2025 Jim Kahler Excellence in STEM Award
Escambia County 4-H: Aerospace Innovation Program
Abstract

The Escambia County 4-H Aerospace Innovation program utilizes drones to teach youth and adults about STEM principles. This program has many facets including introduction to drones at the 4-H club level, a senior age (14+) 4-H member Special Interest 4-H Club to facilitate peer-to-peer STEM mentorship to younger members, and presentations to adult groups to incorporate drone programs in their 4-H programs. Over 140 youth and 190 adults were impacted by the program that has six regional and national partnerships with over $28,000 in grant funding secured. Impact for the program showed 81% of 4-H club members had purchased a drone, two youth were in the process of obtaining their pilots license, a youth-led day camp was conducted with a $3,500 in-kind donation from the National Flight Academy at NAS Pensacola, and four additional county 4-H programs in Florida and nationwide have added drone programming for their youth.

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Narrative

Define the Scope of the STEM program, curriculum, project, or event
The Escambia County 4-H Aerospace Innovation program utilizes drones to teach youth and adults about STEM principles. This program has many facets including introduction to drones at the 4-H club level, a senior age (14+) 4-H member Special Interest 4-H Club to facilitate peer-to-peer STEM mentorship to younger members, and presentations to adult groups to incorporate drone programs in their 4-H programs.

The first facet of the Aerospace Innovation program is an introduction to drones at the 4-H club level. The Discovery 4-H club has embraced drones as its focus area for 4-H project work in 2024 and 2025. Club members participate in meetings to learn about the fundamentals of drones, different careers with drones, and ultimately, members get to fly drones. Introduction to drones was also taught to four other 4-H clubs as a special interest project.

The next aspect of the Aerospace Innovation program is a senior age (14+) 4-H member Special Interest 4-H Club (SPIN) to facilitate peer-to-peer STEM mentorship to younger members. The purpose of this program is our high school youth the skills, experience and knowledge required to gather information, prepare lessons, and mentor a younger audience on STEM and drones.

The SPIN club also utilized their knowledge and skills to plan and present the Drone Day Camp during the summer of 2024. This camp was dedicated to introducing youth ages 8+ to the advancing world of drones. Youth learned from the teen leadership about different varieties of drones, where they started, and how to properly operate them. Participants also got a chance to gain leadership skills and get connected to potential careers in the industry. One day of camp was at NAS Pensacola where participants had the opportunity to fly flight simulators.

The final facet of the Aerospace Innovation program is presentations to adult groups to incorporate drone programs in their 4-H programs. 4-H staff have presented at the club level, local, district, state, and national levels on incorporating drones into existing 4-H programming.

Identify the audience-number of people reached by the program, curriculum, project or event. Include the type of audience, i.e. underserved, etc.
The Escambia County 4-H Aerospace Innovation program had three different audiences that were targeted: 4-H club youth, senior age (14+) 4-H SPIN club, and adults who wanted to incorporate drones into their existing 4-H programming. A breakdown of the program reach is below:

Audience	Topics	#
4-H Club Youth	All	122 youth
4-H SPIN Club Youth	Introduction to drones	27 youth
Adults	Introduction to drones	192 adults

Explain the collaborative efforts by individual/state or multi-state with other agencies or organizations, if applicable

The Escambia County 4-H Aerospace Innovation program was started after working with a local company, Rocket Drones. Rocket Drones is the premier provider of drone racing, drone curriculum, and drone career training for middle schools, high schools, and colleges. Escambia County 4-H purchased the racing drone and classroom education kits that are the basis for all of the programming within the Aerospace Innovation program. A full list of partners that have presented, showcased, and/or given financial assistance with Escambia County 4-H are below:

Partner	Type
Rocket Drones	National drone education program
Pelican Drones	Aeriel photography company
NAS Pensacola Flight Academy	Flight instructors through the military that train incoming students on flight, provided simulators for 4-H youth
Local Farmers	Farmers who implement drones
Hawkeye Drone Service	Local drone photography and videography company
AT&T Foundation	Provided $28,000 grant titled 4-H Tech Changemakers. Funds used to purchase STEM equipment and training materials

Explain the educational value and significance of the program, including any innovative teaching or learning strategies used, if applicable

The Escambia County 4-H Aerospace Innovation program has three levels of engagement, each with their own educational value, significance, and innovative teaching and learning strategies.

<u>The 4-H Club Level</u>

Partnering with Rocket Drones for programmatic guidance and support, our 4-H club youth are being integrated into career and technical programs and being prepared for in-demand careers within the drone industry and beyond. The valuable knowledge and principal skills that are being instilled can be transferred to various fields beyond drones and STEM. Escambia County 4-H members at the club level create a spark and interest in STEM, specifically drones, while getting ands-on experiences and interactions with industry professionals.

<u>The Special Interest 4-H Club Level</u>

Youth in our Special Interest (SPIN) 4-H Club gained skills, experience and knowledge required to gather information, prepare lessons, and mentor a younger audience on STEM and drones. Youth also gained knowledge and pre-information on the FAA Part 107 Remote Pilot, a certification that older youth and adults can acquire and is required by the Federal Aviation Administration (FAA) for individuals operating drones commercially in the United States. Teens also had the opportunity to showcase their skills and obtain knowledge on a national level and have been sought out for internship opportunities through Rocket Drones.

<u>The Adult Level</u>

Our partners, volunteers, and other adults have gained a higher respect for the drone industry and a better appreciation for technological advancement efforts. For many of them, they have learned how to implement the introduction of drones into their own 4-H programming while

understanding basic needs of the overall youth population and developing specific programs that can still be interactive with or without the availability of drones.

Adults in our programs also had the opportunity to undergo pre-training to be eligible to gain the FAA Part 107 Remote Pilot Certificate. Drones are applicable for youth of all backgrounds whether they want to connect with a college or university, connect with the military services, or go into an industry certification as a continuing education effort.

The Aerospace Innovation program has striven to ensure an equal opportunity learning opportunity for all youth and adults. The peer-to-peer efforts of our SPIN 4-H club has ensured that younger youth have 1-on-1 guidance and experienced mentors to create sparks and new interests in the drone industry and STEM. Our volunteers have also gained a better understanding and respect for the principals of youth-adult partnerships encouraged by 4-H.

Describe the impact of the program on youth, the 4-H program or the community.
Through this program there were various sets of impacts:

<u>The 4-H Club Level</u>

- 122 4-H club members from four Escambia County 4-H Clubs gained an interest in the drone industry for potential career paths.
- Learned in an inclusive environment while gaining problem solving and adaptability skills.
- End of 4-H year survey revealed 81% of Discovery 4-H Club members had purchased a drone for home use because of their involvement in drones in the club.

<u>The Special Interest 4-H Club Level</u>

- Two youth are in the process of obtaining their 107 pilots license.
- Created, planned, and presented a drone day camp to 23 youth. 3 of those day camp youth then participated in the STEM challenge at the North Florida Fair.
- During the Drone Day Camp, participants had the opportunity to fly flight simulators at the National Flight Academy at NAS Pensacola. This opportunity was provided free of charge, an in-kind benefit to Escambia County 4-H of $3,500.
- Connected with industry partners for future career and showcase opportunities.
- Two youth were offered internships with Rocket Drones for the summer of 2025.
- Understood how to collaborate as a large scale or small-scale team and adapt based on individual leadership styles and presented peer-to-peer education.

<u>The Adult Level</u>

- Gained knowledge on the industry and how it's connected to other opportunities within 4-H and beyond.
- Four county 4-H programs in Florida and 10 county 4-H programs nationwide have reached out to Escambia County 4-H to add drone programming. Based on feedback from adult participants, four county 4-H programs (Florida and Nationwide) have purchased drones and incorporated drone programming for their youth.
- Understood how to incorporate the basic principles of drones with or without owning them.
- Gained networking skills on how to outsource industry connected individuals for demonstrations and realized the importance of the drone industry.

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Supplemental Materials
1/3: Photos

4-H Club Level



Special Interest 4-H Club



Adults


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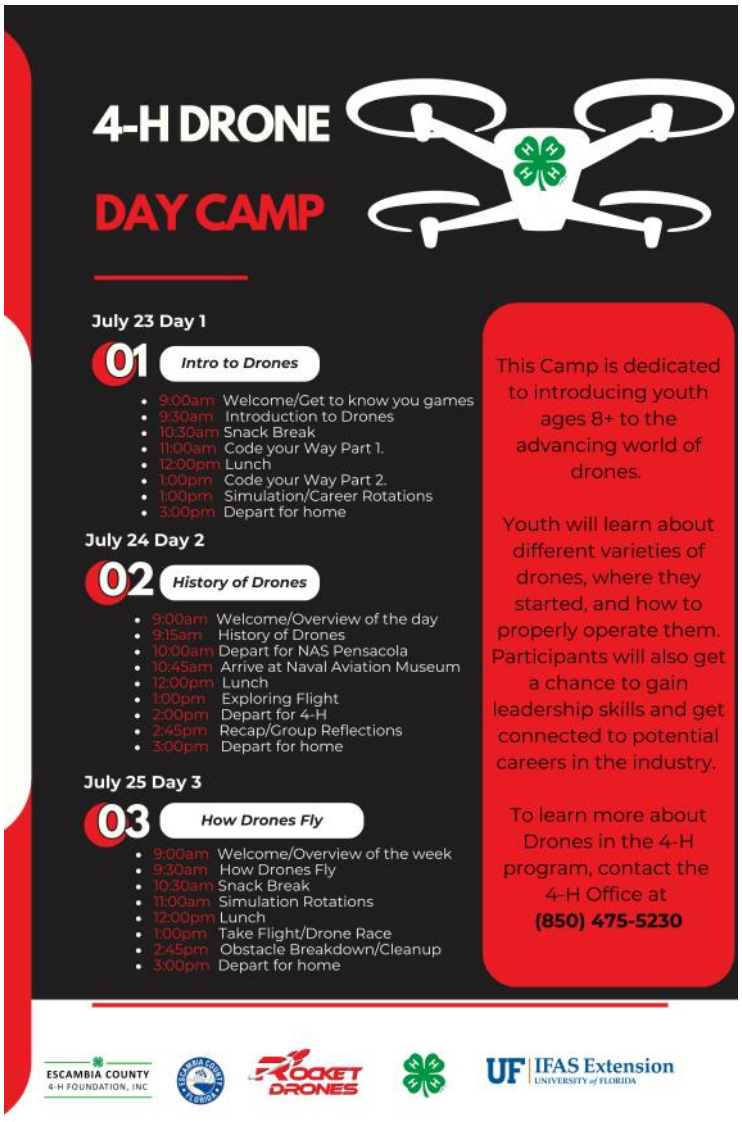
Supplemental Materials
2/3: Factsheets and Day Camp Agenda

Aerospace Innovation Factsheets

2024 4-H Drone Day Camp Agenda



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Supplemental Materials
3/3: Presentations

4-H Drones Poster Presented at 2024 4-H Military Partnership Conference

Aerospace Presentation at 2025 4-H Volunteer Forum