of 3-4 students. Tell students that they will be building a glider that will be judged on time in flight, distance from the release point, and condition of the banana passenger upon landing.
2. Hand out a small banana to each team warning them that Mr. B.A. Nana must be transported safely without being glued, cut, taped, punctured, or damaged in any way during flight or landing. He may not be peeled. He may wear a seatbelt or sit on a custom seat. He may rest in any position, lying down is acceptable.
3. Next, discuss the engineering design process of brainstorming as a team, designing a model, building the model, testing the model, evaluating the results, and then redesigning if necessary.
4. Give students access to the glider building materials and remind them the glider they build must fly and deliver Mr. B.A. Nana in good condition.
5. Once the gliders are complete, choose a location to fly them. All gliders should start from the same point. At least two people should have stopwatches in case of any disputes or technical difficulties. Write down the time and distance for each glider flight. Also, compare and record the condition of Mr. Nana before and after each flight.

6. Have students complete the team worksheet and record their results.

Summary: This activity helps students not only learn about the center of gravity and flight requirements for gliders but also uses the engineering design process to accomplish a task.

Evaluation: Students will be assessed on using the engineering design process and how well they completed the task.

Extension:

- For an explanation of how a glider flies, visit Boeing at http://www.boeing.com/companyoffices/aboutus/wonder_of_flight/glider_hitech.html
- How Gliders Fly - <http://www.mansfieldct.org/Schools/MMS/staff/hand/flightglider.htm>
- Lesson on how gliders and boomerangs are similar with lessons on center of gravity, Bernoulli's Principle, and other math connections with lesson plan ideas - <http://www.broadbentboomerangs.com/lessonplans/Glider.pdf>



Did you know? Students, ages 12-19 can become CAP cadets where they have opportunities to fly and learn about flying in a powered and non-powered aircraft. Find out more at www.capmembers.com/cadets.



Curriculum Corner (Grades 5-12) continued....

Mr. B.A. Nana, Banana Man, Glider Student Sheet

Team Member names: _____

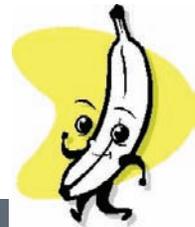
Your team will be building a glider that will be judged on three criteria:

1. Time in flight
2. Distance from the release point
3. Condition of Mr. B.A. Nana after the flight (Mr. Nana's condition will be rated on a three point scale: 1 point for major damage, 2 points for some damage, and 3 points for slight damage)

You may not glue, cut, tape, puncture, or damage Mr. Nana in any way.

Consider the following when building and flying your glider:

1. How large should the glider be to support the weight of Mr. Nana?
2. Consider the center of gravity and where Mr. Nana should be placed on the glider.
3. What shape should the wings be to receive the most lift?



Have one person on your team record the plans for the glider.

Have another person draw a diagram of what the glider will look like.

Another member of the team can be the technician that will launch Mr. Nana.

One team member can record the results of the test flights.



Fill in the chart below:

Test Flight Number	Distance (feet)	Time (seconds)	Mr. Nana's condition	Comments

1. What materials did you find most useful in building your glider?
2. How did your design compare to most of the others in your class?
3. How did teamwork issues affect your success? What aspects of teamwork were most important?
4. How would a heavier or lighter banana affect your glider's performance?
5. Did your glider climb or dive? Why do you think this might have happened?
6. Was wind a factor in your glider's performance?



Air Force Association Partnership

CAP wishes to share sincere gratitude to the Air Force Association for the many years of financial support enabling the perpetuation of the AE Mission via CAP's youth development programs for CAP units and teacher members. The units and projects selected in a very competitive grant process to receive the summer quarter \$250 grants are:

- **Aiken Composite Squadron, Aiken, SC**, Mighty Eighth Air Force Museum WWII U.S. Airpower "Bunk-in"
- **Bakersfield Composite Squadron, Bakersfield, CA**, Cosmos Exploration Star Party Telescope Project
- **Capital City Composite Squadron, Baton Rouge, LA**, Institute of Electrical and Electronic Engineers (IEEE) and Community Outreach STEM Kit Program
- **Clark County Composite Squadron, Athens, GA**, Model Rocketry Day and Tour of Atlanta Air Traffic Control Center
- **Crystal Lake Middle School Squadron, Ft. Lauderdale, FL**, Aviation Flight and Safety Program
- **Dover Composite Squadron, Milford, DE**, Rocketry Program and Rockets for Schools Launch Competition
- **East Tucson Cadet Squadron, Tucson, AZ**, Ground-launched UAV and Imagery Platform for Search & Rescue Missions
- **Group 2, CA WG, San Ramon, CA**, Group Squadrons Robotics Week-end
- **Hammond Composite Squadron, Hammond, LA**, CAP STEM Outreach Program
- **Hernando County Composite Squadron, Brroksville, FL**, KC-135 Refueling Mission and STEM Application Program
- **Hormigueros Cadet Squadron, Mayaguez, PR**, Meteorology with NOAA/Astronomy with Univ of PR Physics Dept. STEM Training Program
- **Lake in the Hills Composite Squadron, Algonquin, IL**, Near Space/True Science Payload Project
- **Leesburg Composite Squadron, Herndon, VA**, Wind Tunnel/Tapered Wings Research Program

- **Osprey Composite Squadron, Baldwin, MD**, R/C Sailplane Program w/ R/C Modelers of Baltimore and area squadrons
- **Potomac Highlands Composite Squadron, Petersburg, WV**, Challenger Center Mission
- **Shawnee Composite Squadron, New Burnside, IL**, Three Days of AE Exploration
- **Southside Composite Squadron, Richmond, VA**, Understanding Astronomy DVD Aero Ed Program
- **Stratford Eagles Composite Squadron, Stratford, CT**, Model Aircraft & Remote Control (MARC) Introduction Program
- **Thames River Composite Squadron, Oakdale, CT**, Weather Satellite Downlink System Project
- **Tyndall Panama Composite Squadron, Panama City, FL**, Senior and Cadet MARC Partner Project with Association of Model Aeronautics (AMA)
- **Van Dyke Cadet Squadron, New Baltimore, MI**, Multi-event Partners in Aviation Program with Boy Scouts
- **Verde Valley Composite Squadron, Sedona, AZ**, Space Balloon 2.0 with R/C Airplane

Congratulations, recipients! Much appreciation to the Air Force Association for funding these grants for CAP units to conduct exciting STEM projects to promote career awareness and preparation!

AFA GRANT RESULTS

Educator Grant Recipient-

Teacher **Melanie Byers**, from **Kettering Middle School** in **OH**, purchased large rockets for her students to build and launch. They learned



about **K and P energy** and different types of energy conversions taking place during the launch. They also applied math skills to calculate speed. The "Wizard of Wright" from **Wright Patterson Air Force Base** demonstrated **Fuel Cells** and the students watched **October Sky** to celebrate their successful launch.

unit Grant Recipient- Under the leadership of **Lt Col Bryce Herkert**, the cadets from the **Nighthawk Composite Squadron** in **Denton, Texas**, traveled five hours to **Houston** for their first sailplane flight. This event led to the **Nighthawk Squadron** establishing a **North Texas Gliding Program** in **Decatur, Texas**.



In closing, CAP extends deep appreciation to the AFA for continued dedicated support to the youth of America! To find out more about all the reciprocal AFA/CAP partnership programs, go to the AFA Partnership link at : www.capmembers.com/afa.

Air Force Association  Phone: Join AFA
THE FORCE BEHIND THE FORCE

Join the Air Force Association today to help support this important partnership!
<https://www.afa.org/newforms/membership.aspx>



From The Deputy Director's Desk.....Dr. Jeff Montgomery

AEO Schools and Summer National Board

The 11th annual National Aerospace Education Officer (AEO) School was completed on 23 June 2012 at Pensacola NAS, FL. Fifty-two dedicated AEOs from 17 different CAP wings comprised a very dynamic and enthusiastic class. All of the volunteer staff and NHQ staff agreed that this was definitely one of the finest classes ever to attend the National AEO School. Aside from our normal discussions about AEO roles, responsibilities, and regulations, we also instituted an AE 101 session prior to the start of the school where we devoted three hours to ensuring that the basics and fundamentals of AE were covered. We also conducted several educational and fun hands-on activities. These activities provided ideas and materials for the AEOs to use in their squadrons and in AE outreach to the community. Expert presentations were given on advanced rocketry and remote-controlled aircraft. These presentations were followed by a field trip to a local Academy of Model Aeronautics (AMA) club where we launched an advanced rocket and flew remote-controlled aircraft. Everyone had a blast, and the class was exposed to even more ways to promote aerospace education. This venue works well and we plan on conducting



Class of 2012 National Aerospace Education Officers School

our 12th annual school next summer at Pensacola. I hope many of you will consider joining us.

Next month, the GLR Region will be conducting its 4th annual GLR AEO School at Dayton, OH, from Aug 8 – 11. The class will meet in the USAF National Museum at Wright-Patterson AFB in Dayton. This location is a wonderful venue for learning more about CAP AE and aerospace in general. Field trips to the museum are part of the curriculum and the behind-the-scenes VIP tours are always a big hit. As in all AEO Schools, whether National or Regional, this school provides a good foundation for understanding AE roles/responsibilities and resources available to you for conducting AE in CAP.

In November, the PCR Region will

also conduct its 4th annual PCR AEO School. The PCR rotates the site each year, and this one will be held at Nellis AFB, NV, from November 10-14. The agenda is still being worked, but I'm sure it will be a very worthwhile event for AEOs. Nellis AFB also provides a great location for an AE field trip. Both the GLR and the PCR schools have been successful schools and very beneficial to AEOs. I hope many of you will consider attending one or both of these schools.

Finally, the Summer National Board will be held in Baltimore, MD, from August 23-25. AE will hold five seminars covering a wide range of topics including: an AE update of curriculum and programs, robotics, remote-controlled aircraft, Satellite Tool Kit, and lots of hands-on activities. Our AE sessions have been very well attended in the past few years, and I hope this trend continues. Hope to see you there!

Thanks for all you continue to do to promote and advance AE in CAP and in our schools, and in youth organizations across our nation.

AFA's CyberPatriot V update:

If your high school, CAP squadron, or JROTC unit has not registered an Air Force Association's CyberPatriot team, please consider doing that very soon! There are two divisions of this exciting national high school cyber security competition that each accommodate unlimited teams of up to five students on each team: The "Open Division" is made up of high school teams from

public, private, parochial, or home schools with a registration fee of \$375. The "All Service Division" is comprised of teams from CAP and all services JROTC cadets with NO registration fee, as the parent organizations pay this fee. Both division teams will begin in October to compete in several rounds to determine national champions in parallel competitions 14-15 March in National Harbor, MD. The program infuses an interest in cyber careers, integrating

cyber security, forensics, and hardware in this year's competition. Registration ends September 1! To find out everything about CyberPatriot, go to www.uscyberpatriot.org.





REGION TO REGION

For information on other pertinent dates for CAP Members and Educators, go to our calendar at www.capmembers.com/ae.

NORTHEAST REGION

October 5

The Maine Science Teachers Association will hold its annual conference at Gardiner Area High School in Gardiner, Maine.

<http://sites.google.com/site/scienceteachersme/conference-information>

October 13

The 2012 Connecticut Science Educators' Professional Development Day will be held at Hamden Middle School in Hamden, Connecticut.

<http://www.csta-us.org/event.htm?id=2azessfl>

MIDDLE EAST REGION

August 23-25

Civil Air Patrol will hold its 2012 Annual Conference & National Board at the Baltimore Marriott Waterfront in Baltimore, Maryland.

<https://events.capnhq.gov/Default.aspx?TabID=220>



GREAT LAKES REGION

July 23-29

Experimental Aircraft Association's 2012 AirVenture will be held in Oshkosh, Wisconsin, with teacher workshops on July 23-24.

<http://www.airventrue.org/>

August 8-11

The CAP Great Lakes Region Aerospace Education Officers School will be held at the U.S. Air Force Museum in Dayton, Ohio.

<https://events.capnhq.gov/OnlineStore/GLRAEOSchool2012.aspx>

August 15-19

The 2012 joint Michigan Earth Science Teachers Association and the National Earth Science Teachers Association will hold a conference at Michigan Technological University in Houghton, Michigan.

<http://www.nestanet.org/cms/content/welcome>

SOUTHEAST REGION

October 25-27

The Florida Association of Science Teachers will hold its annual conference at St. Pete Beach, Florida, at the TradeWinds Island Resorts.

<http://fastscienceconferencesite.org>

October 28-30

Mississippi Science Teachers Association will hold its annual conference at the Marriott Jackson in Jackson, Mississippi.

<http://www.ms-scienceteachers.org/conference.htm>

NORTH CENTRAL REGION

July - August

Hamline University in St. Paul, Minnesota, will hold professional development workshops for science teachers to actively gain new skills and knowledge for effectively teaching chemistry and physics to all students.

<http://www.hamline.edu/cgee/chemphy4all/>

SOUTHWEST REGION

August 4-8

Communicating Science will be the focus at the national meeting organized by the Astronomical Society of the Pacific in partnership with the American Geophysical Union, the National Optical Astronomy Observatory, and the Pima Community College. Preceding the conference will be a two-day workshop for educators in grades 3-12. The meeting takes place at the Doubletree Tucson-Reid Park in Tucson, Arizona.

<http://www.astrosociety.org/events/meeting.html>

October 11-13

New Mexico Science Teachers Association will be held at Bosque School in Albuquerque, New Mexico.

<http://www.nmsta.org/Default.aspx?pageId=1297939>

ROCKY MOUNTAIN REGION

October 4-5

The Idaho Council of Teachers of Mathematics and the Idaho Science Teachers Association will hold the fall conference at Borah High School in Boise, Idaho.

<http://www.idscienceteachers.org/register-for-the-conference/>

PACIFIC REGION

September 8

The Hawaii Science Teachers Association will hold its conference at Punahou School's Mamiya Science Center in Honolulu, Hawaii.

<http://hasta.us/conference/>

October 12

Oregon Science Teachers Association will hold its fall conference at Leslie Middle School in Salem, Oregon.

<http://www.oregonscience.org/conference.php>

October 19-21

The 2012 California Science Education Conference will be held at the San Jose Convention Center, Marriott San Jose Hotel, Hyatt Place San Jose, and Hilton San Jose Hotel in Jose, California.

http://www.cascience.org/csta/conf_home.asp

Answers to questions on front page:

1. Engineers can make a difference in sustainability of resources, health, security, and making life more enjoyable for the future.
2. Answers will vary.