

ACE High

K-6 classroom program shows phenomenal growth

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By Sheila Pursglove and Susan Mallett

Sixth graders launching straw rockets with kindergarteners and conducting satellite topography. Fifth grade students graphing the stars and testing the forces of flight in a wind tunnel. Second graders doing micro-gravity physical fitness training. Fourth graders teaching first graders about air with parachutes, balloons, and kites. Third grade students designing a space station. These inquiry-based STEM experiences can be found in CAP's ACE classrooms throughout the United States. The ACE program (Aerospace Connections in Education) has grown by leaps and bounds since its inception in 2007 as an educational outreach initiative.

The program, initially called "Jr. Cadet Program," morphed to ACE the following year. "The name symbolizes what our nation wants for future citizenry: to become the best of the best — Aces," said Suzanne Mercer, ACE program manager at CAP National Headquarters.

There are 21 lesson plans for each of the K-6 grade levels — covering character, physical fitness and academics — to promote engagement in aviation and space topics, and opportunities to connect community volunteers and venues with classrooms. "Lesson plans are fully developed to implement, modify, and integrate into any learning environment." Mercer said.

Mercer taught the program for three years in Alabama before retiring and joining the CAP National Headquarters AE team in 2015. Her goal was to make the program CAP's best-known secret. "Is your FACE part of ACE?" appeared on the website, in emails and in presentations. "During these last two years we've seen definite growth," she said. "The need for schools to focus on STEM is guiding teachers to search for credible and relevant STEM programs they can easily integrate in their educational program."

Tony Vining, a CAP squadron commander and aerospace education officer, or AEO, with the Indiana Wing's Fort Wayne Composite Squadron, is a weekly volunteer teacher at St. Aloysius Catholic School in Yoder, Indiana, the 2016 National ACE School of the Year and home to the 2016 National ACE Student of the Year.

Due to this recognition, the St. Aloysius school was the site for the national 2016-2017 ACE Lift-off event. The AFA's Fort Wayne chapter provided the school's new ACE shirts and collaborated with the CAP Indiana Wing to ensure the students saw the great mentor support available to them.



"I was familiar with ACE, and when the principal approached me about CAP volunteering at the school, I pitched the program to her," Vining said. "She was immediately excited, and we implemented it starting in 2014."

Honored as 2016 National ACE Teacher of the Year, Vining appreciates the hands-on opportunities.. "I can easily teach students about how an airplane or rocket works, but when they launch Fizzy Rockets and fly their gliders, they see concepts in action," he said. "Whenever I get out my 'hands on' box, the students light up, because they know it's going to be a great day!"

ACE Mascot, CAPPY; CAP Cadets; Vining; Principal Voors; and ACE Student of the Year, Kiracofe at ACE Lift-off

Vining recently enjoyed a “proud moment” when he walked by a third and fourth-grade class learning about space. When a third-grader named the planets, and the teacher asked where he had learned that, the boy replied, “Sgt Vining taught that in ACE class!” Vining also proudly introduces CAP cadets to the students and informs them of how to become a cadet when they become of age.

Dr. Rossana Chiarella states that adapting the ACE program components into the regular curriculum fills lessons with excitement. Chiarella has been a CAP aerospace education member (AEM) since 2014, and a S-STEM Club Coach and Space Foundation Teacher Liaison Officer at Palm Springs North Elementary in Hialeah, Florida. “Students’ reinforced interest and achievements are the best reward.”

“Besides rockets launching with angles and radius calculations along with Newton’s laws of motion review, applying astronomy in the tube allows students to speculate and assume distance values among stars,” she added. “Fighting the forces of gravity helps students understand the influence of weight of materials on gravitational forces.”

Teachers and parents join in outdoor activities, such as launching rockets, with the support of CAP’s Opa-Locka Cadet Squadron 464, and enjoy lectures at monthly Parents’ Nights.

Chiarella, who recently received a Hispanic Elementary Excellence in Education Award from the state of Florida, recalled a two-year student in the Space STEM club, who plans to join a CAP squadron — and eventually become a pilot. “What better success story is that for the future of CAP youth development programs — and the workforce of tomorrow?” she said.



Chiarella and ACE student doing balloon rocket activity.



Brian Johnston demonstrates flight using bird wings.

Fifth-grade teacher, Brian Johnston, from Friendship Elementary School, Buford, Georgia, learned about CAP’s AE program when his children joined CAP in 2015. He then joined as a squadron AEO, and learned about the K-12th grade AEM program, which includes the free ACE and STEM Kit programs.

“When I tell teachers about CAP’s free programs for educators, they’re amazed this is out there and they’ve never heard of it,” he said. “Teachers spend much personal money to supplement lessons, but with CAP’s programs, they’re able to integrate exciting STEM kits and curriculum they could never afford on their own.” Johnston has introduced the ACE program to his entire school this year and every child is able to participate.

A CAP educator as well as an AEO and deputy commander of cadets for the Georgia Wing Barrow-Jackson Composite Squadron who also has taught aerospace classes for wing encampments, Johnston gets positive feedback from parents, both in CAP and in school. “They are pleased to see their children learning innovative concepts, like programming,” he said.

Johnston got so involved in ACE that he won the 2017 National ACE School Coordinator of the Year award and his school, Friendship Elementary, won the 2017 National ACE School of the Year award.

In 2011, an elementary school in Minnesota's Anoka Hennepin School District became University Avenue Aerospace Children's Engineering and Science Elementary, aka University Avenue ACES. All K-5 teachers are CAP ACE instructors. "This has resulted in pretty neat experiences, like CAP teacher flights and valuable additional STEM resources," said Kate Watson, curriculum integration coordinator, and CAP's 2014 National ACE Coordinator of the Year.

Each grade level has its own area of exploration, such as aviation, aerospace engineering, and experimental aircraft, with the scope being supported by local volunteer subject-matter experts and the wide array of lessons and STEM materials provided by CAP.

The ACE program provides a great foundation and road map, Watson said. "The cross-curricular, interactive lessons are a great way to reinforce skills and fit well with grade-level curriculum standards," she said. "The lessons are well laid out and integrate both physical fitness and character ed lessons with the academic content.

"It's not always easy to find the right programs and associated professional development for a K-5 aerospace school. We're so thankful and appreciative to CAP and the ACE program for not only giving us amazing free resources, but lending support when we have questions or need guidance. CAP has helped our school reach out to other local resources to enrich our aerospace program."

As the AFA is the *Presenting Sponsor* for the ACE program throughout the nation, CAP connected the school to the local AFA Rawlins chapter. The AFA chapter donated the unique CAP/AFA ACE shirts to the school and provided speakers for special ACE award days. "In the thank you notes written to the AFA, a fourth-grade girl wrote: 'Thank you for the shirt, now I feel like I belong,'" Watson said. "I don't think a day goes by when at least a few students, or staff, are proudly wearing their ACE shirts."

CAP and AFA representatives participate in three special "ACE Days" each year. Cadets and adults from the local CAP squadron have visited the school; helped with airport field trips; and hosted a picnic to give teachers a first-hand look at new aerospace activities and opportunities for their upper-grade students.

Last year, Home Depot donated wooden airplane building kits to second graders. "If you can imagine over a hundred eight-year-olds hammering together planes in their ACE shirts, it was quite an experience!" Watson said.

This year's aerospace events include presentations from meteorologist Belinda Jensen; a Black Hawk pilot; the Raptor Center with an eagle and a hawk; Mad Science; the Jackson Middle School Observatory; wearable technology; a navigator from the 133rd Airlift Wing Minnesota Air National Guard; and pilot Chuck Datko, who flies/organizes T6 Thunder flyovers and, who worked on NASA's Apollo Missions.

Kate Watson's ACE students at the airport.



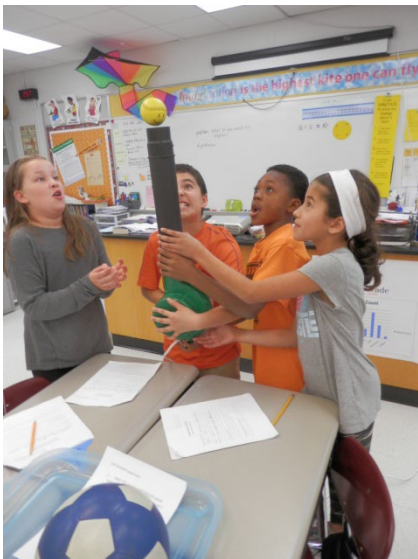
What makes these schools stand out as stellar examples of the efficacy of the ACE program for the over 25,000 ACE students nationwide? Commitment. What is contributing to the impressive annual growth of the ACE program? Collaboration. What invigorates over 90% of ACE teachers to continue the program? Credibility.

The “ACE is high” due to the mainstay work of dedicated members of a credible, collaborative, and committed core team of educators, CAP members, and AFA chapters across the nation. Together Each DOES Accomplish More!

The ACE Program is CAP’s forerunner to the cadet program. It is supported by presenting sponsor, the Air Force Association (AFA), and by dedicated CAP adult and cadet members throughout the country. There are currently 25,420 ACE students working with over 500 educators in classrooms, home schools, youth organizations, museums, and after-school programs in the US, PR, and DoD schools. The AFA and CAP join forces and resources to provide exciting and relevant STEM professional development opportunities for these educators.

THE FACES OF ACE

Alabama’s Holtville Middle School ACE students balance a softball while demonstrating Bernoulli’s Principle, one of many fun activities involved in Civil Air Patrol’s expanding Aerospace Connections in Education, or ACE, program. ACE students discuss the best possible flight plan for their power planes.



Kate Watson’s University ACEs students in Minnesota test the forces of flight in a museum wind tunnel.

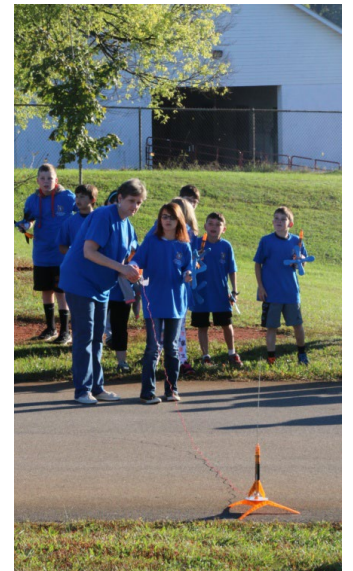
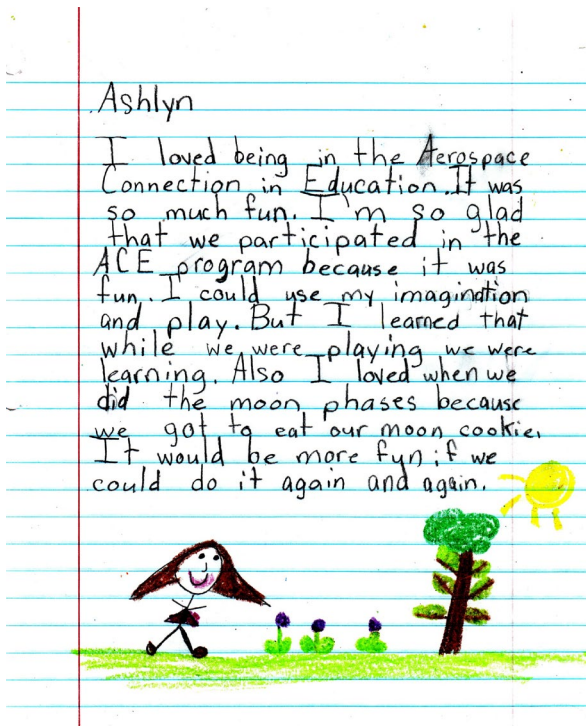


ACE students at Maxwell K-8 School in Alabama work in cooperative groups to build their own hydraulic machines where their Platform Lifter rises to new heights.



Having been a part of the ACE program since it began, many students who have enjoyed the ACE program have gone on to join the CAP as cadets. My students love ACE Days; they never miss school when they know we are going to be doing ACE lessons. ~Lynn Koehler, Boaz Intermediate School, Boaz, AL (2008 National ACE Teacher of the Year)

As a school librarian, I have seen how this exciting STEM program has increased interest in reading in the content areas. Due to the entire school's interest in the ACE program, we launch rockets, have a robotics club, and are starting computer coding club! ~Suzanne Costner, Librarian and STEM Coordinator, Fairview Elementary School, Maryville, TN (2015 National ACE Teacher and School of the Year)



Girls love rockets, too! Ms Costner prepares for a rocket launch.

It has been very evident at Antioch that the ACE program and our PITSCO science lab have helped raise science scores in the upper elementary level on DEA testing, state testing, and academic testing.

~Laura Pink, STEM Coordinator, Antioch Elementary, Crestview, FL (2014 National ACE Teacher of the Year)



Laura Pink with the ACE mascot, CAPPY.



One of her students thinks, "I believe I can fly!"

Our school has been a total ACE school since the program started. Students' interest in regard to careers involving aviation or science increase after learning and participating in all the activities provided with ACE. Our school was named a National Blue Ribbon School due, in part, to the wonderful STEM programs provided by the CAP.

~Shelia Sealy, Bear Exploration Center, Montgomery, AL (2008 National ACE School of the Year)



Auburn University ROTC student mentors Bear ACE students during a trip to the airfield while another Bear ACE student is learning about airplanes from CAPPY, the ACE mascot at the airplane park.

Our school, Phoenix Ranch, did not have any aerospace education at all. As a first year science teacher I had the opportunity to attend a conference where I was introduced to CAP and have used it ever since. Last year I introduced it to the remainder of the elementary school classes. Now our entire elementary is an ACE school!

Thanks so much for an amazing program!

~ Catherine Grimes, Phoenix Ranch School, Simi Valley, CA
(2013 National ACE Coordinator of the Year)



Barbara Walters-Phillips with ACE students.

When I first started in ACE in 2010, my students' test scores improved. When I was a STEM coordinator for an ACE school, that school moved from a "D" school to a "B" school. Last year our school received the telescope STEM kit to add to the ACE program. Our students showed tremendous improvement in science on last year's FCAT test!

We are looking forward to the ACE program this year. Our students are motivated by it and look forward to the lessons. This year we will have a WW II B-17 waist gunner who also flew in the Berlin Airlift visit our class and speak along with a lady from Germany who remembers the pilots dropping the candy in the parachutes.

~ Barbara Walters-Phillips, Cheney Elementary School, Orlando, FL (2010 National ACE Coordinator of the Year)



One of the AFA volunteers from the Central Florida AFA chapter at the 2012 ACE Lift-off event in Florida with Barbara Walters-Phillips and students.