

Dr. Melissa Pfaff
2024 3rd Place National AFA Thompson/Mallett Aerospace/STEM Teacher of the Year
Sponsored by Rolls-Royce
Winner of \$1,000

9-12th Grade Teacher:
AP Biology, Chemistry, Space Science, AFJROTC Sponsor
[Academy High School](#)
Berthoud, CO
Edgar Torres, Principal

[Mapleton Public Schools](#)
Mike Crawford, Superintendent

Nominated by AFA's Colorado Mile High Chapter127
Chapter 127 and Colorado State President: Cliff Klein
Colorado VP/AE: Caty Rozema
Rocky Mountain Region President: Fran Bradshaw



Dr. Melissa Pfaff is a 23-year teaching veteran, having taught at Academy High School for the last 12 years. She received her 2024 Ph.D. from the University of Denver in Curriculum & Instruction // Dissertation: Exploring the Benefits of Experiential Professional Development for Secondary Science Educators. She also has degrees in Biology, Molecular Biology, and Diverse and Cultural Science Education.

Her work at Academy High School includes Science Teacher/Lead, Leadership Team, Gifted & Talented Adviser, and teacher of Chemistry, Environmental Science, Space Science, AP Biology. At her school district, she serves as the Secondary Science Lead and JROTC Sponsor, as well as helping with Priority Standards and Assessment Development, Curriculum Selection, and New Teacher Orientation (Training & Development). She is a well-respected educator and leader, as well as a treasured student mentor to guide her students through myriad science programs, competitions, and experiences to prepare them for their futures. As a student mentor, it is said that she provides her students with the fuel they need to keep going and to know that while with her, they will never be hungry or feel uncared for.

Melissa is currently involved as presenter, leader, curriculum developer, and student program coordinator with numerous state and national professional organizations, such as:

- American Association of Teaching & Curriculum;
- Colorado Association of Bilingual Educators;
- Colorado Education Association;
- Association for Supervision & Curriculum Development;
- National & Colorado Association of Science Teachers;
- Westernaires Alumni Association;
- United States Equestrian Federation;
- Limitless Space Institute as Ambassador Educator/Curriculum Developer;
- Air & Space Forces Association;

- International Space Station – Space Station Explorers Educator;
- Civil Air Patrol as AE Member;
- Space Discovery Center – Teacher Liaison; and
- Planetary Society – Space Educator.

Melissa’s professional bio was creatively explained by what she could do with \$100. Included are excerpts from that which fully describe her professional educator mindset...

“The reality is, \$100 will not take you far in 2024. My entire classroom stipend to teach *six* science classes is \$100. That is it! So, what do I do with my \$100?

“I teach two sections of AP Biology, four sections of Chemistry, and three flights of JROTC. I also oversee our school’s gifted and talented program and lead our school’s student leadership club. With \$100 I teach students to think critically, observe, experiment, and analyze data to understand the natural world.

We do a lot of science with \$100! Annually, I:

- create labs to understand the laws of chemistry and the intricacies of the living world; bring in guest speakers and get students out into the community; take field trips and participate in community service; and meet with STEM professionals;
- teach responsible conduct of research, integrity in reporting results, and consideration of the societal impacts of scientific advancements;
- provide learning opportunities that require effective communication skills to share findings, debate ideas, and work together to solve complex problems: encouraging curiosity and creativity by inviting exploration, questioning, and innovation to advance our understanding of the world.
- take students to visit college campuses and help them apply for scholarships, explore careers, and seek new paths.

“That \$100 does not cover my personal different learning opportunities to become a better teacher, traveling to conferences and institutes across the US and Canada to grow my craft and find ways to engage my students. My travel, conference fees, lodging, and meals all come out of my pocket. I even pay for my own substitute days! I really value the opportunities to learn from others and connect with like-minded educators. I also provide professional development for other teachers, so they can bring the joy and love of science back to their classrooms! These are the experiences that fill my bucket and grow my toolkit as a teacher. What I bring back to my classroom inspires my students to seek their own experiences and achieve their own dreams.

“When I discovered that \$100 was not going to cut it for my classroom, I found lots of ways to gather resources for my classroom. Over the past couple years, I have become adept at finding ways to fund the learning that happens in my classroom. I write grants; I created a very successful Donorschoose campaign; I apply for scholarships and awards from every available avenue. I do my best to leave no stone unturned.

- These efforts have earned more than \$30,000 to bring science to my students!



“And when I still fall short of funding my classes, I make financial sacrifices to make science happen. Sometimes it’s hard to make ends meet, but it’s worth every penny to see my students fall in love with science.

“Importantly, and with a legacy for the future of Colorado schools, I have worked with our state legislature to connect Colorado’s booming aerospace industry to our schools and our classrooms. Every year I attend Air and Space Day at our state’s capital. I use my voice and my passion to advocate for our schools, my colleagues, and my students. I advocate for the future of air and space. Since the adoption of the Next Gen Science Standards in Colorado, I have worked with several colleagues, as well as a group of legislators, to advocate for better professional development for science educators.

- In the spring of 2024, we passed Bill HB 24-1446 which will guarantee three million dollars to provide dynamic professional development for science teachers across the state of Colorado! This has been a great achievement, and I look forward to helping other teachers in the future.

“So, I ask you again... What can you do with \$100? With my \$100, my students are learning exceptional STEM concepts, applicability to real-life and future careers, and how to find resources to propel them toward their futures. I am learning how to be a better educator alongside exemplar educators.”



Visiting NASA hangars during Limitless Space Institute in Houston



AP Biology students developed models to demonstrate how difficult it is to maintain homeostasis.



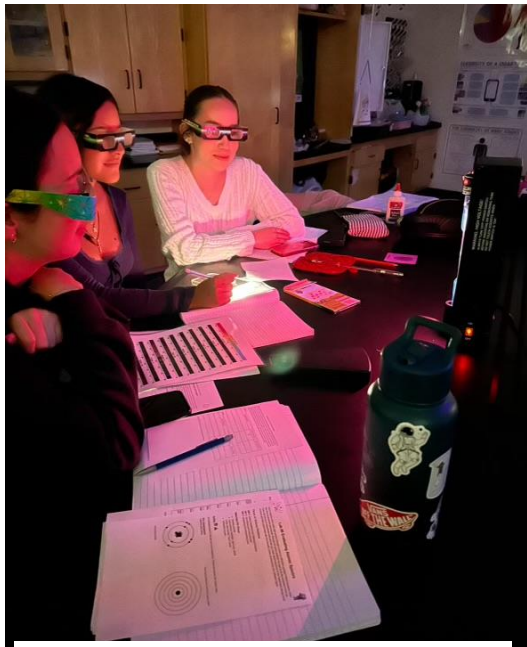
AFJROTC chemistry students learning about the Gas Laws. They experimented with a Garnow Bag. This is a unique, portable, hyperbaric chamber used for the treatment of acute mountain sickness.



Chemistry students experimenting with Gas Laws. The lab was a result of participation in a DoD STEM class where they designed, built, and tested hot air balloons.



Environmental Science students teaching 2nd graders how to develop biofuels.



Chemistry students using the electromagnetic spectrum and spectroscopy tools to identify gasses on unknown planets.



Chemistry students designed and tested rockets in their stoichiometry.



AFJROTC cadets designing and testing landing mechanisms at the Discovery Center in Colorado Springs.

AFA Education Ambassador Message:

Melissa would like to focus on finding ways to integrate STEM into other content areas to enhance STEM learning, cultivate critical thinking and problem-solving skills, and promote global citizenship. By embracing air and space education, she feels we can better prepare the next generation to meet the challenges of the future with knowledge, creativity, a sense of responsibility, and the love of science.

Her rationale:

“Integrating air and space education into non-STEM classrooms promotes a sense of global citizenship and environmental awareness. Air and space exploration provides a unique perspective on Earth, highlighting its fragility and the interconnectedness of all life. Lessons about Earth’s atmosphere, climate change, and the impacts of space debris can foster a sense of responsibility and stewardship among students. By understanding the delicate balance of our planet’s ecosystems and the broader universe, students are more likely to develop a commitment to sustainable practices and global cooperation. This perspective is essential in an increasingly interconnected world facing global challenges. This way of thinking should not be limited to strictly space science classes; it is for every educational environment! Air and space education can inspire and motivate students, igniting a passion for learning. The awe-inspiring nature of space exploration captivates their imagination, making learning more engaging and enjoyable. When students see the practical applications of their studies in exciting fields like space travel, satellite technology, or astrophysics, they are more likely to pursue higher education and careers in these areas. This enthusiasm can lead to a more motivated and innovative workforce, driving advancements in science and technology. This also provides great opportunities for students to explore a career in air or space in the military. “

See Melissa’s Video: [This I Believe](#)

Excerpts from Melissa's letters of recommendation:

Determined to Get STEM Message to Other Teachers

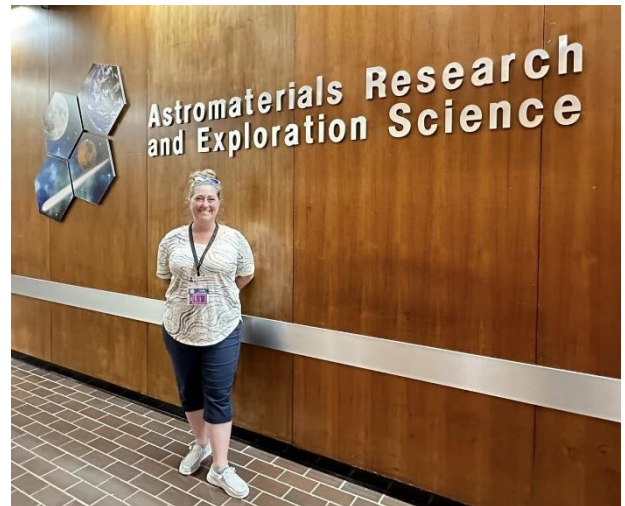
Cliff Klein, AFA Chapter 127 and Colorado State President

Our AFA chapter is proud to have Melissa as a wonderful AFA STEM advocate. She is quite the involved professional. Besides all of the classes she teaches, she ensures her students have extra opportunities. Of particular interest is her sponsorship of the AFJROTC program. She took some AFJROTC cadets to DC to tour the national science and military sites, and then took another group of cadets and other science students on a tour of the International Space Symposium. Melissa is also trying to ensure she is engaging with other educators for her own professional development, and to provide PD to teachers who desire more STEM opportunities. She is an excellent example of what a national AFA TOY should be.

Extremely Committed Professional

Mike Crawford, Superintendent, Mapleton Public Schools

Mrs. Pfaff is a passionate and committed professional who works tirelessly to ensure her students are prepared to work within her challenging advanced placement classes and to move ahead to realize their full potential. She teaches a variety of classes and affords her students experiences beyond the classroom. She sponsors the National Honor Society, the Science Fair, student technology association competitions, Student Council, and the AFJROTC. For our school system she has developed priority curriculum standards, helped adopt textbooks, and provided mentorship and professional development for our teachers. We are proud that she is helping advance our school system with her tireless efforts.



Real Education Happens Outside the Classroom

William H. Arrington, III, Lt Col, USAF, Senior Aerospace Science Instructor, Mapleton Public Schools

Melissa is a long-time co-worker and friend – to me and to my AFJROTC cadets. She ensures that students are provided strong and challenging classroom instruction. She believes that real education happens outside the classroom and sacrifices much of her personal time (and money) to allow students to experience life-changing opportunities. She works to raise funds needed for extra programs and supplies for her labs and for these students. From making parachutes, launching rockets, or operating robotic Mars rovers, there is always something exciting and challenging going on in Melissa's teaching environment. She accomplishes so much for the students, her school, and her school system that is recognized nationwide. She is a motivated, dedicated, life-long learner who never gives up on herself, her students, or other teachers who need support in our school system or across the country. Her passion for STEM education, experiential learning, and the well-being of her students is without limits.