



**MCKINNEY AVIATION ACADEMY**

**MCKINNEY HIGH SCHOOL • MCKINNEY BOYD • MCKINNEY NORTH**

# Building an Airplane

Presented by:

Nathan McAfee & Todd Curtis

# Introductions

- Todd Curtis
  - Advanced Ground Instructor (AGI)
  - Background in airplane sales and repair
  - Sixth year teaching the program
  - Started in education teaching physics
- Nathan McAfee
  - Commercial drone pilot
  - Started in education teaching science
  - Background in robotics

# Program Beginnings

- Program started in Fall 2011
- Three high school campuses
- One course offering
- 32 students total



# Program Today

- Over 220 students
- Four Year Curriculum
  - Year 1
    - Intro to Aerospace and Aviation (AOPA)
  - Year 2
    - Private Pilot Ground School
  - Year 3
    - Aviation Management/Airplane Build (Van's RV-12)
  - Year 4
    - Practicum/Professional Development
- Career/College Oriented
- Connections with students and the aviation community
- Expanding course offerings to include drones and AE

# Our Need

- We needed an engaging component to add to our Year 3 curriculum
- We needed to build on what the students were learning in Years 1 and 2
- We needed something that would challenge and build their skills and reward their efforts
- We needed...



To Build

**BUT HOW???**



# Eagle's Nest Projects

- We met in 2014
- A 501 (c)(3) non-profit organization inspiring future aviators
- Provide in-classroom aircraft building project
  - Schools across the country
  - Variety of program types
- We asked to be a part of the next build group



# Our Plan

Step 1: Convince Eagles Nest

Step 2: Convince the District

Step 3: Assemble our team

Step 4: The build



# Step 1: Convince Eagles Nest

- Multiple schools were interested
- Limited availability
- Doubts of our potential for success
- Our situation was unique
  - 3 high school campuses
  - 40 students (15 was the norm)
  - No prior build experience

# Step 2: Convince The District

- We have an amazing and supportive District
- They had concerns
  - Liability
  - Cost
  - Ability to Succeed
  - Build Location

# The Accord

- Both parties agreed to participate
  - No school funds would be used for the airplane
    - Shop supplies
    - Tools, build equipment, etc
  - Eagles Nest would purchase the kit
    - Built as a shop project
    - Build would complement curriculum
  - Finished airplane would belong to Eagles Nest



# Student Benefits

- The Students Win
  - Unique hands-on experience
  - Positive benefits for at-risk students
  - Build experience = major factor in securing opportunities like Southwest Airlines Internships

# Benefits

- The District Wins
  - Recognized STEM program
    - Image as a progressive school district
    - A draw for future residents
  - Quality student engagement
- Eagles Nest Wins
  - Completed airplane
    - Provide flights for students
    - Sales can fund future projects
  - Quality student engagement

# Step 3: Assemble Our Team

- Instructors – drive curriculum
- Lead Build Mentor – coordinates the build
  - previous RV build experience
- Build mentors – guide the students
  - A&P mechanics
  - Former Air Force pilots
  - Commercial pilots
  - FAA inspectors



# Support Structure

- **Booster Club**
  - Helped organize aviation events
  - Organized fundraisers
    - Purchased tools
    - Purchased avionics package
- **Community support**
  - Received tools, equipment, and supplies
  - Monetary donations, discounts

# The Plane

- Van's RV-12
  - Simple design
  - High completion success
  - Range of 555sm
- Total cost including kit, engine, consumables and paint =\$72,000
- Total build time of approximately 600 man hours

# The Students

- Wings – 12 students engaged at a time
- Fuselage – 8 students engaged
- Engine – 4 students engaged
- Wiring – 3 students engaged



























