**Workforce Readiness Through Drone Technology: Preparing Youth for Careers in a Growing Industry**

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**Background:**

As industries such as agriculture, construction, emergency response, wildfire monitoring, and logistics increasingly integrate drone technology, there is a critical need for licensed drone pilots. Drones are frequently used in agriculture systems to enhance precision and manage crop production. Skilled drone operators can detect nutrient deficiencies, disease prevalence, crop maturity, and flooding and/or drought impacts so that timely corrective actions can be implemented. Aerial spray programs for safe and precise pesticide applications also involve advanced drone operators. Equipping young learners with foundational drone skills prepares them for future career opportunities and fosters innovation in agriculture and beyond.

**Educational Objectives:**

1. Provide hands-on experience with drone flight and maneuvering techniques
2. Educate participants on Federal Aviation Administration (FAA) guidelines and ethical considerations in drone piloting
3. Prepare youth to take and pass the Federal Aviation Administration (FAA) Part 107 test required to receive their drone license for commercial hire
4. Demonstrate real-world applications of drones across various industries
5. Inspire youth to explore STEM careers by engaging in interactive learning experiences

**Program Activities:**

Two separate five-day summer camps were funded through generous donations totaling $8500 from the Putnam County Soil and Water Conservation Board to host this program in 2021 and 2024. Participants were required to be in the appropriate age range (i.e. 16-18) to be eligible to take the FAA Part 107 Exam and also to be a member of a local 4-H chapter. Participants engaged in a structured curriculum combining classroom instruction taught by a conglomerate of UF/IFAS Extension Agents and hands-on drone flying exercises taught by local drone consultants.

**Teaching Methods:**

The teaching methods for the camps included group engagement activities, lectures, drone flying exercises, exam preparation activities, and on-line registration procedures. Lessons covered drone components, basic flight principles, and FAA Part 107 regulations. Interactive activities, including obstacle course challenges, structural evaluations, and integrated mapping programs, allowed participants to apply their knowledge in practical operations. UF/IFAS Extension Agents and local drone business owners presented insights into career pathways and emerging opportunities in the field. The program involved intensive classroom training with rigorous pre- and post-tests to evaluate the participants’ progress throughout the camp. Each participant was required to register for the Part 107 FAA drone pilot exam and was provided transportation to the certified testing facilities by Extension Agents on the final day of the camp.

**Evaluation & Results:**

Participants demonstrated increased confidence in drone handling, with 100% (n=13) successfully completing basic flight maneuvers by the end of the program. For both camps combined, 92% of participants passed their exams and received their drone licenses, positioning them for future employment opportunities. In post-evaluation surveys, 31% of licensees had earned at least $100/hour for commercial drone hire within six months of obtaining their certification, and 77% of participants had purchased and registered their own drones with the Federal Aviation Administration.

**Impact Statement:**

The growing demand for drone pilots presents significant career opportunities for the next generation. The 4-H summer day camps effectively introduced youth to drone technology, safety, and career pathways, equipping them with valuable skills and FAA certification. The program not only prepared participants to pass their drone pilot test but also laid the foundation for future employment in an expanding industry. The ultimate goal was to equip students with a relevant license for future agribusiness opportunities, however, drone technology is applicable for any type of field operation. By continuing to offer hands-on learning experiences, 4-H can help bridge the gap between education and workforce needs, ensuring a well-prepared generation of drone operators.