

**Ashlie Blackstone Smith:**  
**2021 2<sup>nd</sup> place National AFA/Rolls Royce Aerospace/STEM Teacher of the Year**

8<sup>th</sup> grade Physical Science teacher

[Cranbrook Kingswood Middle School for Girls](#)

39221 Woodward Ave.

Bloomfield Hills, MI 48303

*Cranbrook Kingwood Middle School for Girls, Head of School*

Mrs. Stacy Rivard

**Nominated by AFA's MI-179 Mount Clemens "Selfridge" Chapter**

Chapter & State President, and State VP/AE, John "Odie" Slocum

Chapter VP/AE, Suzanne Rutkowski

Ashlie Blackstone Smith is a 20-year veteran teacher who has worked at Cranbrook Kingwood Middle School for Girls in Michigan for the last 18 years as an 8th-grade physical science teacher. Her teaching background includes field instruction in marine biology and facilitation of adventure challenge programming. She holds a Bachelor of Science from Michigan State University and a Masters of Arts in Teaching from Wayne State University. She has received local and national attention for her work in space science instruction, use of technology in the classroom, and focus on women in science and engineering. Highlights include receiving the Alan Shepard Technology in Education Award presented by NASA, Astronaut Memorial Foundation and Space Foundation; ISS US National Laboratory Outstanding Teacher of the Year; and Cubes in Space Teacher of the Year.

Smith credits her interest in, and style of instruction to three high-school teachers who encouraged her, provided her attention, and incorporated experiential learning techniques to connect lessons to the real world. Following in her mentors' footsteps, Smith strived to find new ways to introduce experiential methods and self-directed learning into her curriculum, personalize learning, and break the cycle of instructor-led instruction followed by homework. In 2012, Smith committed to "flipping her classroom." Over two years, Smith developed more than 100 STEM content videos that students could watch at home at their own pace. This freed up valuable class time for new technologies like 3D printing and augmented reality, and new programs like Civil Air Patrol's Sphero and Rocketry STEM kits. The change of focus to student-led learning resulted in an apparent increase in participation and student excitement. It provided the opportunity to supplement the existing curriculum with projects that took students beyond the classroom and into the stars, developing experiments that went to space.



Smith's love for space science was ignited by a 2015 scholarship from Honeywell Corporation to attend Space Camp for Educators. Supported and inspired by like-minded educators, Smith returned to her classroom determined to create new opportunities to inspire and challenge her students. Student response was immediate and positive. Classroom implementation includes:

- **Cubes in Space.** Global design competition for students 11-18 years that challenges students to design/propose experiments to launch into space and/or near space. Extracurricular offerings grew from 16 girls submitting one experiment in the first year to 97 students and 34 experiments in the following six years. In the third and fourth year, a total of 18 girls and their families traveled from Michigan to NASA Wallops Flight Facility in Virginia during summer vacation to present their experiment to scientists and watch it launch on a NASA sounding rocket.
- **NASA-simulated Water Filtration and Electrolysis Labs.** Implemented in-class labs that challenge students to develop a water filtration system similar to the method used on the International Space Station to filter waste-water simulant into a potable condition. Later in the year, students performed a lab focusing on splitting water for fuel and life support for future Artemis missions to the moon.
- **Mars Exploration Challenge.** Developed a multi-day project that challenges students to work together and apply knowledge of forces and motion to complete a mission control simulation. Civil Air Patrol STEM kits and lesson plans were modified to involve coding Sphero robots, design and development of chariots to be powered by Spheros, and construction and launch of ESTES rockets.
- **Math/Physics Olympics.** Co-developed and launched Math/Physics Olympics. Now in its 14th year, it spans the entire month of April and dominates the 8th-grade math and science curriculum. Following a month of classroom projects and curriculum, student groups compete in a day-long competition full of coding, robotics, student-created music instruments, catapults, egg-catching devices, and ship-the-chip packages. Many students considered it the highlight of their middle school experience.

Summative Paragraph about Ashlie Blackstone Smith from her Professional Biography:

Smith's passion for space science has grown beyond the classroom. She has developed and published curriculum for the ISS US National Lab and created and led multi-week space camps for elementary and middle school students at home and internationally. The space community has proven to be an incredible source of inspiration for Ashlie and her students, and she is excited to give back. She is a teacher liaison for Space Foundation, and ambassador for Space Center Houston and ISS US National Lab. She enjoys sharing her successes and curriculum with other teachers at state-wide and national conferences. Smith will continue to develop aviation and aerospace video lessons at the national level. This summer, she has attended Air Camp in Dayton, Ohio, to further develop her knowledge of aeronautics and aviation and expand her collaborative, educator network.

- See teacher video submission showing Ashlie Smith in action [HERE](#).

#### **Most Recent Awards and Accolades**

- (International) 2019 - International Space Station US National Lab Outstanding Educator Award
- (International) 2019 - Cubes in Space Educator of the Year Award
- (National) 2017 - Discovery/Science Channel Science Superhero Awardee
- (National) 2017 - Alan Shepard Technology in Education Award (NASA, Astronaut Memorial Foundation, Space Foundation)

### **Most Recent Presentations and Trainings**

- (State) 2020/2005 - MSTA Conference, *Launching Space Science into your K-12 Curriculum / SMART Review Games*
- (International) 2020-2017 - Space Exploration Educators Conference, *Cubes in Space (2020), Story Time from Space, Space Station Explorers (2019), Experiencing NASA's Curiosity Rover with Sphero (2018, 2017)*
- (National) 2018 - International Space Station US National Lab: STEM Summit: Teacher Panel

### **Most Recent Personal Trainings**

- (State Training) 2016 - ReDesign EDU summer workshop with Massachusetts Institute of Technology, *Design Thinking*

### **Published Work**

- ISS US National Lab: Space Station Explorers - STEM KIT #1: Welcome to the ISS (series of six space science lesson plans), 2018-2019
- DAQRI 4D ELEMENT BLOCKS, Augmented Reality Lesson Plans for the Middle School Chemistry Classroom, Feb 2017

Ashlie feels her platform as a 2021 AFA National Aerospace/STEM Educator Ambassador would be to use her passion for preparing and inspiring the next generation of females to lead, learn, grow, and aspire. Young women need role models and educators to help them envision a future to succeed in STEM careers. In Ashlie's words, "To advance our nation, quality STEM education must be prioritized for all students. Imagine what could be possible if we were to engage ALL of our children, regardless of gender, in this global STEM race. I am excited to continue and share my work as a means of making this a reality so that all students can – quite literally – reach for the stars."

Ashlie will be an excellent representative of America's teachers for AFA and Rolls Royce; being a strong proponent of the perpetuation of STEM education for ALL students, especially females.





Students at Cranbrook's Middle School for Girls work with the atom and molecule sets designed at the Edgerton Center at the Massachusetts Institute of Technology



2019 Students and their families gather at NASA Wallops for Cubes in Space rocket launch

***Notable Quotes from her nomination package:***

“In addition to Mrs. Smith’s national excellence in teaching award recognition, she has used her imagination, innovation, and creativity in the fields of science, technology, engineering, and math to spur her students to greater heights of understanding and achievement by incorporating programs and activities into her curriculum, such as Cubes in Space which has launched experiments to sub-orbital space, the Mars Exploration Challenge, and the Math/Physics Olympics which she developed.

In spite of the worldwide pandemic, Mrs. Smith has persevered to overcome challenges (teaching in-person and online simultaneously) through imagination, innovation and creativity to provide her middle school science students with the STEM teaching tools and curriculum necessary not only for graduation but also to incite and motivate her students to go on to excel and achieve in a variety of technical disciplines.”

*~ John “Odie” Slocum, Brig Gen (Ret) President, MI AFA*

“Ashlie can only be considered a master teacher. She continually refines her practice, is highly respected by her colleagues, and freely mentors other teachers, particularly in the application of technology into their curriculum. As a teacher in an all-girls school, Ashlie has made it her personal responsibility to instill a deep appreciation of science into each of her students. While promoting a growth mindset in her students, she constantly works to dispel negative stereotypes about girls and STEM. She has had numerous students reference her for igniting their passion to pursue STEM related majors and careers. Simply put, Ashlie is a dedicated, innovative, and focused educator doing what she loves to do, teach science!”

*~ Mrs. Stacy Rivard, Head Cranbrook Kingswood Middle School for Girls*

“Ashlie Smith has been teaching physical science at Cranbrook Middle School for Girls for year and she augments her curriculum with interesting aerospace lessons she has either authored or picked up along the way. She runs an extracurricular club, called ‘Cubes in Space,’ where her students design and build science projects with a space theme. Indeed, over 100 girls have participated to date, and over two dozen of her students’ projects have actually flown to space! She offers a tremendous amount of energy and inspiration to encourage these young women to reach for the stars. Just prior to the COVID-19 pandemic, I personally visited her campus and witnessed, firsthand, the excellence of her classes- not only her students, but several of the other grade levels at the school. The visit culminated with a presentation to me from the 2019-2020 Cubes in Space participants, and I do not ever recall observing that much energy and enthusiasm from a group of middle school students. I cannot think of a teacher more deserving of the Air Force Association’s National Teacher of the Year.”

*~Gregory H. Johnson, Col (Ret), USAF Former NASA Shuttle Pilot, Former Executive Director at the Center for the Advancement of Science in Space (CASIS), and Current Lockheed Martin Corporation Crew Integration Team Member for the Human Landing System*