

Megan Tucker: 2021 National AFA/Rolls Royce Aerospace/STEM Teacher of the Year

K-5th grade STEAM Specialist; Aerospace, Technology, and Gifted Teacher; Dean of Curriculum

Hillsboro Charter Academy

37110 Charles Town Pike
Hillsboro, VA 20132

Hillsboro Charter Academy President, Board of Directors (acts as Superintendent of the School)

Gwen Wilf

Hillsboro Charter Academy Principal

Paul Vickers

Nominated by AFA's VA-433 General Charles A. Gabriel Chapter

Chapter President, Mike Winters State President, Linda McMahon State VP/AE, Mark Douglas

Megan Tucker is a 17-year veteran teacher who has moved from Florida, to California, to Virginia following her husband's USAF military career. At each stop along the way, she made a huge impact on the educational environment where she taught and connected with her local AFA chapter at each location. She is involved in a plethora of STEM programs at her school, in writing curriculum for national STEM organizations, in making presentations to teachers nationwide, and in seeking and receiving awards and grants for her school.

- In Florida, she worked with the Hurlburt AFA Chapter 398 and helped conduct aerospace education workshops for teachers. Also, in Florida, she started working with Civil Air Patrol's K-6th grade Aerospace Connections in Education (ACE) program the first year it started and has been a strong participant in that program since, even being a curriculum developer, being named the national ACE teacher of the year, and having two national ACE schools of the year awards under her coordination; all with support from the AFA.
- In California, Megan helped to start the Palmdale Aerospace Academy, teaching 7th grade aerospace where her middle school students taught aerospace to the younger students as a part of the middle school AERO Club created by Megan. She connected with the AFA Pete Knight Chapter 294 and again assisted in doing aerospace teacher workshops, this time working at Edwards AFB Test Pilot School. While there, she assisted with the Alabama AFA and CAP's STEM Career Exploration trip for teachers from the south central region of AFA. Megan aligned CAP curriculum to match aviation museums' exhibits and led aerospace sessions with the teachers from across the country.
- Since "landing" in Virginia 5 years ago, Megan has been instrumental in building a new charter school, where she has taught every kindergarten through fifth grade student all aspects of STEAM, with an emphasis on aerospace, technology, and engineering. She has created a club called *Girls in Gear* (Guiding Engineering, Aerospace, and Robots) and implemented a plethora of special programs for the students as she collaborated with organizations, such as NASA, CAP, AIAA, Project Lead the Way, Girls Who Code, SeaPerch (underwater robotics), the Space Foundation, and CASIS (The Center for the Advancement of Science in Space -the ISS National Lab). She even had both the president and vice president of the VA AFA General Charles A. Gabriel Chapter 433 attend and lead aviation lessons during one of her recent "Friday Flight Fest" days.

At Hillsboro Charter Academy, each day, for the last hour of the day, all students are involved in *E3: Explore; Engage; Engineer* where they work on design challenges, have special speakers, or do project-based learning (PBL) activities to explore the “why” of just about everything.

Students are involved in a plethora of STEAM programs, to include SeaPerch and other robotics, coding, engineering, aviation, space, astronomy, hydroponics, electronics, and Makerspace, with 3D printing.

Even during COVID closures, Megan continued virtual lessons with the students during her “Tucker Tuesday” videos that included a weekly design challenge. Her short and innovative virtual lessons included a design challenge for the students. She ends each lesson with a big “2-1-2,” which is the temperature at which water boils and turns to STEAM, as found in **Mrs. Tucker’s entry video** [HERE](#).

[Mrs. Tucker’s STEAM 212 website](#) includes varied innovative and organized programs for the students. This also includes some Bitmoji (virtual) classrooms, such as the Aviation Fascination virtual classroom, below. Mrs. Tucker stated that virtual classrooms can be used as an online resource where all graphics link to videos, lessons and activities where the students “*click and learn.*”

[Control/click HERE for Bitmoji Classroom Interaction](#)



Hillsboro Charter Academy has won numerous state and national awards – all due to the leadership and work of Megan in her collaboration with other organizations, industry, the military, and peer teachers. A current list is found on the School Recognition photo, below, but does not include two recent awards won this summer, which include:

- 2021 [Virginia Technology and Engineering Education Association](#) Program of the Year award. VTEEA’s Program of the Year Award is one of the highest honors given to Technology and Engineering Education programs and is presented in recognition of outstanding contributions to the profession and students. This award will lead to the International Technology and Engineering

Education Association (ITEEA STEM) “Program Excellence Award” during ITEEA's 84th Annual Conference in Orlando, FL.

- 2021 PLTW - Project Lead The Way Distinguished School for the school's #PLTW Launch School program.

SCHOOL RECOGNITION - STREET CRED

- X ITEEA STEM School of Excellence 2020, 2019
- X Project Lead the Way Distinguished Launch School 2020
- X Virginia Children's Engineering Elementary School Program of the Year 2019
- X Virginia Board of Education's Highest Achievement Exemplar Award 2020, 2019
- X Best of Loudoun "Best Public School" 2018
- X National Civil Air Patrol ACE School of the Year 2018
- X Kindness Certified School
- X "TreeRing Green Yearbook School" Status
- X TomotoSphere Selected Participant
- X RoboNation/SeaPerch pilot elementary school for construction and testing of underwater robots

A photograph of two women standing next to a large award banner. The banner features the ITEEA logo and text including "STEM SCHOOL OF EXCELLENCE" and "2019-2020". The woman on the left is wearing a grey blazer and the woman on the right is wearing a black patterned top.

Always involved in professional development opportunities for herself, as well as her peer teachers, Megan attended the 2021 Space Camp for Educators in Huntsville, AL (with three peer teachers). There, she met and immediately connected with the current Hurlburt AFA Chapter TOY, Shannon Kirby (pictured right) with whom she is planning how their AFA chapters can collaborate.



Ever the sharer of knowledge and opportunities with other teachers, Megan has presented at multiple local, state, national, and international teacher workshops and conferences, such as International Technology and Engineering Educators Association (ITEEA); NASA's Space Exploration Educators Conference; National Science Teachers Association; CAP national conference; Engineers for America (Lead Teacher Trainer) for numerous years; and Troy University Science Consortium. As a leader in her school, she always brings at least one peer teacher with her to help with the presentations and allow the teachers to expand their horizons of learning and confidence in teaching. Said Megan, "I love motivating and inspiring teachers because the reach of one educator is exponential."



See Megan in a [short 2021 AIAA Spotlight on Success video](#) as she was recognized as a 2019 AIAA Foundation Achievement Awardee.

- Other recent national recognitions include:
 - [Space Foundation Teacher Liaison](#) 2018- present
 - [CASIS Space Station Ambassador](#) 2017-present
 - [America's Teachers](#) at the [Interservice / Industry Training, Simulation and Education Conference](#) sponsored by the [National Training and Simulation Association \(NTSA\)](#) 2008, 2016, 2017, 2019
- Over \$100,000 in grants:
 - [AFCEA Drones](#)
 - [Girls in GEAR](#)
 - [Target Field Trip Grants](#) (6 years)
 - [Project Lead the Way](#) STEM Curriculum
 - [National Defense Industrial Association](#) Aerospace/Rocketry Grant (3 years)
 - [AFRL](#) Rocketry Grant
- Most current publication
 - The Elementary School Journal, *Navigate with Nanobots: a STEAM "212" Design Challenge*, Megan Tucker, May 2021
- Most current national curriculum development program
 - STEM subject matter expert/advisor for [AVID, Advancement Via Individual Determination](#), a nonprofit that helps schools shift to a more equitable, student-centered approach to prepare students for college, careers, and life.
- Certifications beyond Megan's Summa cum Laude MS in K-8 Science Education include:
 - National Board for Professional Teaching Standards Teaching Certificate
 - Middle Childhood Generalist (Ages 7-12)
 - [Project Lead the Way](#) Gateway to Technology Multiple STEM Certifications: Elementary Launch Program; Design and Modeling (3D CAD); Automation and Robotics; Energy and the Environment; Magic of Electrons; and Flight/Space
 - Instructional Technology Certifications: Google Level 1 Certified Educator; Seesaw Certified Educator for Teachers; Merge Super Ambassador; and Apple Teacher Certification

A summative paragraph included in her professional bio describes Megan Tucker well: Dedicated, focused, creative and passionate....these are all descriptions of Megan Tucker, a force to be reckoned with when it comes to aerospace/STEM education. Often compared to Ms. Frizzle from the Magic School Bus, Megan has a gift of creating high-energy, educational experiences where her scholars transform into engineers of the future to solve real-world design challenges while inspiring colleagues, administrators, and parents with her aviation fascination. Megan's teaching philosophy is simple. ***Passionate Perseverance: "If a student is truly motivated, he or she can achieve anything - to infinity and beyond!"***



Megan feels her platform as the 2021 AFA National Aerospace/STEM Educator Ambassador would be to help address inequity issues that appear in STEM fields; issues that arise from placing the product as more important than the process. She stated that the most important skills in life are learning to collaborate, communicate, think critically, and exercise creativity. She feels these skills can only be developed in a learning environment where failure is allowed (and encouraged); where each person's opinion is important; and where all students are provided multiple opportunities to explore and make discoveries. This open environment leads to motivation and passion to persevere to learn more and be more, no matter the gender, race, ethnicity, or economic status in life. She feels that powerful teachers are lifelong learners who light the fire of lifelong learning in students with *passionate perseverance*.

Megan will be an enthusiastic and energetic representative of America's teachers for AFA and Rolls Royce; being a strong proponent of relevant, inclusive, and stimulating teacher professional development which leads to equitable STEM education and opportunities for all students.

Hillsboro Charter Academy Students at the Leesburg Executive Airport



Notable Quotes from her nomination package:

“Megan is the kind of instructor who inspires all whom she encounters: other educators, school systems, and students. Her ability to easily interact at all age levels: students and adults, in a fun and positive way is a definite asset. Megan’s ability to seek new opportunities and to widen the range of professionals she can draw upon in nontraditional and exciting ways for her students, is one of the many reasons I believe she would make an excellent National Teacher of the Year.”

~Linda McMahon, President, VA AFA

“The Air Force Association is blessed to have a teacher so dedicated to teaching aviation fundamentals to include curriculum from Civil Air Patrol and NASA, through a school-wide elementary STEM program. Megan is truly making a positive impact on the future of Air & Space Power at the earliest stage of learning.”

~Mike Winters, President, VA AFA Gabriel Chapter

“Not only did Mrs. Tucker lay the strong foundation of our program, but she built the core structure, shaped the integrated curriculum and continues to burnish and enhance the program every year. Our growth from a project-centered, STEAM dream to the world-class, award-winning institution of today rests in large part on the numerous and continuous contributions of Mrs. Tucker.”

~Gwen Wilf, President, Board of Directors, Hillsboro Charter Academy

“Ms. Tucker sets high expectations for her students and permits them to experience their own successes and failures to build resilience and learn to make improvements to design and engineering ideas they have developed. She provides a supportive environment, tools to learn both by research as well as experiences. Her students benefit because she does not initiate limits on how deeply they can learn related to science, aviation, and aeronautics. She allows them to find ‘their limit’ of capacity (whether in terms of current knowledge base, patience, or temperament) to comprehend, which means their natural curiosity is permitted to flourish -- just what we need for innovators similar to known aerospace stars like Scott Crossfield, Burt Rutan, and Mark Rober (*YouTuber, NASA engineer, inventor*). Ms. Tucker also supports the growth of her educator peers and former students.

I am familiar with aviation and aerospace educators and recall my father-in-law, Scott Crossfield, pouring over applications for his ‘Crossfield Kids’ teacher award. Megan Tucker is just the kind of educator who will inspire educators, school systems, and students to have ‘aviation fascination’ and pursue aviation, avionics, and aerospace fields.”

~ Carrie Crossfield, Independent STEM Educational Enrichment Consultant