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# Research Experiences for Teachers Enhancing Teacher Knowledge and Skills in Modern Manufacturing

Title: Drone Challenge  
By: Eric Zylman

Supported by: Oliver Hadnot

Title: Principal

School and Address:

College Station Middle School

900 Rock Prairie Rd

College Station, TX 77840

Date: July 15, 2022



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A handwritten signature in blue ink, appearing to read "Oliver Hadnot", written over the text "Title: Principal".

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# Why Implement This Program?

- Quadcopter drones have been around since the 1920's, but with modern electronics and batteries, quadcopter drones are becoming much more prevalent and cheaper. This is an emerging technology in mainstream society for personal, commercial, and military use. This is a very interesting topic for my students and can open the door to future career possibilities.



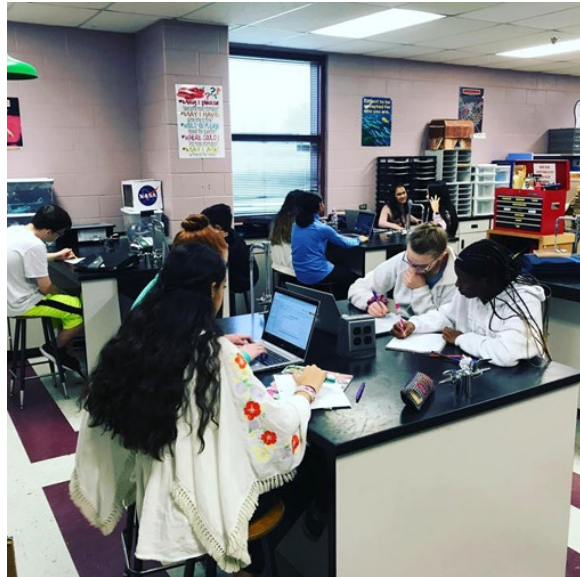
<https://a.co/d/iGnxJyg>



<https://a.co/d/7ne1cmd>

# Why Implement This Program?

- This technology is interesting to our students and will dramatically increase enrollment in my course. Last school year there were approximately 130 students in engineering at College Station Middle School. Of those students, approximately 25% were female and about 25% of my students had a disability. Incorporating drones will increase the interest in this course by 20% or more. This will then help increase participation from these different groups. The success of this program can be measured by the increase in students signing up for the course.



# How and When Will This Be Implemented?

- This program will be implemented in the Spring of 2023. Students will complete a short research project on drones. After the conclusion of that research project, the students will be given a challenge to complete with a drone. The challenge will be to ask the students to pick up a Styrofoam cup with their drone and place it in a target area on the other side of the room. In order to accomplish this, the students will need to incorporate the Engineering Design Process to come up with a viable solution and make it work.



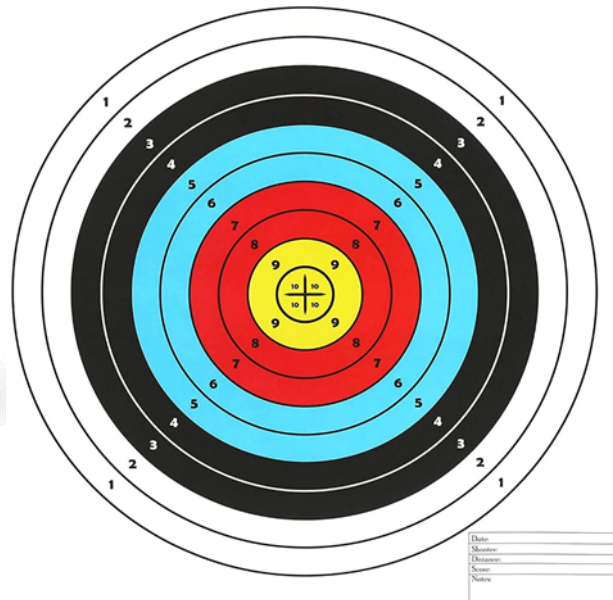
<https://bit.ly/3P42BGE>

# Needed Supplies



<https://a.co/d/gluij9y>

These are the cups for the challenge. A single package of these will be sufficient to last a few years.



<https://a.co/d/9FGTCqp>

These are the targets for the challenge. A single package will last for many years.



<https://a.co/d/80XKxab>

These are the drones we used in the NSF-RET program. They have proven to be easy to use and very durable. A class set is sufficient.

# Total Implementation Cost

<b>Amazon Link</b>	<b>Description</b>	<b>Unit Cost (\$)</b>	<b>Quantity</b>	<b>Total Cost (\$)</b>
<a href="https://a.co/d/gluij9y">https://a.co/d/gluij9y</a>	50 Pack Styrofoam Cups	12.79	1	12.79
<a href="https://a.co/d/9FGTCqp">https://a.co/d/9FGTCqp</a>	50 Pack 17x17 Targets	15.99	1	15.99
<a href="https://a.co/d/80XKxab">https://a.co/d/80XKxab</a>	Potensic A20 Mini Drone	23.99	30	719.7
<a href="https://a.co/d/4qCpNsd">https://a.co/d/4qCpNsd</a>	36 Pack AAA Batteries	10.18	2	20.36
<b>Total</b>				<b>748.48</b>

# Summary

Modern drones are a very new and exciting concept. The proposed drones are inexpensive, reusable, and safe to operate. This unit will engage the students at College Station Middle School and dramatically increase student interest in the engineering program. This will be able to be measured by the increased student requests to take this course, which is estimated at 20%.

