Commercial Drone Applications Pathway

with Curriculum, Certifications and WBL

Educating for Careers Conference 2024
Sacramento, California


2023
ttendees
CENTRAL
CORE Charter SSP Dronie
Commercial Drone Applications

Commercial Drone Applications Pathway, 2nd year presentation

2014

2024

Agenda

- Background on our Commercial Drone CTE Pathway
- SSP Grant and Curriculum Development Process
- Growing Opportunities in Commercial Drone Industry
- Curriculum Structure - CA Educators Together
- Student Certifications, WBL, & Industry Partners
- Example School Curriculum Implementation
- Student Success Story
- Questions
- QR code for downloading this entire slide deck

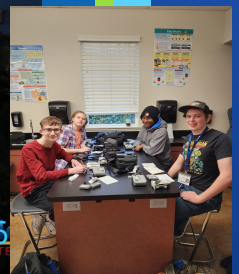
RC Airplanes

Mentoring

CORE / Les

Giving back

New Age Aerial



Meet Our Super Team!

Dave McCreary

CTE Instructor

Transportation
SME - UAS Operations

Chris Mahurin

Executive Director

CORE Charter School

Jeff Patsey

CTE Instructor
Transportation sector

Randi Morales

Curriculum Writer

English Dept. Head
Wheatland HS

CORE
Charter School
Personalized Learning for Student Success!

- Public K-12 Charter School (Since 1998)
- Personalized Learning Model
- Serving rural population - Yuba/Sutter Counties
- High school population = approx. 200 students

CORE Charter School
Personalized Learning for Student Success!

Development of Drone Program

- 2014-15 Introduction to Model Aeronautics
- Added Advanced Model Aeronautics 2015-16
- Focus shifted to UAVs/Drones
- Aerospace STEM Academy
- 2016 Federal Aviation Administration (FAA) Part 107
- 2018-19 Specialized Secondary Program (SSP)
- 2022 WBL -Community Partners with Onboarding SOP

Opportunities for Students

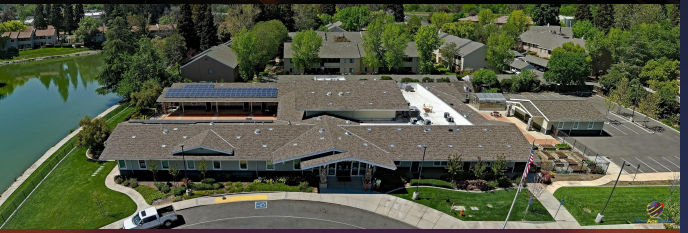
- **Commercial drone market was valued at 6.51 billion in 2021 and estimated to grow to 47.38 billion by 2029.**
  - Fortune Business Insights, in its report titled, *"Commercial Drone Market, 2022-2029."*
- **Rapidly transforming numerous industries:**
  - Film
  - Real Estate
  - Public Safety
  - Agriculture Management
  - Infrastructure Monitoring
  - Environmental Monitoring

SSP Grant & Curriculum Development

- Specialized Secondary Programs (SSP)
  - California Education Code section 58800:

    "...*to provide advanced instruction and training in high technology fields and in the performing arts*"
  - Planning Grant & Implementation Grant Phase

- Golden State Pathways Program Grant (GSPP)
  - Planning and Implementation
    (Due March 19th 2024)



CALIFORNIA
EDUCATORS TOGETHER

Year One :

SSP Commercial Drone Applications for California - Year One Version 1.0

Year Two:

SSP Commercial Drone Applications for California - Year One Version 1.0

Commercial Drone Applications
(Years 1 & 2)

- Our curriculum was written in “weekly lesson plans” rather than traditional day-to-day lesson plans due to **non-traditional scheduling**, coursework, and overall school structure.

Commercial Drone Applications Year 1

z

Unit One: *History and Introduction to Aerial Mapping with Photogrammetry Basics*

Unit Two: *Career Exploration*

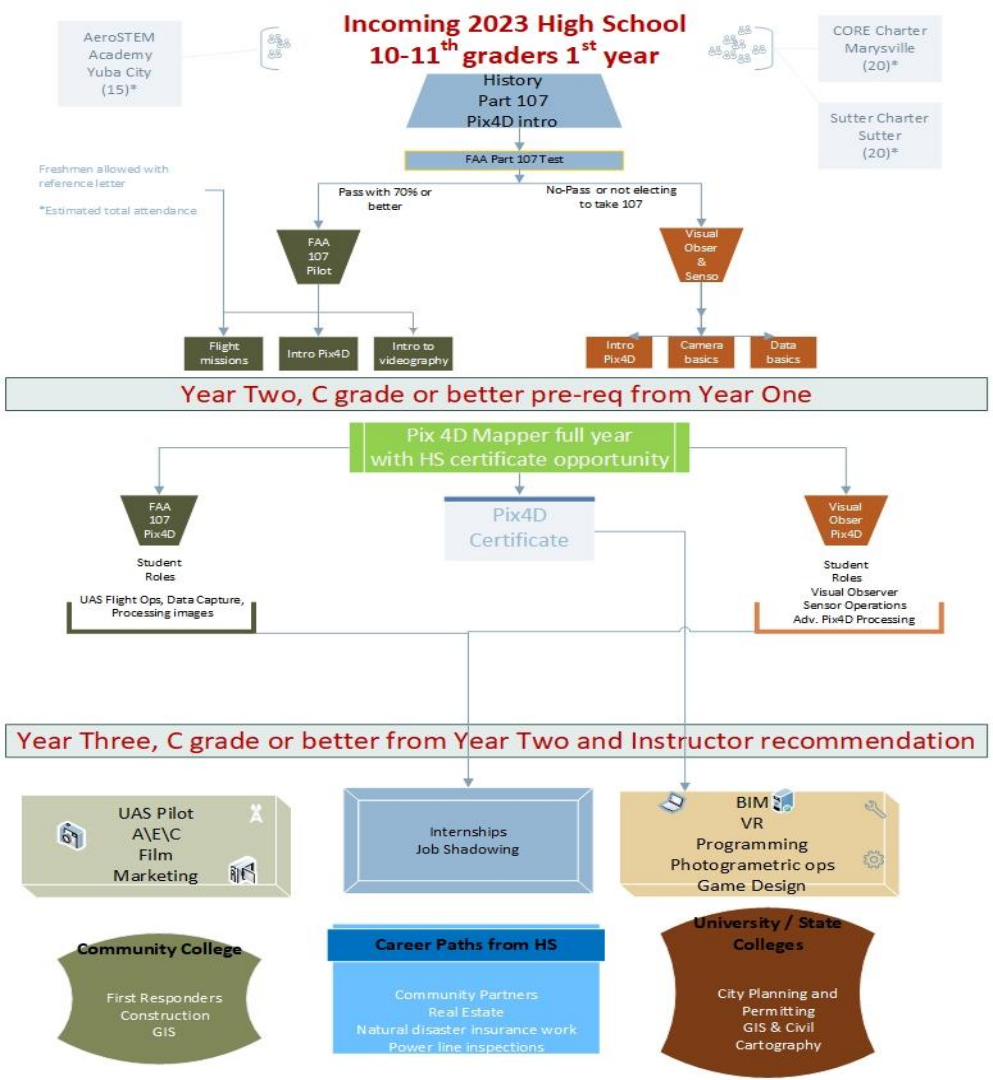
Unit Three: *FAA Part 107 Exam and License*

Unit Four: *Building a Professional Portfolio*

What about students that do not pass the FAA Part 107 certification?

If students are struggling to pass the FAA Part 107 exam and have decided not to complete their license, another option is available for them to complete year one and continue on to year two course work to complete the pathway.

- Pilot: Students who successfully pass the FAA Part 107 exam
- Visual Observer (VO): Students who want to become a VO rather than a pilot or for students who are struggling to pass the exam
- Use Photogrammetry tools to develop 3D models, videos and games


AeroSTEM Academy Yuba City (15)*
Incoming 2023 High School 10-11th graders 1st year
CORE Charter Marysville (20)*
Sutter Charter Sutter (20)*
History Part 107 Pix4D intro
FAA Part 107 Test
Freshmen allowed with reference letter
*Estimated total attendance
Pass with 70% or better
No-Pass or not electing to take 107
FAA 107 Pilot
Visual Obser & Senso
Flight missions
Intro Pix4D
Intro to videography
Intro Pix4D
Camera basics
Data basics
Year Two, C grade or better pre-req from Year One
Pix 4D Mapper full year with HS certificate opportunity
FAA 107 Pix4D
Pix4D Certificate
Visual Obser Pix4D
Student Roles
UAS Flight Ops, Data Capture, Processing images
Student Roles
Visual Observer
Sensor Operations
Adv. Pix4D Processing
Year Three, C grade or better from Year Two and Instructor recommendation
UAS Pilot
A\E\C
Film
Marketing
Internships
Job Shadowing
BIM
VR
Programming
Photogrametric ops
Game Design
Community College
First Responders
Construction
GIS
Career Paths from HS
Community Partners
Real Estate
Natural disaster insurance work
Power line inspections
University / State Colleges
City Planning and Permitting
GIS & Civil
Cartography

Friday Fly Days

- **Wednesday Prep** (Charging & Firmware Updates!)
- **Friday Class** (Safety, Mission Planning, Team & Drone Assignments)
- **Student Teams 2-3** (Remote Pilot in Command (RPIC) & Visual Observer (VO)
- **Advanced Students Supervise Year 1 Teams**
- **Mission Conclusion** (Data collected, equipment returned)
- **Tailboard Meeting** (Debrief - What went well? What can be improved?)

Commercial Drone Applications Year 2 Course

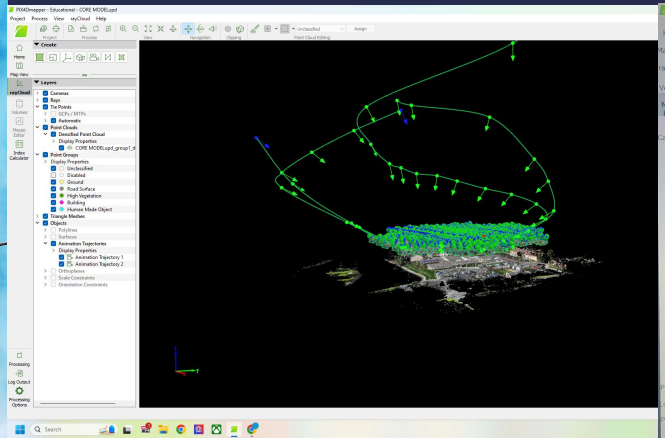
Unit One: *Introduction to Pix4D and Mission Planning*

Unit Two: *Processing With Pix4D*

Unit Three: *Analyzing Content and Content Delivery*

Unit Four: *Workflow Analyzed and Sensors*

Unit Five: *Internships and Job Shadowing*



New Teacher Prep (You can do it!):

Educators need to be familiar with the following topics prior to teaching. This can be completed during the summer in about 2 hrs with some simple YouTube videos and this FREE course!

Year one:

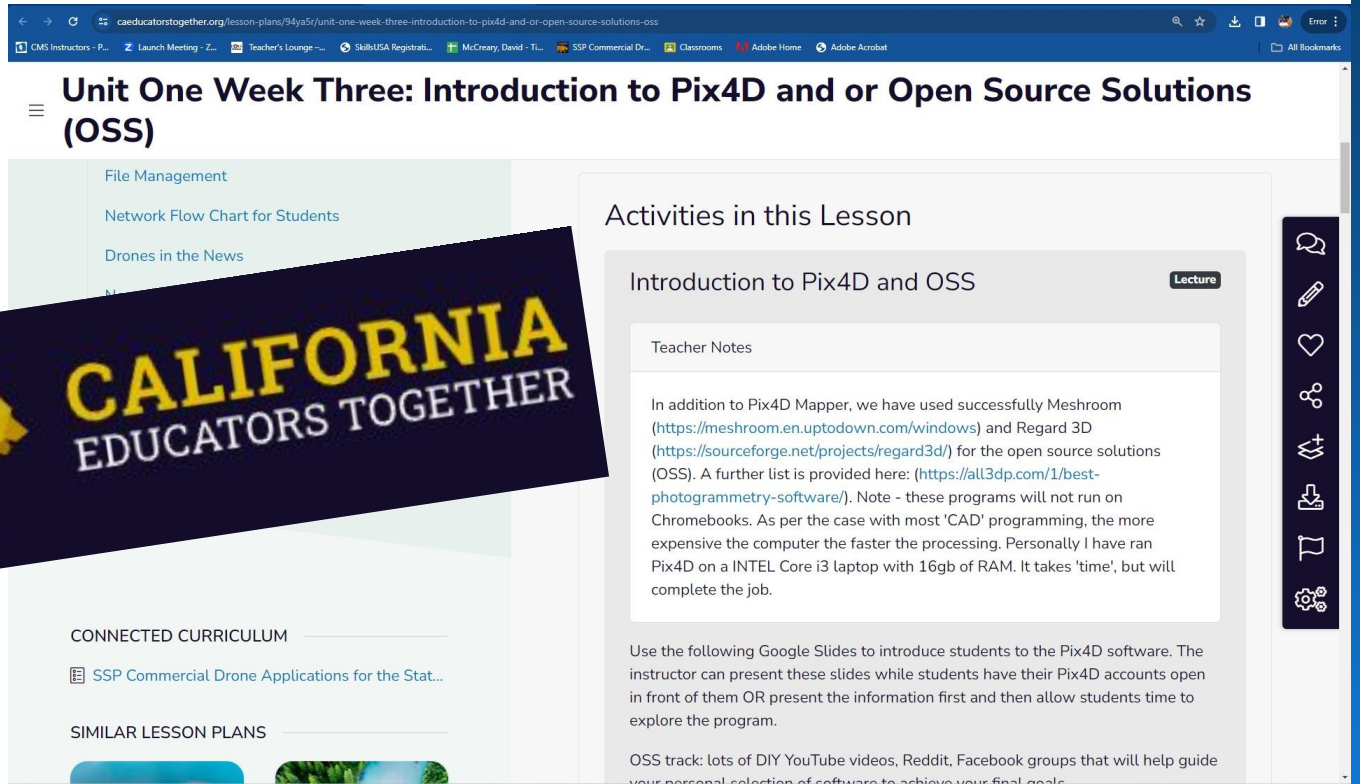
- Photogrammetry
- Aerial mapping
- Various use of drones and other equipment
- Career (especially local) that require the use of drones
- FAA Part 107 certification

Year two:

- All of the above
- Pix4D mapping and or OSS (Open Source Software)
- Work Based Learning within your community

Open Source Software (OSS)

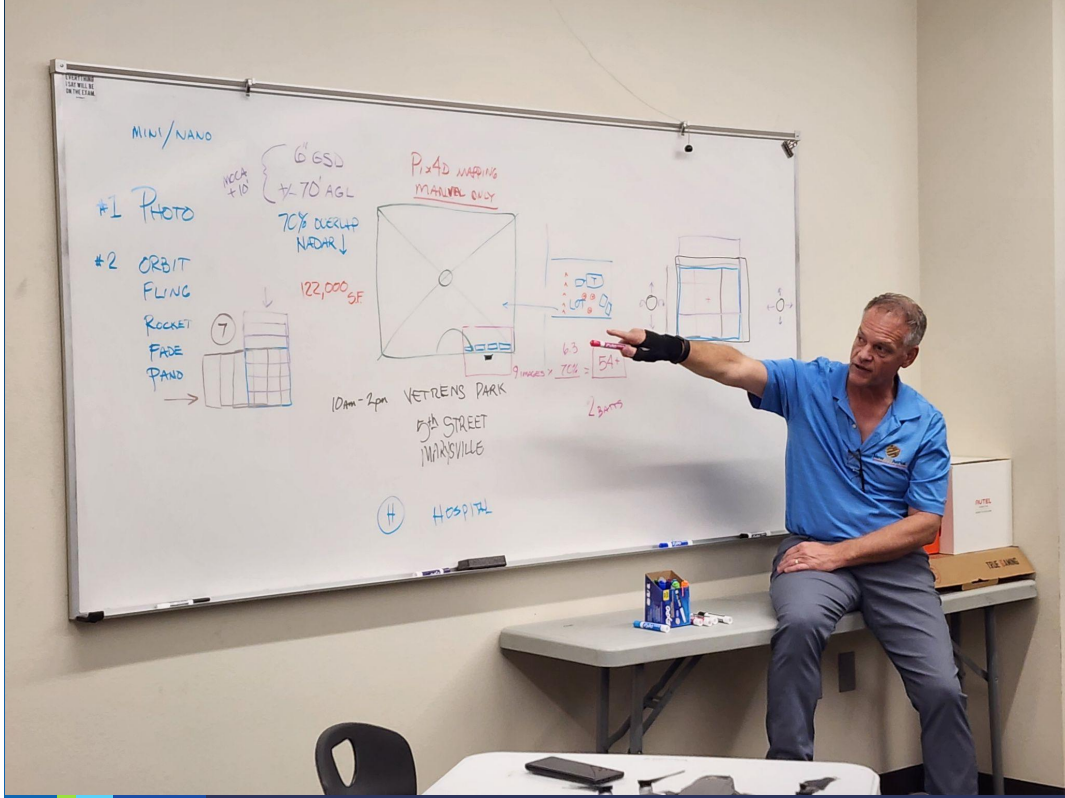
Programs with budget limits, CET gives you 2 years of programming, we have also written in what YOU choose what is right for your program with additional free resources.



CALIFORNIA EDUCATORS TOGETHER

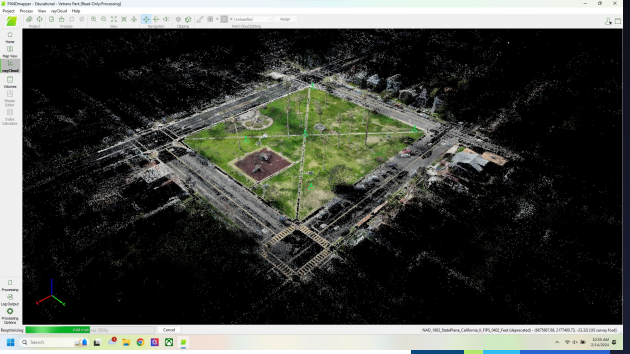
Our Findings:

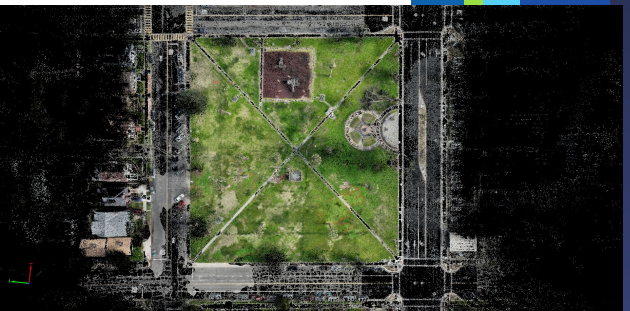
- After teaching year one, we went back to the **drawing board**
- We **added** a parallel track with only using open source software (OSS) and cell phone cameras
- Students needed additional scaffolding for their **certifications**
- Students needed to see the **end goal** in the beginning
- Not **all students will pass** the FAA Part 107 certification exam and some may not want to try
- Community partners are now giving us their Standard Operating Procedures (SOPs) to train from as the training evolves



Community Partners!

Yuba Water Agency | CES | Marysville Parks | Marysville Fire Department





- 4th Year Student
- Job Shadow
- FAA Part 107 Pilot
- Pix4D understanding
- Digital photography
- “A” Student

Student Experience

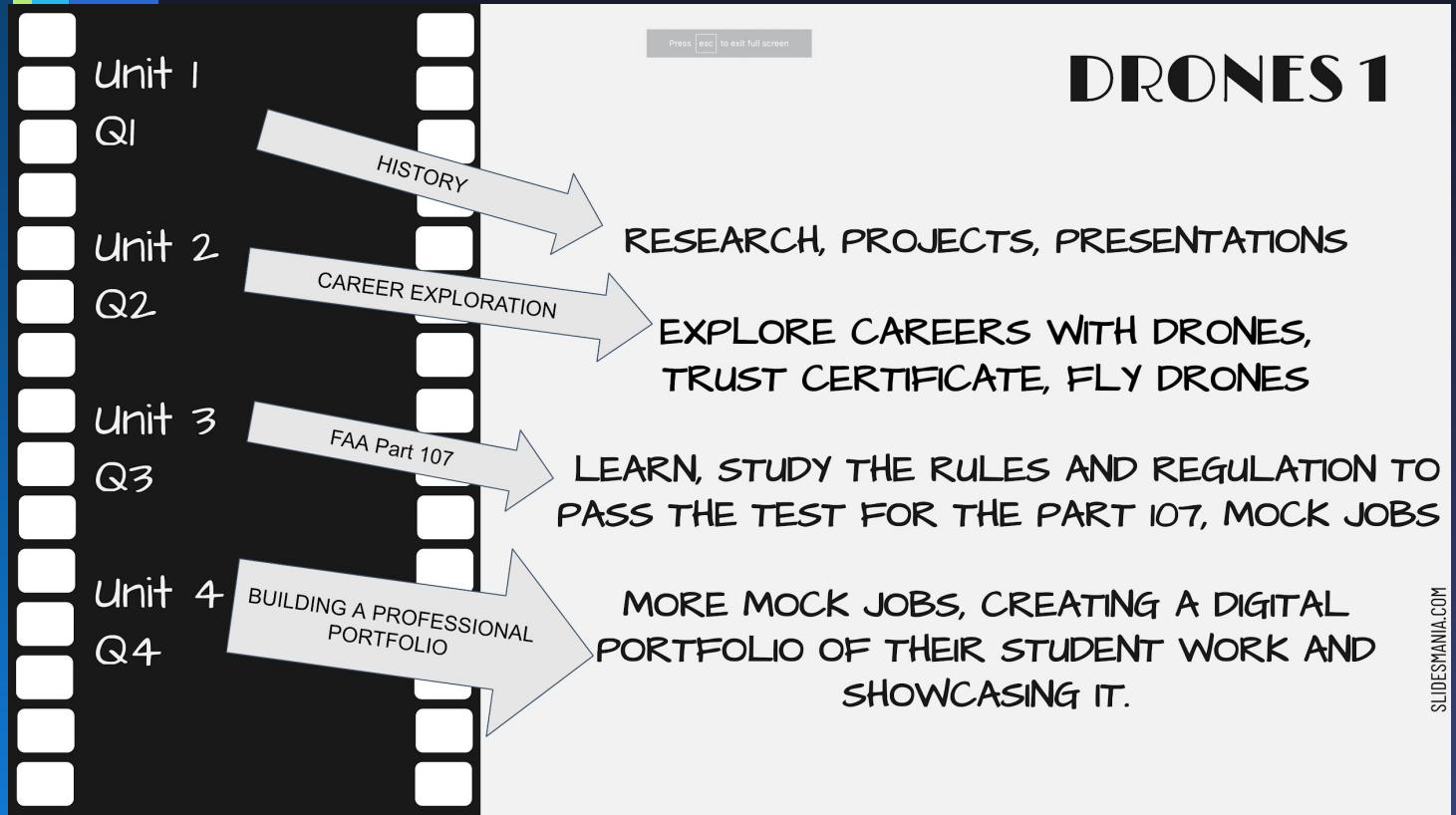
Seth Cox

Seth looks forward to working in critical infrastructure with our community partner CES upon graduation in June

Program Implementation Example

Dewey Compton- Kern High District

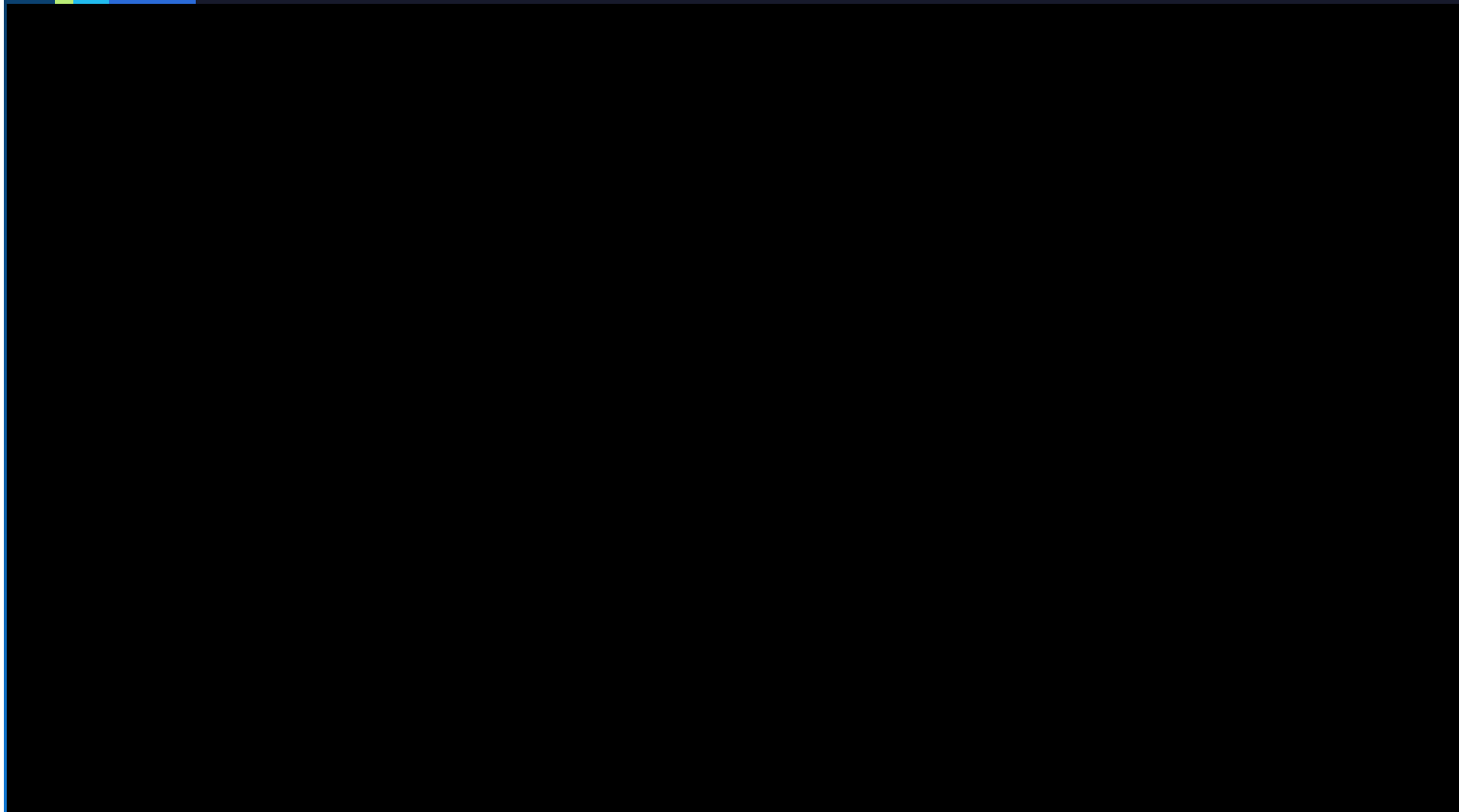
- Started in 2019 with a single drone
- Videography focus
- Skydio platform
- 1st year of instructor teaching drones
- FAA Part 107 pilot



Semper Fries

Food Day Fundraiser- Produced by Drone Year 1 Students

- FUNdraiser by Drone Club
- 100% student creation
- 1st year of instructor teaching drones
- FAA Part 107 pilots
- Gave reel to business owner
- Owner donated $500 to the Club



Questions???

Drone and Career opportunities: ***Dave***

Admin perspective: ***Chris***

Curriculum Development: ***All of us!***

Teaching the Program: ***Dave and Jeff***

Student Experience: ***Seth***

School Implementation Experience: ***Dewey***

We are here until they kick us out…

Thanks!

We hope that our time together will bring some new ideas to CTE on your campus. Please reach out, we would love to help mentor your program.

You can find our team at:
CORE Charter School

- CTE@CORECharter.org
- RandiRovetto1@gmail.com
- https://www.linkedin.com/in/davidmccreary/

Get ALL the slides!
Stay connected!
Stay current!