



***STEM Can Get
Our Schools
Flying***

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By Mike Jones

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It's time to talk about airports. Airports are threatened with extinction by onerous regulators, budget-cutting politicians, NIMBY neighbors, and hungry real estate developers. While the loss of an airplane is heartbreaking to those involved, the loss of an airport is an ominous threat to all flyers everywhere. The National Airspace System is an intricate mechanism and the loss of any individual element degrades the entire ecosystem. It's death by a thousand cuts.

As such, you can only imagine my joy perusing the editorial pages of the Newport News (VA) *Daily Press*. An unusual headline caught my eye: "Public Schools Should Teach Aviation" by Andrew Crider and Bonita Anthony. Their platform is straightforward: aviation and education complement each other. The art, science and adventure of aviation is an enormous attraction that will engage students. In so doing, aviation will entice them into higher levels of performance and enhanced citizenship. I have seen this phenomenon in my own flying career, so I reached out to Crider and Anthony to learn more about their ideas.

Like Peanut Butter and Jelly

Based in Richmond, VA, Crider is an economist, an educator and a private pilot with about 350 hours in his logbook, most of those in an RV12 he built with his father. He pays for his avgas addiction consulting with small- and minority-owned businesses as well as consulting with aeronautical businesses, such as Commonwealth Aviation.

Crider exercised his economics training while working at FBOs, handling airport operations and even pumping gas in a pinch. “Eventually I was working at the Virginia Department of Aviation where I did communications education,” Crider explained. “We found teaching aviation in the classroom was great for the kids.”



Every student should be aware of the excellent careers available in aviation because it is, to a greater degree than in most fields, truly a meritocracy where all that matters are your skills and your decision-making. Makayla took her first Young Eagles ride in 2012.

Similarly, Anthony is another aviation-addict. While she is a student pilot with just ten hours total time, she holds a BS in electrical engineering and two master's degrees. Her first job after college was with the FAA, installing and testing long-range radar systems. Eventually she migrated to her current role at the College of Engineering and Technology at Virginia State, where she offers Science, Technology, Engineering and Math (STEM) out-reach to educators and students which hopefully leads them into satisfying, high-paying jobs in STEM fields.



Bonita Anthony is an engineer and an educator with a passion for aviation. She has restarted working on her private ticket now that the pandemic is winding down.

“I’m the Queen of Outreach,” she said with a laugh. “I try to bridge the gaps between the schools and their students, to show them the opportunities which are available.”

If you’ve been hiding under a rock for a couple decades, STEM is an acronym for Science, Technology, Engineering and Math. The heart of STEM is to integrate the “hard sciences” in every class in the school. In a successful STEM program, those elements are woven into every subject at every grade level. STEM is very practical and emphasizes taking classroom lessons and applying them to real-life situations. Sound like pilot training?

“Aviation education is a great wingman for engaging students in math, science and technology, maximizing the relevance [of those subjects] outside the classroom,” Crider said.

Starting Aero-STEM Programs

“Ask any kid what super-power they would want, the most common answer is to fly,” Crider told me. “People are fascinated by flight. It’s the apex of freedom. And, you use science and math to get you there. They eat it up.”

Aviation is the ideal combination of STEM topics and the real world, packaged in an adventurous setting. The EAA’s Young Eagles program touches this by enabling young people to experience a G.A. flight and encouraging them into aviation. For nearly two decades my local airport sponsored two Young Eagles events annually until COVID stole the wind from their wings. At their peak, more than 200 kids would fly on a sunny Saturday morning.

Similarly, Anthony’s first flight in 2019 was at an event sponsored by the International Organization of Women Pilots, also known as “The Ninety-Nines.” She quickly accumulated a few hours and was getting ready to solo when COVID arrived. Now that the pandemic is fading she’s looking to get back into the cockpit.

An even more pointed example: A few years ago, I wrangled my airport into sponsoring the “Summer STEM Camp” organized every year by the local public schools. It involved two cohorts of about one hundred kids studying all things aeronautical for two weeks. They learned math by discussing lift and then used a 3D printer to design and print a wing.

They programmed mechanical rovers to navigate around “boulders” on a



Andrew Crider is an economist, a pilot and an airplane builder who took seven years to assemble a beautiful RV12 with his father.

simulated surface of Mars (a tarp on a classroom floor). They interviewed pilots and wrote stories about their lives. And, as the capstone of the event, every student got a Young Eagles ride. When the event was publicized on the web *all 200 spots sold out in eleven minutes*. Kids are attracted to the fun and the glamour of flying like moths to a flame.

“Young people, especially young girls, get ingrained that they can’t do this, they can’t do science, girls don’t do math,” Anthony said. “It really opens their eyes when somebody tells them they can do difficult things, when somebody who looks like them says ‘I fly, I’m a pilot.’ It challenges their view.”



The “Norfolk Can Fly” event in June 2022 attracted all of these young people plus nearly several hundred others to the Norfolk (VA) International Airport. State legislator Jackie Glass is on the left, wearing the yellow shirt and hat.

There are other benefits to “hooking” kids into aviation early on. It’s a great career path with a multitude of options. You have to be reasonably good in school or you won’t pass the written exam.

You have to stay away from drugs and adopt a moderately healthy life-style (no DWI infractions!) or the FAA will take away your toys. Most parents would be thrilled to know their kids were choosing to grow up healthy and were focused on a high-paying job.

But for the education and aviation link to be formed, airports need to open their doors to non-flyers.

Access Leads to Opportunity

“It’s so important to have access to aviation,” Crider said. “If you don’t have access, how are you going to get the bug? How are you going to learn about this industry which, in a lot of ways, exists behinds fences and security gates?”

Crider has organized a number of aviation education events, plus fly-overs, charity flights, and the like. He and Anthony caught the eye of Virginia Delegate Jackie Glass when they all attended a reception sponsored by the Virginia Business Aviation Association.

Glass represents the City of Norfolk in the Virginia legislature. She’s a high-energy activist: a mom, a Navy veteran who’s married to an air traffic controller; maybe a bit of a visionary. Glass is enthusiastic about linking her constituents and aviation. In an email, she wrote: “People of all ages love to imagine the freedom of flying. At one point, my office was an aircraft carrier. It’s hard to be in that environment and not fall in love with aviation.”

Glass had the idea to organize STEM-style events in



Kids are attracted to airplanes like bears to honey, which makes the educational link even more powerful. Here, one participant in the Norfolk Can Fly event tested the left seat in a Cessna. (Note to readers: our privacy policy is to not publish the full names of minors, such as the kids in these photos.)

around Norfolk to prod young people toward STEM careers. Anthony figured that aviation and STEM education could marry together and feed into those other areas. It was perfect: opportunity and preparedness mixed like a perfectly chilled martini.

Image this scene: Crider has just moved into a new apartment in Richmond, VA. He didn't have any furniture yet and all his clothes were in trash bags on the floor. Amidst all the turmoil, he receives an unexpected summons from Delegate Glass, following up on their conversations at the aviation reception a couple weeks earlier. She wanted to speak to Crider right away.



As a new electrical engineer, Bonita Anthony had her first “dream job” with the FAA, installing long-range surveillance radar systems for air traffic control purposes. This snapshot was taken during her first G.A. flight, helping her see the world from a very different perspective.

“When a delegate calls, you jump. I dug into my trash bags and found a suit not too wrinkled, and walked to her office a couple blocks away,” Crider said. “We talked about bringing aviation education to Norfolk schools. We expanded that discussion to include

a fly-in event to attract attention. Our first planning meeting was where I met Bonita and it just took off from there.”

“Norfolk is a special place, with special problems,” Anthony explained. Despite having a great seaport and marvelous beaches, the per capita income is lower than the U.S. average and the crime rate is almost double. “We are well-known for having the largest Navy base in the world, and we’re delving into off-

shore wind and maritime industries, but to move outside of those is a challenge.”

The plan evolved to attract the attention of the under-served in the community. “It was to be an open house, like EAA Young Eagles events,” Anthony continued. “That’s where we take our inspiration, but it’s simply never been done in Norfolk, and certainly not at a busy international airport.”

Thanks to their hard work, support from the Ninety-Nines and a strong PR campaign, about 200 people showed up for the first Norfolk “Women Can Fly” event on June 11, 2022 at the Norfolk International Airport. The event was open to anyone, but the Ninety-Nines particularly wanted to focus on young girls.

The fly-in was a family affair. “Parents like the adventure, too. There was a lot of excitement that their kids were getting an opportunity to fly,” Crider acknowledged. Both feel pilots are great ambassadors for safety, rooted in safety procedures and a great safety culture.

“Aviation builds discipline and respect,” Anthony agreed, and now she and Crider, along with experts from Delegate Glass’ office, are working on ways to take that excitement from the airport and move it into the schools.



Cyarra Goodman, a staffer with Delegate Jackie Glass’s team, gets a feel for Andrew Crider’s homebuilt RV12 on the ramp at the Norfolk Can Fly event in June.

Roadblocks & Work-Arounds

The real issue — one that this author has learned the hard way — is linking STEM and aviation involves engaging with two large, staid, and bureaucratic

organizations: the local school system and the local airport. Of the two, schools are harder. Education these days is so complex, with so many disparate pressures and demands, there isn't a lot of spare bandwidth for new programs.

Glass summarized the problem neatly in her letter to me. "The resources are abundant, but the human capital to teach is not. [STEM] implementation requires creative and passionate educators with the bandwidth to provide hands-on experiences. The most significant barrier is cost... We must find the money in our state budget, bring in partners and work with school systems to make it happen."

"You cannot start at the top level, even at a Superintendent, because it's so hard to get down to the classroom level," Anthony said. "It's going to be teacher-champions that make it happen."

"I start with a STEM coordinator or a teacher where the interest exists and build off of that, adapting it to be relevant to the classroom," Crider agreed. "if you can paired-up with a teacher who is excited about aviation, there are very few problems which cannot be solved."

My Recommendations

This is a great opportunity for airports to build more public support by engaging with the kids in their community. If you get the kids, the parents will do anything for them. Here's five strong recommendations:

Recommendation #1: Airports should arm themselves with the awareness of the wide variety of educational resources available. EAA, AOPA, and the Virginia Dept of Aviation all have pre-packaged STEM curriculum. One great example is the Denbigh Aviation Academy, right at the Newport News (VA) Airport. It is a normal high school in every way, but with focus on aviation. "They have drones, ground school, everything," Anthony reported. Similarly, at Sun-n-Fun, the three-story Central Florida Aerospace Academy is a modern

public high school “aviation career academy” which offers educator assistance programs with STEM-based curriculum and lesson plans for teachers at all grade levels.

Recommendation #2: Another distraction is the standardized performance tests most school systems have now adopted. These usually are structured with rigid “Standards of Learning” adapted to each age group. Some teachers spend most of the school year “teaching to the test.” Crider and Anthony suggest aviation topics can be adapted to the math, physics or liberal arts as appropriate. Furthermore, because the students are excited about aviation, they learn faster and with higher levels of recall and test scores should improve.



Crider enjoys letting youngsters begin their adventures in aviation in his homebuilt RV12 — even the ones a little too young to take an introductory flight. This attention-getting event was Culpeper Airfest at the Culpeper (VA) Regional Airport in October 2021. Photo credit: Kimberly Wells.

Recommendation #3: Don’t go at it alone. Anthony also suggested reaching out to organizations like the Ninety-Nines and Sisters of the Skies who show that flying is possible for anybody willing to work hard. Look for some “easy” wins, perhaps a STEM weekend at the airport or a STEM camp sponsored by a local flight school.

Recommendation #4: Grab the kids with a story that is relevant to them. “I’d tell the little citizens that the sky is literally the limit,” Delegate Glass said. “Aviation knows no borders, and the adventurer in you will find a never-ending quest in aviation. Bring your work ethic, self-discipline, and imagination into the world of aviation.”

Recommendation #5: Each airport should have a formal outreach program to look for teacher-champions in the local schools. Airports should make schools and teachers aware of the wide variety of resources available to them. Airport staffers can work at the grassroots level with ROTC detachments, the Civil Air Patrol, Scouting, or other organizations. Airports also should voice the opportunity with their school administrators and reach out to their state and county legislators and leaders the municipal level because aviation is a great economic driver. Far-sighted airport authorities even could insist that STEM programs and facilities be added to the airport's Master Plan, designing the airport of the future with an eye of the education impact.

"The best defense of an airport is for each airport to be a community leader," Andrew Crider. "If you're involved in your community and you're relevant to your community, you can do anything."

What are you doing at your airport, to bring kids and planes together?



Quantiz (left) and Emarius were thrilled with their ride in the author's Cessna T210.

About the Author

Mike Jones is a 3,000+ hour commercial pilot who has donated more than 700 Young Eagles flights over the years. Look for Jonesy and his handsome red-and-white Cessna T210 at Oshkosh and elsewhere in 2022. He's always accessible at PilotMike2012@gmail.com.

