



# Aerospace Education

Spring 2011

# News

Inspiring Students To Excel

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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, Ala.

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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](mailto:jstone@capnhq.gov).

## Last Flight of Discovery

Although all five of the vehicles that have comprised the Space Shuttle fleet have been unmatched in achievements, the Discovery is a very unique member of this group. What made Discovery special?

- It flew to space more than any other craft, and it carried more crew members to orbit.
- It was the first spacecraft to retrieve a satellite and bring it back to Earth.
- It visited two space stations.
- It launched a telescope that has seen deeper in space and in time than ever before.
- And, twice, it demonstrated the will of the United States to persevere following devastating tragedy, returning America to orbit following the two worst accidents in space history.

On its final flight, Discovery achieved two other milestones...its visit to the International Space Station (ISS) coincided with the 10-year anniversary of a permanent human presence aboard the outpost and it brought the first non-human resident, Robonaut, to the ISS.

The launch of the Discovery on February 25, 2011, a beautiful Florida day, left people with a sense of pride in their country; awe at the sight of a powerful rocket launch; and wonder at what can be accomplished next. Humans have always wondered what is over the next horizon and if we stay involved in space exploration, that question will excite a whole new generation of explorers.

**Note:** The Udvar-Hazy Center will become the new home for shuttle

Discovery, which retired after completing its 39th mission March 7, 2011. (See two associated Discovery stories on page 5.)



### Questions:

1. What milestone did the Discovery accomplish concerning deep space?
2. What anniversary does this Discovery flight coincide with?
3. How many orbiters have comprised the Space Shuttle fleet?
4. If you were to predict what the United States Space Program would be like 50 years from now, what would you imagine it to be? (Answers on page 10)



## Aerospace Education Member (AEM) Spotlight ...

### Glenn Rutland, Florida



Glenn Rutland has been an educator for the last 30 years and still teaches with the excitement and energy of a first-year teacher. Her rewarding career has brought her many opportunities to excel in the subjects she loves most - science and math. She has taught the sciences (Life, Earth and Space, and Physical) and math, as well as gifted learners in elementary and middle schools in Georgia and Florida. Glenn is currently teaching 5th grade math and science at Holley-Navarre Intermediate School in Navarre, Florida.

Being a finalist for the NASA Astronaut Teacher in Space Program has led to many opportunities for Glenn. She has been a NASA/NEAT (Network of Educator Astronaut Teachers) representative for the past six years and Glenn has used the materials and knowledge gained from this NASA education program to conduct teacher workshops that help inspire other teachers. Glenn spreads her activities and lessons to fellow teachers and students in her district by also being a teacher coach for the ZERO-G Corporation and

a Hawking Fellow.

A few of the accolades that Glenn has received as a result of her interest and pursuit of excellence in science education are:

- NTTI (National Teacher Training Institute) Teacher of the Year
- Rothschild Middle School Teacher of the Year
- Holley-Navarre Intermediate Teacher of the Year
- Hurlburt Air Force Association Chapter Teacher of the Year
- Air Force Association State of Florida Aerospace Teacher of the Year
- Wilmington College Educator Alumni Award

This stellar teacher has now added another exciting program to her classroom. She is teaching the CAP Aerospace Connections in Education (ACE) Program to her 5th grade students. She says, "Being involved with the Civil Air Patrol's ACE Program has presented an incredible amount of materials for my students to work with and enjoy - while learning more than

they could ever imagine. The activities in this program tie to our Sunshine State Standards perfectly."

Glenn's students are benefiting from the background and dedication of a teacher who is "out of this world." Glenn has been a member of CAP as an AEM for several years and is looking to continue this beneficial relationship. Glenn says that fun and learning go hand-in-hand and the ACE program is providing both for her students.



***"Students are eager to come to school and experience the many different curriculum activities that we have been given by the CAP Aerospace Connections in Education (ACE) Program."***

***---Glenn Rutland***

**Glenn Rutland's 5th grade students participate in the ACE Program**



## Aerospace Education Officer (AEO) Spotlight..... Lt Roger Bass, AEO DC 026



Sometimes an interest in aviation is instilled by a parent or an experience at a young age. 1Lt Roger Bass had both motivators. His mother was an early aviatrix flying out of Floyd Bennett Field in New York, and, later, when he lived near Mitchell Field, he would fall asleep to the drone of the engines of hundreds of C-119s transporting troops and materials. Years later, after college and graduate school in architecture, he found himself working at the Kennedy Space Center / Cape Canaveral Air Force Station designing facilities for the Space Shuttle and Titan 34B programs.

In 1980, 1Lt Bass relocated to Washington, DC to work for a large architectural firm and this led to an assignment on the Washington Dulles International Airport terminal expansion, which is on-going today. In the mid-1980s, he started his own independent architectural practice and was kept busy with not only his practice, but also raising two sons.

Always in the back of his mind, 1Lt Bass's love of aviation and flying continued, and, in 2002, he was able to earn his pilot's license while teaching graduate and undergraduate classes at Marymount University in Arlington, Virginia. At the time, he was only vaguely aware of CAP and its history and mission. He became more interested in CAP when he was working on his instrument rating with a Certified Flight Instructor who was also a CAP pilot. He then learned about the aviation and community service opportunities in CAP.

In May 2009, 1Lt Bass joined the CAP Arlington Composite Squadron, and, at the urging of his commander, Capt Toni Ali, he became involved in Aerospace Education. Due to his wife's

involvement as a veteran teacher of 27 years, he was able to gain introduction to the math, science, and volunteer supervisors in the Arlington, Virginia Public School System. This led to several opportunities to introduce CAP learning activities to the public school students.

Jamestown Elementary School was the first group of students that was given a presentation by 1Lt Bass. He constructed soda bottle rockets with fourth grade students in June of 2010. This activity came from the CAP Model Rocketry Book. Ninety enthusiastic fourth grade students witnessed the outdoor rocket launch of the soda bottle rockets. In the fall of 2010, 1Lt Bass

presented a series of lessons taken from the CAP ACE (Aerospace Connections in Education) program to K-2nd grade students at Drew Model School. The program was so well received that his team was requested to present two separate programs, one for the K-2 students and one for the 3rd through 5th grade students.

1Lt Bass is off to a wonderful start with CAP and Aerospace Education. He has combined his talents and interests of architecture and aviation with a genuine interest in his community to motivate the next generation of aviation and space enthusiasts. We are proud that he is on the CAP team and wish him much success!



Maj Sedberry (left) and 1Lt Bass (right) with some of the Jamestown Elementary School students and their completed bottle rockets

*"Major Patrick Sedberry and I held an outdoor rocket launch, which was enthusiastically attended by 90 fourth grade students."*

*---1Lt Roger Bass, DC 026*



## K-6 Aerospace Connections in Education (ACE) Program...and Beyond!

Arlen Sykes's Fifth-Grade Class



The CAP's K-6 Aerospace Connections in Education (ACE) Program is nearing completion of its fourth year. The ACE program uses the aerospace theme to promote STEM subjects and careers, character education, and physical fitness. Over 400 teachers have introduced the ACE program to more than 11,000 students this year. ACE Award nominations will result in the selection of the 2011 National ACE School, Teacher, and Student of the Year to be named in May. If interested in participating in the ACE Program for the 2011-2012 year, please go to the ACE link at [www.capmembers.com/ae](http://www.capmembers.com/ae). If already an ACE teacher, please remember to sign up to receive automatic notifications of ACE announcements at [www.capmembers.com/aceteachers](http://www.capmembers.com/aceteachers).

### 2011 ACE Program Highlights

Arlen Sykes, a fifth-grade ACE teacher at Kyrene De La Colina School in Phoenix, Arizona is not only using the CAP's ACE lessons to enrich his classroom instruction, he is using field trips to enhance both his ACE curriculum and the overall educational experience for his students! One such field trip was a visit to Stellar Airpark, a nearby privately owned, public airport in Chandler, Arizona. Some of the students' activities included viewing different types of aircraft; walking the runway to discuss airport markings, lighting, and the wind sock; meeting the airport owner; meeting an aviation mechanic to discuss aviation careers; discussing and demonstrating control surfaces (while on the ground); listening to and discussing the Chandler automated weather system;

and discussing the primary aircraft instruments while seated in an airplane. All of these activities provided the students with a fun, memorable, and educational experience.

One activity during the field trip, however, literally swept the students off their feet. The students had the opportunity to fly! The pilot, Ben Schulte, offered free flights in his private airplane for Arlen and the student participants. (The students had to have a special permission slip signed by their parents ahead of time in order to take the flight.) Mr. Sykes offered the following advice to other teachers who may wish to provide this type of experience to students. "To get the most out of the trip, prior knowledge is the key. I instruct the students using the aerospace curriculum, and have aviation experts come in to give lessons and talk to the students. This allows for networking, and some of the experts feel connected with the students. This is what opens doors and allows for opportunities to happen. This year, Pilot Schulte came in to talk to us about flying and set-up the trip to Stellar Airpark. The pre-lessons included building a mini-airport and simulating air traffic control services to aircraft that were in the pattern and 'flown' by other students using radios. That gave the students an understanding of what they were seeing at the airport."

Through the efforts of Mr. Sykes and the staff at the airport, along with the generosity and skills of Mr. Schulte, the students were provided a field trip that literally took them "out of the classroom and into the sky." Mr Sykes commented, "Everyone had a ball. It was

Students fly with pilot, Ben Schulte



Kyrene De La Colina students excited about flying with pilot, Ben Schulte

hands-on, and we experienced a 180 mph low approach down the runway. Talk about some excited eleven year-olds! Many of them began asking me about CAP and when they could join."

### ACE Program Knowledge Continues Into Middle School!

The ACE program can be used in middle school 6th grade classes. Students having been involved in the K-6 ACE program may be interested in joining a CAP squadron. Interested students, ages 12-19, can find a CAP squadron near them to visit by entering their zip code at <http://cap.findlocation.com/>. As part of the Cadet Program, middle school students can continue building upon their ACE program aerospace knowledge and participate in more aerospace activities (including Cadet Orientation Flights aboard CAP Cessna aircraft); participate in physical fitness activities; and engage in activities to strengthen their character and leadership skills. Form more information about the Cadet Program, visit [www.capmembers.com/cadets](http://www.capmembers.com/cadets).



Soar to Success with CAP's Cadet Program (To find out more about starting an after-school cadet squadron, go to [www.capmembers.com/schools](http://www.capmembers.com/schools))



## Aerospace Education Excellence (AEX) Award Program

What is AEX? It is a fun hands-on activity program free to our members. If you would like to learn more about the AEX program, go to the AEX link at [www.capmembers.com/ae](http://www.capmembers.com/ae).

If you are preparing to complete the AEX program to receive your plaque and certificates, please go to eServices at [www.capnhq.gov](http://www.capnhq.gov) to complete your report. Once you have received your participant certificates, go to [www.capmembers.com/ae](http://www.capmembers.com/ae) and click on AEX Award Program. There

you will find an AEX template that may be used to type the recipient's name and information directly on the certificate. Follow the directions in the AEX Certificate Template yellow box.

For questions please contact Debbie Dahl at [ddahl@capnhq.gov](mailto:ddahl@capnhq.gov), and she will be happy to assist you.



**Continuing the AEX Tradition**  
Composite Squadron WY 059 has received the AEX Award every year since 2004. Congratulations, cadets and leaders! Pictured are: Front row left to right: C/AB Nick Trujillo, C/AB Bradley Matthews, C/SGT Shelby Sterling, C/AMN Kelley Sterling, C/SSGT Mason Jones, C/2d Lt Tyler Stovall-Back row left to right: Lt Col Susan McDonald, Major Dennis Cornell



## Points of Pride

### CAP Team CyberPatriot National Champs!

Orlando, FL Civil Air Patrol Squadron, Team Wilson, beat over 500 teams and won the All Service Division for the CyberPatriot National Finals Competition, which took place on April 1 in Washington, D.C. Northrop Grumman is the Presenting Sponsor for CyberPatriot, the largest national high school cyber defense competition designed by the Air Force Association. Information for the upcoming school year is found at [www.uscyberpatriot.org](http://www.uscyberpatriot.org). Register your team now!



CyberPatriot CAP Cadet Team with Maj Gen Amy Courter (far left), CAP National Commander

For the CAP *Volunteer Now* online story and video about Cyberpatriot, go to <http://www.capvolunteernow.com/> and search for the article titled "CAP Cyberpatriot Team Relishes National Title."

### Astronaut Wheelock Inspires Alabama Students

Astronaut Doug Wheelock partnered with long-time CAP AL AEM, Sandy Armstrong, to initiate the



Wheelock and Al the Astronaut

"Al the Astronaut" mascot and lesson plan program. Al accompanied Doug during his 6-month command of the International Space Station in 2010. Al was returned to Earth on the final March 7th flight of the Discovery shuttle orbiter. CAP and the AFA's Montgomery Chapter helped sponsor Doug's travels to CAP's AL Aerospace Connections in Education (ACE) schools to give students hope of making their dreams come true, and, to bring Al home to Alabama at a conclusive Troy University Wiregrass Math/Science Consortium event. "The dream of space exploration belongs to everyone, and I am grateful I can play even a small role in connecting people to the universe," said Wheelock. "At NASA we are in the business of making seemingly impossible dreams come true every day. We want to captivate, inspire, and energize the next generation of scientists, engineers, and space explorers."

### Eric Boe's Former Teacher Continuing the Dream



Eric Boe, his teacher, Debi Huffman, and Roy Eley, original Tuskegee Airman

Astronaut Eric Boe energized his interest in aerospace at a ten-week after-school Discovery class in 1978 taught by Carol Hickson and Debi Huffman. A Dorasville, GA student at Evansdale Elementary School, Eric completed the class and then became a CAP cadet. Eric, along with cadets John Haver and Alan Ratteree, returned to the Discovery class in following years to promote the CAP cadet program. Eric has continued to work with Debi Huffman on youth and teacher aerospace programs in the Peachtree/Dekalb County, as well as in Houston. As Ms Huffman is continuing to inspire young people toward STEM careers, she was a special guest at the final launch and return of, ironically, the Space Shuttle Discovery, where Col Boe was the pilot. We never know the influence we will have as we all continue to promote aerospace to the students of today...

For more on these stories, go to [www.capmembers.com/ae](http://www.capmembers.com/ae) and click on AE: What's New? link.



## CURRICULUM CORNER.....(Grades K-4)

### ASTRONAUTS "BONE UP" ON CALCIUM

**Objective:**

Students will learn what makes calcium important to bones and how astronauts deal with calcium loss while in space.

**National Science Standards:**

- Content Standard C: Life Science
  - Organisms and environment
- Content Standard F: Science in Personal and Social Perspectives
  - Personal health
- Content Standard G: History and Nature of Science
  - Science as a human endeavor

**Grade Level(s): K-4****Background Information for Teacher:**

As mankind moves farther into space, the demands of space travel become more severe. Studies have been done aboard the Space Shuttle and the International Space Station to see what the effects of space travel are on astronauts traveling and living in space.

In 1998, one of the Discovery flights, STS- 95, carried one of the original astronauts of the space program, Senator John Glenn. Senator Glenn was 77 years old at the time, so his presence helped NASA and the National Institute on Aging study space travel in older Americans and how the effects correlated with aging effects here on Earth. Older people commonly experience a loss of bone mass, a condition often due to the age-related disease osteoporosis. By exploring the interaction of aging and space flight, research on STS-95 contributed to our knowledge of the aging process. A better understanding of bone and muscle changes in space flight will also lead to treatments for astronauts and Earth-bound patients alike.

The skeleton provides a rigid support for the body in Earth's gravity and is similarly affected by microgravity.

Bones lose calcium -- the mineral from which they derive their structure and strength -- through the process of demineralization. If enough calcium is lost, the skeletal system becomes weaker and less capable of withstanding the stresses associated with daily life on Earth. Once astronauts return to Earth, the gradual process of returning calcium to skeletal bones begins; this recovery can last months -- even years -- if an astronaut's stay in space was of substantial length.

How do astronauts hope to prevent this bone calcium loss from occurring? At the present time, supplementing the diet with foods and vitamins and making sure the astronauts do weight-bearing exercises to combat the lack of gravitational pull on the bones are ways that the problem is being handled.



Senator John Glenn exercises aboard STS-95



STS-133 Commander, Steve Lindsey, exercises aboard Space Shuttle Discovery

As mankind looks to visit Mars or asteroids, physicians look at the scientific studies that will accomplish this long-duration space travel to help them solve some of the mysteries of aging on Earth.

**Discuss with students:**

*Calcium is an important mineral that helps build strong bones and teeth. Getting extra calcium as a child can mean stronger bones are built. What can you do to help build your bones now?*

1. Make sure you get at least three servings of milk every day (and milk products like cheese and yogurt).
2. Stay active. Participate in exercises that are weight bearing, such as running or walking.
3. Play outside in the sun to get the vitamin D needed for your body to absorb calcium.
3. Try not to drink sodas or eat other foods that are high in phosphorous.

*Astronauts lose calcium from their bones while in space. Scientists are studying why this happens and what to do to help not only astronauts, but also older people on Earth who lose calcium as they grow older. Astronauts also*



have to exercise, eat foods that contain calcium, and take vitamins in order to prevent calcium loss in space. In space, however, milk and other dairy products are not readily available. That is why astronauts take a calcium supplement or vitamin to help them.

**Materials:**

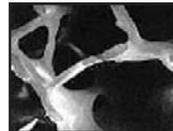
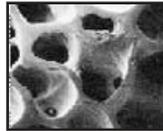
- 2 chicken bone legs
- 2 cups water
- 2 cups vinegar
- 2 jars with lids
- paper and pencil for each student

**Procedure:**

- Note: The teacher will do this as a demonstration and have students hypothesize (or guess) what the results will be after the discussion about bone mass loss and how it affects astronauts.
1. Place a chicken bone (that has been cleaned thoroughly) in each jar.
  2. Add 2 cups of water to one jar and 2 cups of vinegar to the other jar.
  3. Put the lids on the jars and leave them alone for at least three days.
  4. After 3 days, remove the bones and rinse with water.
  5. Let the children feel them and compare how flexible the bones are. Tell the children to try and bend the bones.
  6. Ask the children what they think hap-

pened. Have the children draw a picture of what they think happened.

7. After the discussion and demonstration, have students write a short article telling astronauts what to do for calcium loss while in space.



Right: Healthy bone  
Left: Bone with calcium loss

**Review:**

Calcium loss is a problem for astronauts in space and for people as they age. To prevent this loss, both groups should eat foods rich in calcium and exercise regularly.

**Evaluation:** Check students' understanding by looking at their drawings and listening to their responses. The worksheet below might also be used to check understanding.

**Answers to worksheet:**

In part one, the items circled should be the cheese, milk, yogurt, and ice cream. On the second part, running and getting outside in the sun should be checked.

**Extension:**

1. After the bones have dried out, leave them out for a few weeks (be sure and label which bone came from the water and which came from the vinegar). Tell students to try and break the bones and write down what happened. Which bone was stronger - the one that was soaked in vinegar or the one that was soaked in water? (Answer: The bone that was soaked in vinegar lost calcium, causing it to be weak and break easier than the bone soaked in the water.)
2. Have students make a list of foods strong in calcium that they should eat to build strong bones. Younger children may want to cut out pictures of the foods.

**Resources:**

1. Milk Matters website with games and information for kids can be found at: <http://www.nichd.nih.gov/milk/kids/kidsteens.cfm>.
2. There are YouTube videos from NASA that have kids explaining about calcium loss in astronauts and the importance of calcium to kids. One of these can be found at: <http://www.youtube.com/watch?v=xvLRWvYxxrU>.

Name \_\_\_\_\_

Circle the foods that are calcium-rich.



Put a check in the box next to the activities you can do to keep your bones strong.



Reading



Running



Getting outside in the sun



Commander of STS-133, Steve Lindsey, exercises aboard Space Shuttle Discovery

## CURRICULUM CORNER

(Grades 5-12)....

# CREATE A PODCAST - "EXERCISING IN SPACE FOR BONES AND MUSCLES"

### Objective:

Students will learn about podcasts and how astronauts exercise in space to prevent damage to bones and muscles.

### National Science Standards:

Content Standard C: Life Science

- Diversity and adaptations of organisms

Content Standard F: Science in Personal and Social Perspectives

- Personal health
- Risks and benefits

Content Standard G: History and Nature of Science

- Science as a human endeavor

### National Technology Standards:

Standard 11: Students will develop abilities to apply the design process.

gravity that they feel is only about one-millionth of the gravity we feel on Earth. The prefix "micro" means small or one-millionth. Without regular use and exercise, our muscles weaken and deteriorate. This is a process called atrophy. Studies have shown that astronauts experience up to a 20 percent loss of muscle mass on spaceflights lasting up to 11 days. When bones do not get exercise, they lose minerals, such as calcium. This loss is called disuse osteoporosis.

NASA uses countermeasures to prevent some of the damage that occurs to the bones and muscles of space explorers. A countermeasure is an action to counteract, or change the effects of, another action. NASA uses the term "countermeasures" to describe

procedures, strategies, medications and exercises that help keep astronauts healthy and productive while they are traveling in space and after they return to Earth. Exercise countermeasures prevent or counteract some of the bone and muscle loss in an astronaut's body.

Note: The information in this lesson can be found on the NASA website for DIY podcast (Do-It-Yourself podcasts) at <http://www.nasa.gov/audience/foreducators/diypodcast/index.html>. (See screen shot for this website below.)

**A podcast is a media file that is distributed by subscription over the Internet for playback on portable media players and personal computers. In the case of the podcast in this lesson, the podcast is informational.**

Grade Level: 5-12

### Background Information:

All living things on Earth are accustomed to gravity. We don't often think about how gravity keeps us from floating away or how it keeps us strong. The pull of gravity on our bodies gives us a bit of a workout - strengthening our muscles, bones and cardiovascular system. Gravity places a load on our muscles and bones. Every time we stand, walk or pick up something, our muscles work against gravity. The more we lift and the faster we move, and the more often we do both, the stronger our bones and muscles become. If we are active enough for long enough, our cardiovascular system gets a workout as well. But what would happen if we no longer had gravity to work against?

In space, astronauts experience "microgravity." This means the pull of





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

### Materials:

- computer with access to Internet
- paper and pencil
- access to video and audio editing software (You can find free software online by googling "free audio and video editing software." One site for audio editing software is Audacity at <http://audacity.sourceforge.net/about/>. There is a list of free video editing software at <http://desktopvideo.about.com/od/editingsoftware/a/freevideedit.htm>.

Usually both Mac and PC computers have software already installed that will allow you to put together and edit audio and video parts into a podcast format. Such programs as Movie Maker for PCs or iMovie for Macs come installed on the new computers.)

### Procedure:

1. Students should become familiar with the software for editing video and audio found on their computers.
2. Students should discuss the health benefits of exercise for astronauts in a microgravity environment.
3. Students can work in groups of 2-3 to develop a short informational movie on bone and muscle fitness in space using the video clips, information and images found on the NASA website for podcasting at <http://www.nasa.gov/audience/foreducators/diypodcast/index.html>.
4. Students will first download video and audio clips from the NASA site mentioned in step #3 that pertain to the story they want to tell, or they can record their own video and/or audio with a camcorder, digital audio recorder or other recording device. Students may use the information on the NASA website to record other data for their video.
5. Next, students should write a production script and/or create a storyboard (a graphic representation of the order and content of each part of the video).
6. Students will then edit their story so

that it flows without interruption and is ready for podcast.

7. Once the students finish editing their video, they can share it in different ways, such as podcasts, social networks, video sharing sites, blogs, school websites, cell phones or DVDs. (For this lesson to be evaluated, students should have an accessible copy on a DVD or website so they can share with the class.)

### Review:

NASA's Do-It-Yourself Podcast activity sets the stage for students to host a show that features astronauts doing experiments in microgravity or NASA experts explaining scientific concepts. NASA provides a set of audio and video clips along with links to images and information about a STEM-related topic. Students can choose as many items as they want to include in a project and download them to their computer. Students can use the information provided or conduct their own research to write a script for an audio or video production.

### Evaluation:

Teachers might ask students (as an audience) what they learned from each podcast and how creative was each presentation.

### Extension:

Have students create podcasts to share with lower grade students to help them understand such concepts as:

- Solar Arrays
- Robots
- Newton's Laws



Astronaut Eileen Collins works out on exercise bike in space

### How DIY Podcasts Work



Download NASA video or audio clips



Write a production script



Record your narration



Edit your product



Share it!



Thank You



Air Force Association!

## Air Force Association Partnership

CAP's gratitude to the Air Force Association continues for the many years of financial support enabling the perpetuation of the AE Mission via CAP's youth development programs for units and teacher members. This quarter, appreciation is extended to the AFA for providing \$250 AE grants to deserving teachers selected in a competitive grant application process. The winners and their excellent AE projects are as follows:

- Travis Angell**- Washington Irving Elementary, Waverly, IA - 6th grade Delta Dart Project
- Gary Bodman**- Madison Middle School, Albuquerque, NM - Afterschool RoboRAVE Competition and Remote Control Aircraft Program
- Gregory Boggs/Cheryl Bremer**- California Aerospace Academy, McClellan, CA - Advanced Personal Computer-based Aviation Training Device (PCATD) Flight Simulator Program
- Kathy Boyte**- Wright Elementary, Ft. Walton Beach, FL - ACE Program Extravaganza
- Christopher Chambers**- Shamrock Middle School, Decatur, GA - Aerospace Exploration Class
- Susie Comer**- Warren East Middle School, Bowling Green, KY - Aviation Exploration Program with Regional Airport
- Barbara Corbin/Cassi Swaney/Monica Hiris/Lark McCormick**- Van Buren Elementary, OH - Moon Phases Project
- Richard Edgerton**- Aviation High School, Des Moines, WA - Honorary Rocket Scientist Project
- Kaci Heins**- Peak School, Flagstaff, AZ - Aerospace Dimensions Rocketry Program
- Laura Hummell/Elizabeth Kinsey/Melissa Schmitt**- Anthem School, Anthem, AZ - Aerospace Academy ACE/STEM Project
- Marlene Moore**- Canyon Owyhee School Services Agency, Wilder, ID - Five-District Gifted/Talented Aerospace Workshop
- Rachel Noles**- Boaz Intermediate

School, Boaz, AL - Outdoor Aerospace Exploration Area Project

- Sandy Sanders**- Headland Elementary, Headland, AL - 2nd Grade AE Day
- Gary Schaefer**- Bowie USD #14, Bowie, AZ - Hydrogen Powered Rocketry Program
- Anne Stultz**- Martinsville Middle School, Martinsville, VA - Virginia Air and Space Center Trip

### Correction from Winter Unit Grant Recipient List:

- Citrus County Composite Sq**, Beverly Hills, FL - 2Lt Joseph Francis - Rural AE Enhancement Program

### Recent AFA Grant recipients share after-action appreciation:



Montana's CAP Missoula Composite Squadron cadets and Target Range Elementary students joined forces to earn state First-Place Teamwork Trophy for their robotics project funded by an AFA Grant for CAP members. Kay Ebel guided her youth to use NXT robots to explore the cutting-edge world of Biomedical Engineering to discover innovative ways to repair injuries, overcome genetic predispositions, and maximize the body's potential, with the intended purpose of leading happier and healthier lives. Community medical specialists volunteered as mentors. Many of the youth are now considering studying science, technology, math and engineering fields for culture careers. *Mission accomplished!*



The CAP Three Rivers Flight in Grape Creek, Texas used their AFA Grant to purchase radio, video, and flight control equipment to conduct, launch, and track an impressive high-altitude balloon. They gained FAA approval and completed their project with excellent videos from the clouds and plans for future experimental flights. Their computer tracking of the balloon resulted in a quick search and rescue operation! Much STEM subject excitement was generated via the well-planned and implemented project.

Once again, CAP extends sincere gratitude to the AFA for dedicated support to the youth of America! To find out more about all the AFA/CAP partnership programs, go to the AFA Partnership link at [www.capmembers.com/ae](http://www.capmembers.com/ae). If you are NOT a member of AFA, find out how YOU can join a community-based/community outreach AFA chapter!

### Answers to front page story:

1. The Discovery launched a telescope that has seen deeper in space and in time than ever before.
2. This flight coincided with the 10-year anniversary of a permanent human presence aboard the outpost.
3. Five orbiters comprised the Space Shuttle fleet.
4. Answers will vary. Students may wish to be creative in the presentation of their answers by using different methods such as visual or multimedia.



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



### STK – Use It Anywhere, Anyplace, Anytime



Civil Air Patrol and Analytical Graphics Inc (AGI) have enjoyed a wonderful partnership for many years. AGI, the maker of STK, the leading commercial satellite software in the country, has provided STK licenses to CAP members for a long time. Many of our members have received licenses and have enjoyed using STK as a very effective tool for learning more about satellites, satellite orbits, satellite missions, and space operations. STK has been a wonderful educational tool.

Typically, CAP members have sent information that appeared on their STK disk to CAP NHQ/AE, who, in turn, passed that information along to AGI. AGI then issued a STK license to the CAP member. Well, that procedure worked fine, but now, AGI has made it even easier to use STK.

AGI recently introduced a new procedure, which will allow CAP members to obtain a STK license directly from AGI. This new procedure offers every CAP member (cadet, senior member or teacher member) the opportunity to use STK anywhere, anyplace, anytime. A member can log in to AGI from any

computer anywhere and begin using STK. The only contact you will need to make with NHQ/AE is to obtain the CAP unique password. Once you have that, you are ready to use STK. So, members can use STK at the squadron, in the classroom, or at home. Members can also obtain multiple licenses for the squadron or classroom setting. Please follow the guidance below.

#### Licensing

1. *Obtaining AGI software:* Request a DVD at [www.agi.com](http://www.agi.com), or download STK from <http://adn.agi.com> and click on the Download Center tab. You will find the list of downloadable products in the first column on the left; select STK. After clicking the Download button, you will be prompted to follow the directions on the screen. (Note: if installing from disk, the same disk can be installed on multiple computers.)

2. *Getting your STK licenses:* This step requires an active internet connection and only has to be completed once. After installing STK, go to your Windows Start menu: All Programs; navigate to AGI Support Tools and launch the AGI License Manager. Proceed to the Enterprise Home Use tab and fill in the requested information. We are asking only for name and email address. Your unique password is obtained by NHQ/AE and must be used exclusively by CAP. Click the "Get Home Use License" button and STK will automatically be launched. You must have an active internet connection the first time STK is launched each day in

order to obtain a new license but obtaining the license is now automatic and STK should open on your screen.

3. If you have an active STK license, this process will not work. You can continue to use the old license. You will need to remove/disable any active or old STK license file in order for this process to work.

#### Training

1. AGI training is available at <http://www.agi.com/training/>. The link will direct you to training in many forms: registration for classes; AGI training materials; training videos, etc. They can all help you get started quickly with the software.

2. CAP's AE website at [www.capmembers.com/aerospace\\_education/general/stk.cfm](http://www.capmembers.com/aerospace_education/general/stk.cfm) contains 20 new STK scenarios. These scenarios will walk you step-by-step through several uses of STK.

3. Check [www.agi.com](http://www.agi.com) for free STK fundamental and comprehensive training classes throughout the year at various locations across the country.

STK will tremendously increase your knowledge of space and satellites. So, please take advantage of this wonderful opportunity AGI has given us to use STK. Explore different satellite orbits. Create your own satellite constellations. Or do myriad other fantastic adventures with STK. Additionally, share it with your CAP friends. This is a great way to expand aerospace within CAP!

### TOP Flights Inspire Educators Onward and Upward!

CAP's volunteer Directors of Aerospace Education (DAEs) across the country continue to motivate teachers to integrate aerospace education in the classroom setting by taking them "out of the classroom and

into the sky" via CAP Cessna airplanes! As a benefit for teacher members of CAP, Teacher Orientation Program (TOP) Flights give teachers a cockpit view of their community to share with their students. Learning about the principles of flight from the air illuminates traditional science into a spark to ignite the minds of reluctant students.

To find out more, go to the TOP Flight links at [www.capmembers.com/ae](http://www.capmembers.com/ae).





## REGION TO REGION

For information on other pertinent dates for CAP Members and Educators, go to our calendar at [www.capmembers.com/ae](http://www.capmembers.com/ae).

### NORTHEAST REGION

**May 24-26**  
LEGO® Engineering Symposium 2011 will be held at Tufts University in Medford, Massachusetts.  
<http://legoengineering.com/conferences.html>

### MIDDLE EAST REGION

**May 18-20**  
The CAP Middle East Region Aerospace Education Officers School will be held in Lexington Park, Maryland. Contact **Col Larry Trick** at [larrytrick@msn.com](mailto:larrytrick@msn.com) for details.

### GREAT LAKES REGION

**July 15-16**  
The National Aviation Hall of Fame will announce the 2011 Scott Crossfield Teacher of the Year Award at the NAHF President's Banquet in Dayton, Ohio.  
<http://www.nationalaviation.org/crossfield-award/>

**July 23-24**  
The Dayton Airshow will be held at Dayton International Airport in Dayton, Ohio.  
<http://www.daytonairshow.com/>

**July 25-31**  
Experimental Aircraft Association will hold the 2011 AirVenture at Oshkosh, Wisconsin. Teacher workshops will be held July 25 and 26.  
<http://www.airventure.org/>

**August 10-13**  
The CAP Great Lakes Region Aerospace Education Officers School will be held in Dayton, Ohio. For details, contact **Lt Col Sherwood Williams** at [dr-w@new.rr.com](mailto:dr-w@new.rr.com).

### SOUTHEAST REGION

**May 7**  
National Astronomy Day Family Celebration will be held at Montgomery, Alabama Planetarium from 5-10 p.m. Contact Rick Evans at 334-241-4799  
<http://montgomery.troy.edu/planetarium/>

**June 17-20**  
The 7th Annual Gulf Coast Hot Air Balloon Festival will be held at Foley SportsPark in Foley, Alabama.  
<http://www.gulfcoastballoonfestival.com/>

**June 21-25**  
CAP National Aerospace Education Officers School will be held in Pensacola, Florida, at the Pensacola Naval Air Station. To find out more or to register, go to:  
<http://www.capmembers.com/ae> and click on **AE: What's New?**

### NORTH CENTRAL REGION

**June 18-19**  
25th Quad City Airshow will be held at the Davenport Airport in Davenport, Iowa.  
<http://www.quadcityairshow.com/2011/index.html>

**July 16-17**  
The AirExpo 11 will be held at Flying Cloud Airport in Eden Prairie, Minnesota.  
<http://www.airexpo-mn.org/>

### SOUTHWEST REGION

**July 22-24**  
Dallas / Ft. Worth Summer Balloon Classic & Airfest will be held at MidWay Regional Airport in Midlothian, Texas.  
<http://www.summerballoonclassic.com/>

### ROCKY MOUNTAIN REGION

**May 20-22**  
15th Annual Erie Town Fair and Balloon Festival will be held at the Colorado National Golf Club in Erie, Colorado.  
<http://www.hotairballoon.com/Erie-Town-Fair-Balloon-Festival/>

**June 6-17**  
A STEM (Science, Technology, Engineering and Mathematics) Institute will be offered to students who will enter 6th, 7th, 8th or 9th grades in the fall of 2011. The Institute will be held at Preston Middle School in Fort Collins, Colorado.  
<http://schoolweb.psdschools.org/preston/stem/STEM%20web%20site/index.htm>

**July 29-31**  
The CAP Rocky Mountain Region Aerospace Education Officers School will be held at Peterson AFB, Colorado. Contact **Lt Col Kaye Ebelt** at [kebelt@msn.com](mailto:kebelt@msn.com) for details.

### PACIFIC REGION

**April 27-30**  
BOOST (Best Of Out-Of-School Time) Conference will be held at the Palm Springs Convention Center in Palm Springs, California.  
<http://www.boostconference.org/>

**July 30 - August 2**  
The CAP Pacific Region Aerospace Education Officers School will be held at March ARB, California. Contact **Lt Col Virginia Nelson** at [vmnelson@juno.com](mailto:vmnelson@juno.com) for details.

### Special Events

**CAP Annual Conference & Summer Board Meeting will be held in Louisville, Kentucky from August 17-20, 2011. Make plans now to attend! For registration, visit [http://www.capmembers.com/events/cap\\_annual\\_conference/index.cfm](http://www.capmembers.com/events/cap_annual_conference/index.cfm)**

