



DRONE SKILLS FIT
MULTIPLE CAREER PATHS





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HOKE COUNTY HIGH SCHOOL

HOME
FIGHTIN'



SkillsUSA® competition winners headed for roles in Air Force/engineering

Danny Pham dreams of a career in the Armed Services. At one time, he imagined being in the Army, but, during his senior year, he experienced a change of heart. Now a recent grad, he has enlisted in the Air Force and has his sights set on becoming a pararescuer – a special operations role tasked with entering dangerous environments to provide medical treatment and recovery of wounded troops. The program has a reputation as one of the most grueling in the Air Force. It requires extreme dedication and perseverance in challenging circumstances.

When Pham enrolled in Drones I at Hoke County High School in Raeford, North Carolina, in 2020, he expected drones to be just “a fun little thing” – a sharp contrast to the demanding conditions of his future career. Pham couldn’t foresee the adventure that lay ahead of him over the next school year.

NEW HORIZONS IN EDUCATION AND COMPETITION

As drone operation becomes increasingly relevant as a workforce skill, this knowledge area has begun to find more footing in career and technical education (CTE) courses. Teachers naturally want their students to be aware of the growing opportunities available to them in industries ranging from agriculture to construction to media to military. And, while there are no numbers yet, state and school officials are listening as well – drone programs at the middle school and high school level are clearly proliferating.

This dawning trend has opened the way for innovation and new alliances. CrossFlight Sky Solutions has teamed

with other STEM education industry leaders such as Pitsco Education to put classroom solutions into the hands of teachers and drones into the hands of students. In addition to the courses and resources the company offers to professionals, CrossFlight offers a complete high school curriculum that can lead a group of students totally new to aviation all the way to being equipped to pass the FAA Part 107 aeronautical knowledge test.

The creativity and passion of pioneering educators today are laying the groundwork for a movement in STEM that is beginning to take flight. Hoke County High School teacher Mario Malabunga offers a prime example.

A longtime CTE teacher with professional drone experience, Malabunga (called “Mr. Mario” by his students) describes his drone program as “a guinea pig for the state,” as he, along with a few other teachers, has been working closely with the North Carolina Department of Public Instruction to define the needs and aims of drone education.

Guinea pig or not, Hoke County’s pilot program has in one sense already escaped the bounds of the state: two of Malabunga’s students, Pham and classmate Riley Edwards, teamed up and took the national title in the new SkillsUSA® sUAS Commercial (Drone) Competition.

The event – developed by CrossFlight Sky Solutions, MINDS-i Robotics, Pitsco Education, and the University of Florida’s Herbert Wertheim College of Engineering – brought student teams from across the nation into (remote) competition to test their drone knowledge and skills. Students qualified for the national-level event by first winning at state-level competitions.



Hoke County High School classmates Riley Edwards (left) and Danny Pham (center) teamed up to capture the 2021 national title in the new SkillsUSA® sUAS Commercial (Drone) Competition. Their teacher is Mario Malabunga (right).

CrossFlight Sky Solutions Vice President Justin Robinson stated that his company's aim is to formally educate students so they can one day become FAA-certified drone pilots. "CrossFlight is excited to be a part of the first truly cross-disciplinary commercial drone competition in the world and to share in this opportunity with students from across the United States. CrossFlight has a mission of safe integration of drone technology into the aviation community and feels that what better way to achieve this than to start with the future workforce."

ENGINEERING EDGE: RILEY EDWARDS

Edwards, also a 2021 graduate, knew Mr. Malabunga long before taking Drones I as a high school senior. As a middle schooler, he enrolled in a robotics class taught by the teacher. Edwards vividly remembers the enjoyment he got cutting metal TETRIX® robotics pieces to customize his design.

While Edwards hasn't worked out all the details of his career ambitions, he loves math and anticipates a rigorous course of study beginning with a deep dive into applied physics at the University of North Carolina at Pembroke before transferring to NC State. His future plan is to become a mechanical engineer, and he admits he wants to connect this discipline with his interest in drones.

Edwards served as the visual observer during the flight portion of the SkillsUSA drone competition in winning the North Carolina state competition and then again at nationals. This meant that while Pham, serving as remote pilot-in-command, operated the controls from a blind spot, Edwards visually surveyed the course and gave flight directions using appropriate FAA-sanctioned terminology. He explains, "If I need him to move left or right, I have to say, 'roll left' or 'roll right.' If I need him to go forward or backward, I have to say, 'pitch forward' or 'pitch backward.'"

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– Justin Robinson, CrossFlight Sky Solutions Vice President



Edwards was excited to win the national competition but, thanks to his inquisitive mentality, speaks with nearly equal excitement about the behind-the-scenes work. Because nationals were held remotely, Edwards and Pham helped set up the playfield, arrange cameras, and assemble foam obstacles. They even poured cement in tires to make the anchors for the net. (Teams connected with SkillsUSA judges via Zoom, and the Pitsco Education Drone Arena was set up on-site with a supervisor.)

It seems natural, then, that Edwards takes the wider view when it comes to what he has learned in the class and the competition. "It's not exactly the components I learned that matter," he says. "Drones showed me how advanced the technology is. I learned things like using infrared cameras on drones and how that could help with agriculture. I learned different things that drones could do. And maybe I could take them and change them up to use them in a different way."

TAKING ACCOUNT: DANNY PHAM

During competition, Pham experienced a connection with his career ambitions in a surprising way. The final component of the competition involved meticulously planning a search and rescue mission. He admits he was a little intimidated.

"There were so many things to take account of," he explains. "There were different nearby areas – a hospital, a jail, a courthouse. It was a heavily populated area. But I took the time to see all the areas and think about what could go wrong." He likens this to the situational awareness and planning necessary for pararescuers: "When you go out on a mission, you have to have intelligence about where everyone is and what the situation is on the ground."

Though the specifics of this search and rescue scenario surprised Pham, both he and Edwards were able to draw heavily from the safety protocols they learned from Mr. Malabunga.

And indeed, safety is king for the teacher: "The foundation, the number one priority, is safety because people's lives are at risk. My students always ask me, 'Mr. Mario, why do we have to learn all these things?' ... I tell them, 'You guys

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— Riley Edwards, high school senior

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are sharing airspace with everybody – with helicopters, with the Army, the Air Force, with commercial aircraft.' We are trying to teach them to be respectful and law abiding."

CrossFlight's high school curriculum emphasizes safe operation as a top priority through preparing students to complete the FAA Part 107 aeronautical knowledge test. This is the perfect program for any high school career and technical education course, after-school program, or summer school program wishing to incorporate Part 107 certification. For anyone interested in starting a drone exploration program with younger students, Pitsco's middle school curriculum is an excellent entry point.

Malabunga sees the big picture. "Teaching drones is not just teaching how to fly drones. It is respecting the people who started aviation like the Wright Brothers and the industry that tries to keep it safe for everyone. It is very important to me to stress to my students that drones can do good." But, he explains, this depends on young people rising to the challenge. "They have to study the basics, learn the laws, learn to communicate. We have to work as a team. This is not just important in drones but in life."



SkillsUSA

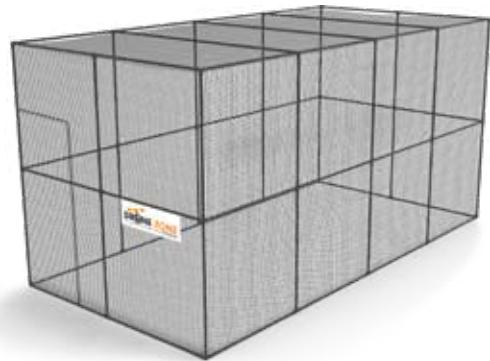


DISCOVER DRONES



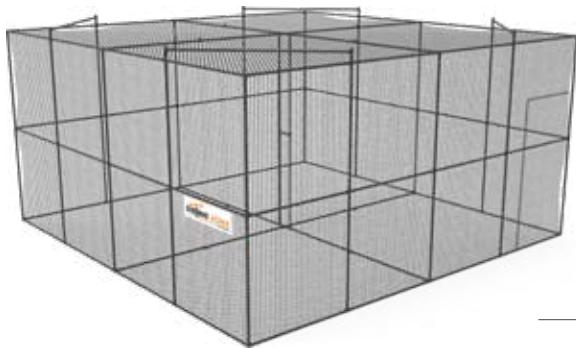
Tello EDU Drone 5-Pack – 45953

Our Tello EDU Drone 5-Pack features best-in-class technology designed specifically for education. Students can start by using the remote control features of the Tello app and then easily transition to learn programming languages such as Scratch, Python®, and Swift. With Tello EDU, you can prepare students for exciting future careers and watch learning take flight.



Drone Arena (10' x 20') – 45952

Engineered for educational drone flight, this solution creates a safe and secure yet accessible environment for learning, competition, and fun. This is the ideal cage for drone competition outdoors or in a gym, large classroom, or school lobby. Includes structural materials and connector pieces along with netting for a 10' x 20' drone arena. **Assembly required.**

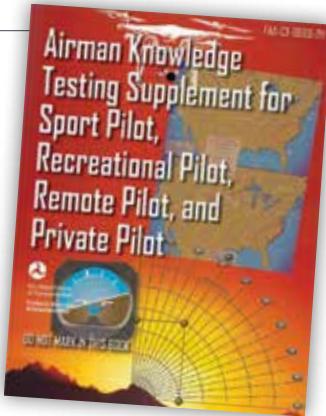


Drone Arena (20' x 20') – 46785

This solution creates a safe and secure yet accessible environment for drone competition outdoors or in a gym. The expanded size allows for staging multiple field elements and tasks at once. Includes structural materials and connector pieces along with netting for a 20' x 20' drone arena. **Assembly required. Please account for 2+ hours of assembly.**

FAA Testing Supplemental – 46303

The *Airman Knowledge Testing Supplement* book is the same book issued during the FAA knowledge exams at the computer testing centers. This book is exactly as released by the FAA and covers all sport pilot, recreational pilot, remote pilot, and private pilot tests. Use this book to prepare for your FAA pilot's test, and you will be well prepared to pass and fly in no time.



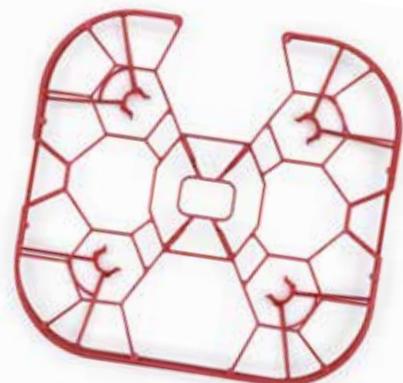
Drone Industry Field Elements Kit – 46786

Engineered for drone competition, this package allows for construction and flight of three flight scenarios. This package focuses on flight skills to find hidden objects, find an object mixed in with similar objects, and fly to and land on objects of differing heights. This package was created for use in the SkillsUSA® Commercial sUAS (Drone) Competition but can be used for classroom use as well. **Assembly required. Please account for 2+ hours of assembly.**



GameSir T1d Controller – 46141

Designed to provide a lightweight feel, smooth experience, and convenient operation, this controller can instantly transform your smartphone into a drone controller. With two high-precision 3-D joysticks, the controller can orient your aircraft to any location, making more difficult maneuvers possible. The controller includes a high-speed connection to GameSir Connecting Mode so you can begin flight immediately. **Note:** The GameSir T1d Controller can be used with only the Tello and Tello EDU drones. This is a customized controller for UAV flight, not for game operation.



Tello Closed Propeller Guard – 46783

This prop guard covers all of a drone's propellers, which ensures flight safety and protects students and objects from the spinning propellers. This guard, made specifically for Tello and Tello EDU drones, is lightweight and easy to mount and detach.



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