#### 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**

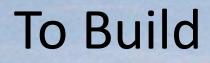
- Program started in Fall 2011
- Three high school campuses
- One course offering
- 32 students total

## **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...





### **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





