STEM through the lens of Aviation

2019 Western Regional
Space Grant Meeting

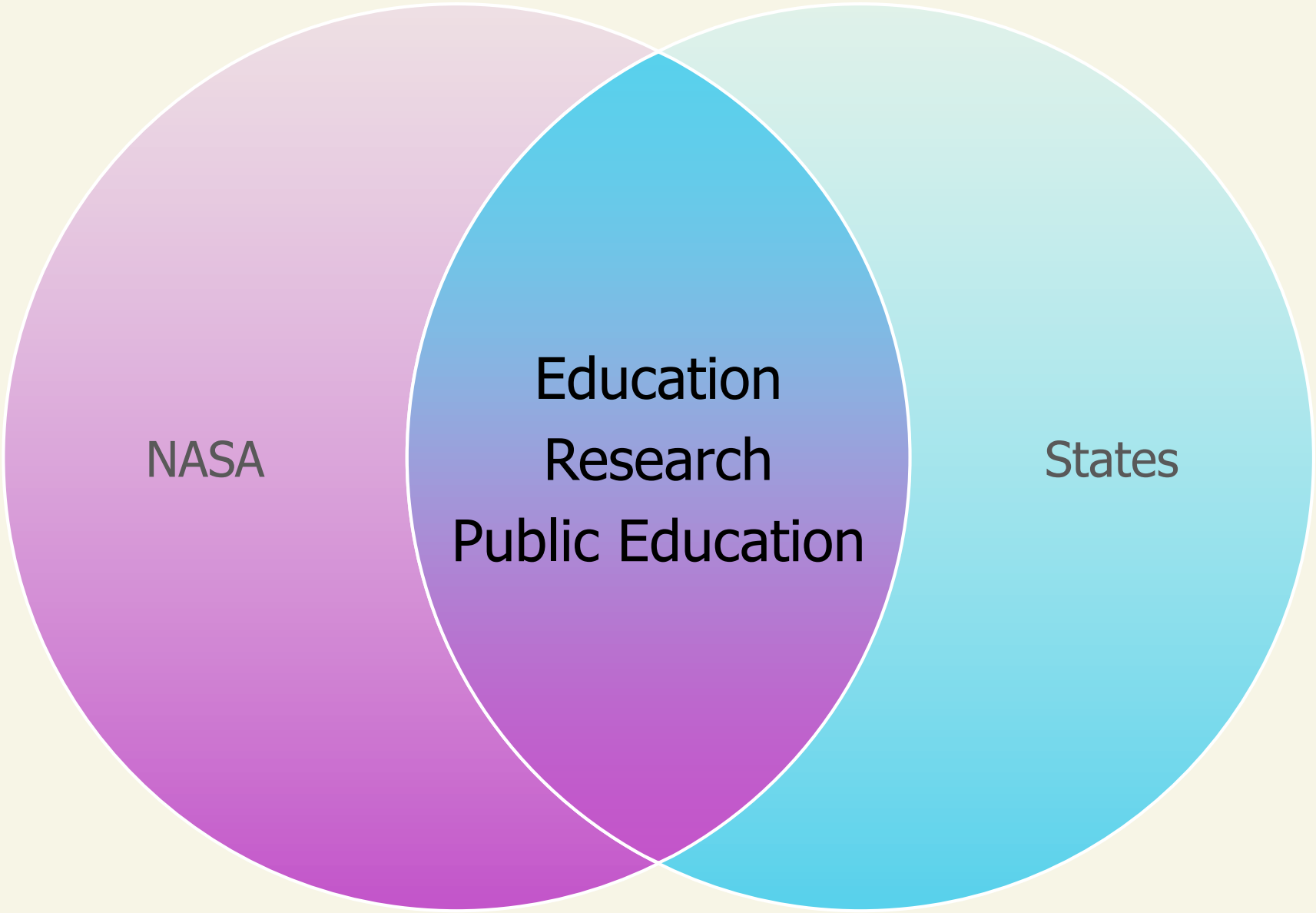
Bachelor's in
Mechanical Engineering

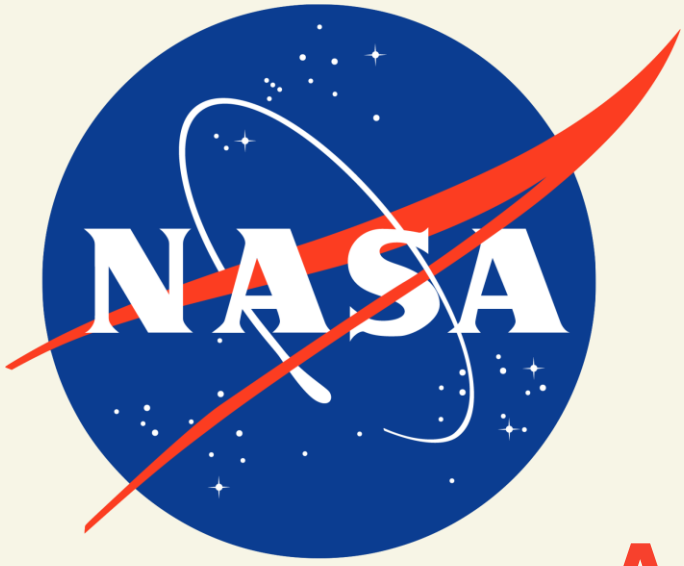
20-year
Master Instructor

Project Leader
4-H STEM Programs

Rich Stowell

Susie Johnson


NASA
Education
Research
Public Education
States



Aeronautics

and

Space

STRATEGIC GOAL 3

1 2 3 4

DEVELOP

Transform Aviation

NASA AERONAUTICS: AVIATION AT THE LEADING EDGE

SPACE GRANT UNIVERSITY STUDENTS AND FACULTY:

Get to know the people, the ideas and the technology that are driving the revolutionary work done by the first "A" in NASA – NASA Aeronautics.

NASA has made decades of contributions to aviation. Every U.S. commercial aircraft and control tower have NASA-developed technology on board.

The next great aviation transformations are being designed and engineered right now, from the return of supersonic flight to the emergence of flying cars and electrified aircraft.

WHERE ARE YOU IN THIS FUTURE?

Each one-hour webinar will feature conversations with NASA Aeronautics researchers who will talk about the technology and also about their educational and career paths. Students can submit questions for the presenters.

REGISTRATION REQUIRED
Online registration for this series will open on August 30, 2019.

Learn more and register at:
vsgc.odu.edu/aerowebinars

ABOUT
This series is offered as a partnership between NASA's Aeronautics Research Mission Directorate and the National Space Grant Program and is produced by Old Dominion University.

Quiet Supersonic Flight Over Land - Lowering the Boom

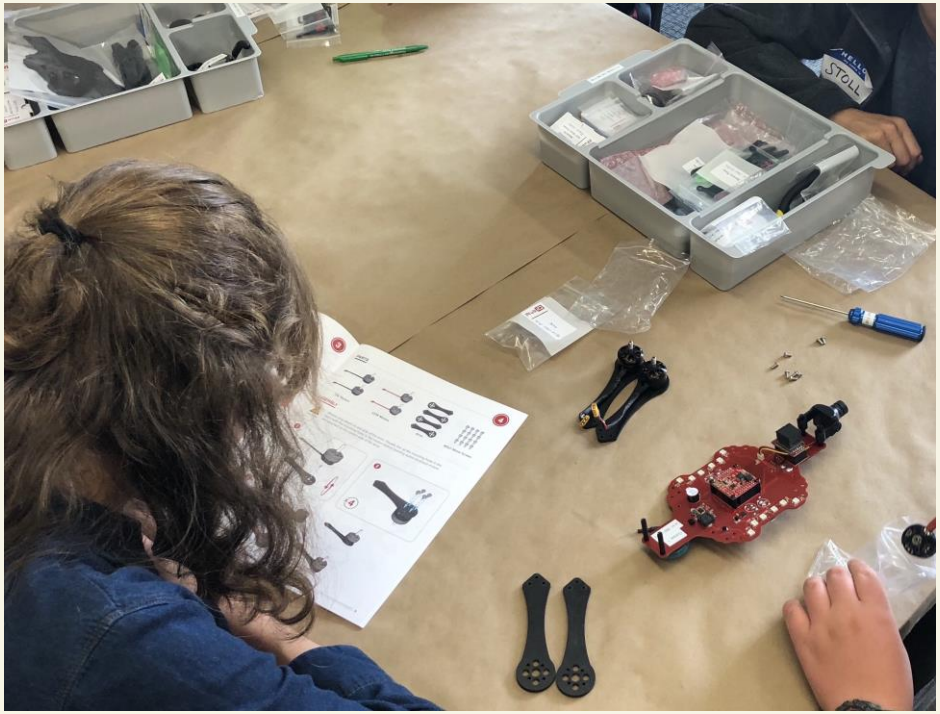
Wednesday, October 2, 2019 7:30 p.m. EDT

Safe Flight for Drones - Designing a System for Urban Air Mobility

Thursday, October 24, 2019 7:30 p.m. EDT

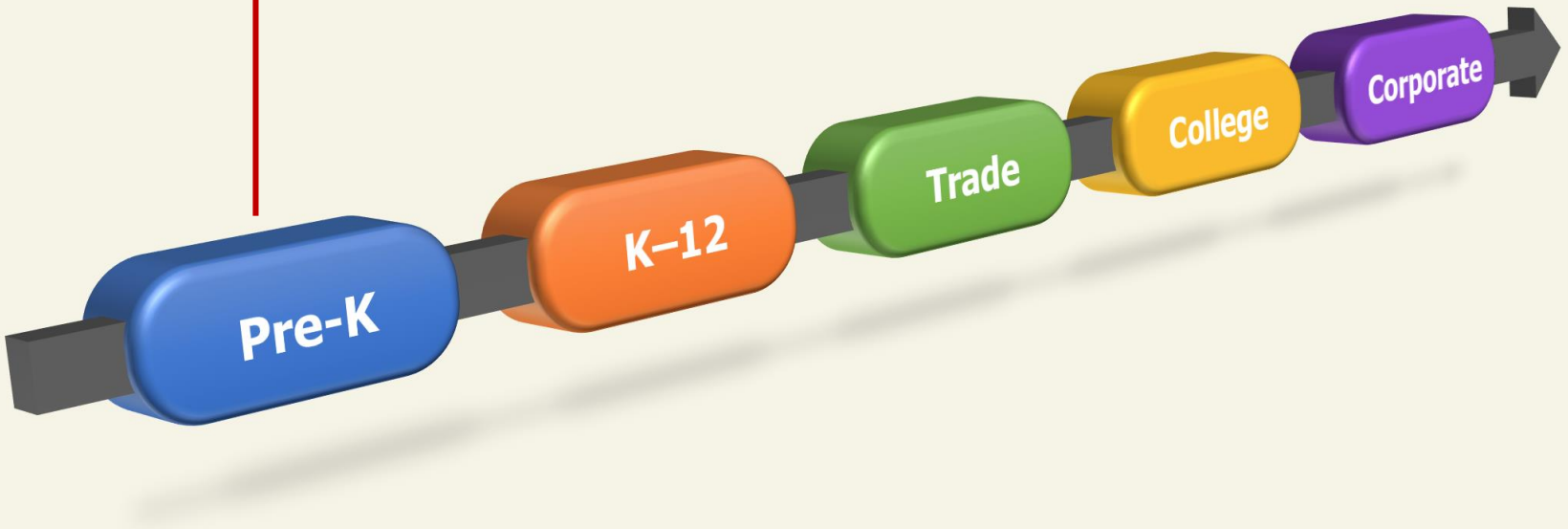
Electrified Aircraft - Tackling the Challenges of Alternative Propulsion

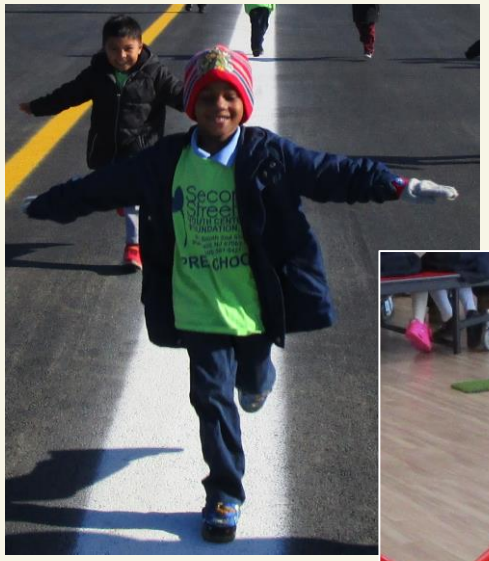
Wednesday, November 6, 2019 7:30 p.m. EST



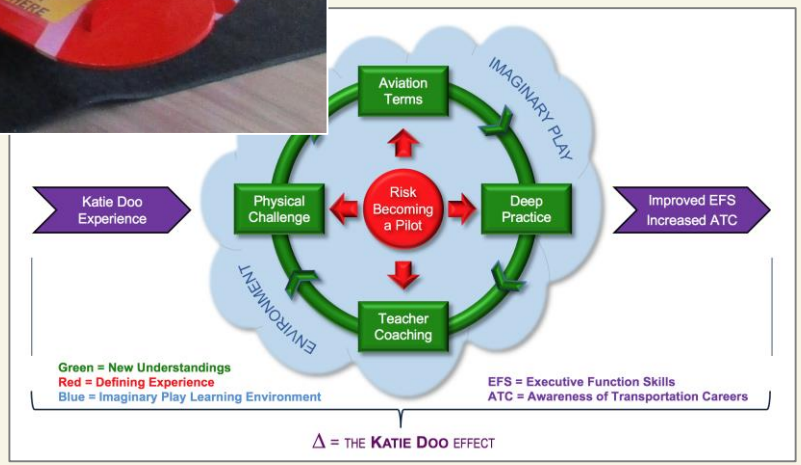
Tumblewing
Pilot
Tumblewing
Pilot
Tumblewing
Pilot
Tumblewing
Pilot

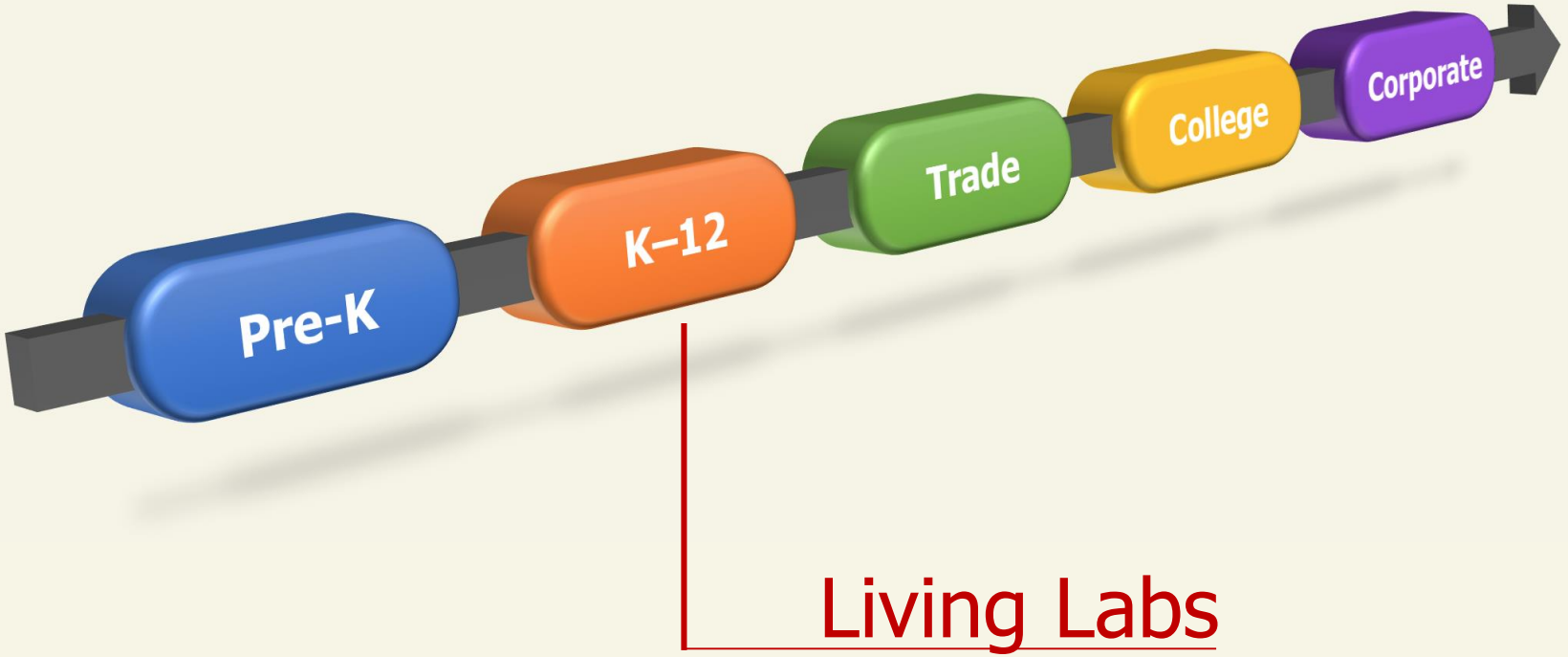
Katie Doo



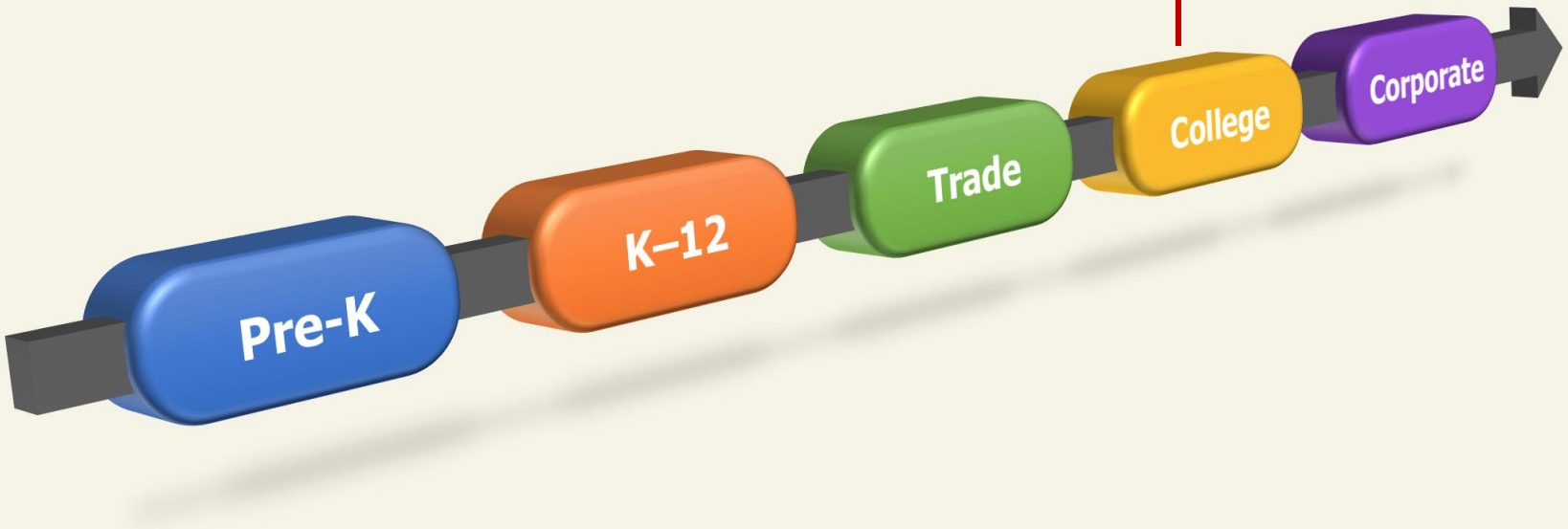


DO NOT
STEP HERE

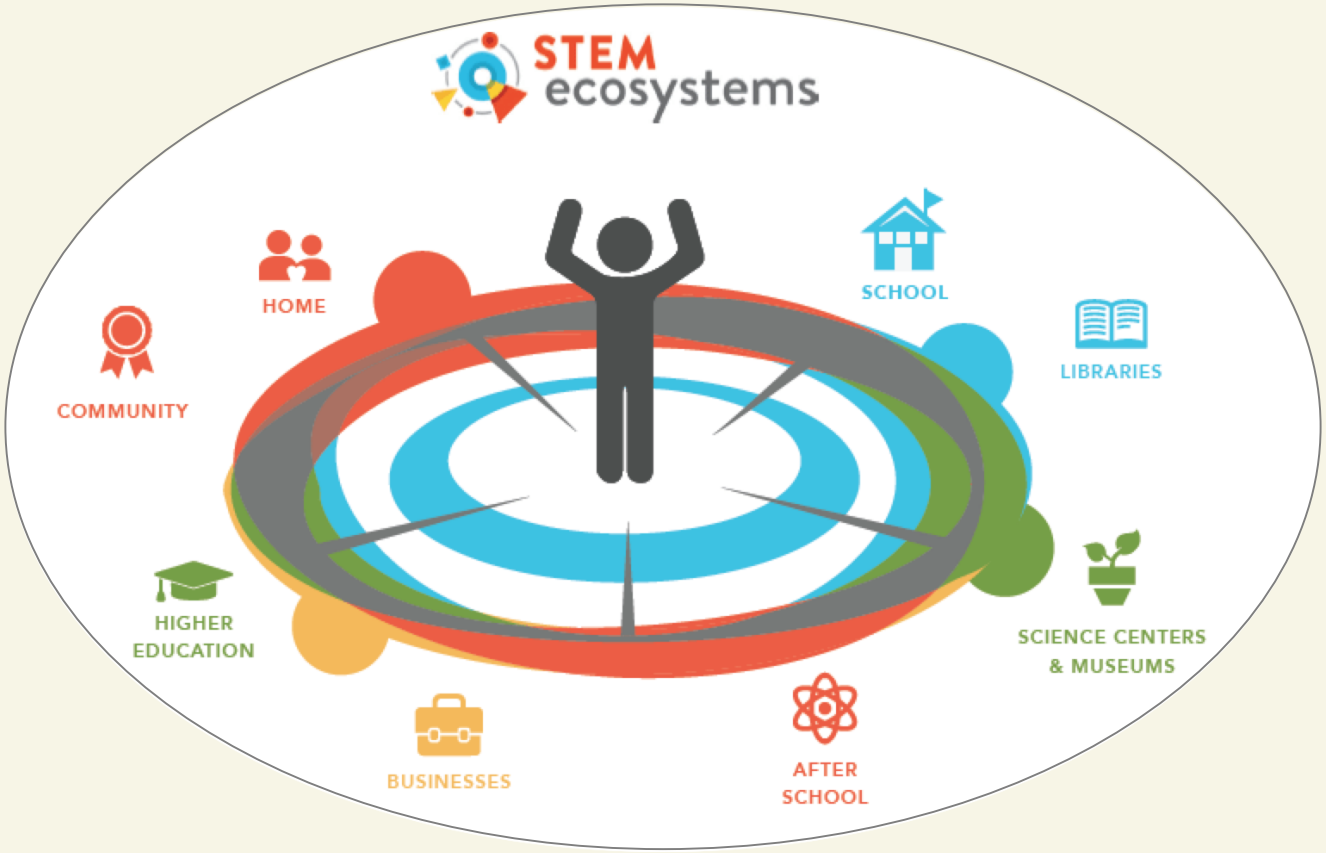

Katie Doo Experience
Aviation Terms
Physical Challenge
Risk Becoming a Pilot
Deep Practice
Teacher Coaching
IMAGINARY PLAY
ENVIRONMENT
Improved EFS Increased ATC
Green = New Understandings
Red = Defining Experience
Blue = Imaginary Play Learning Environment
EFS = Executive Function Skills
ATC = Awareness of Transportation Careers
Δ = THE KATIE DOO EFFECT


Pre-K
K–12
Trade
College
Corporate
Living Labs

TF Workshops



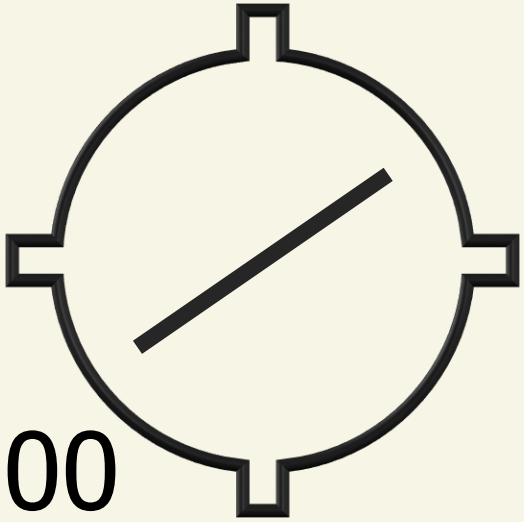
SKYHAWK II


STEM ecosystems
HOME
SCHOOL
COMMUNITY
LIBRARIES
HIGHER EDUCATION
SCIENCE CENTERS & MUSEUMS
BUSINESSES
AFTER SCHOOL

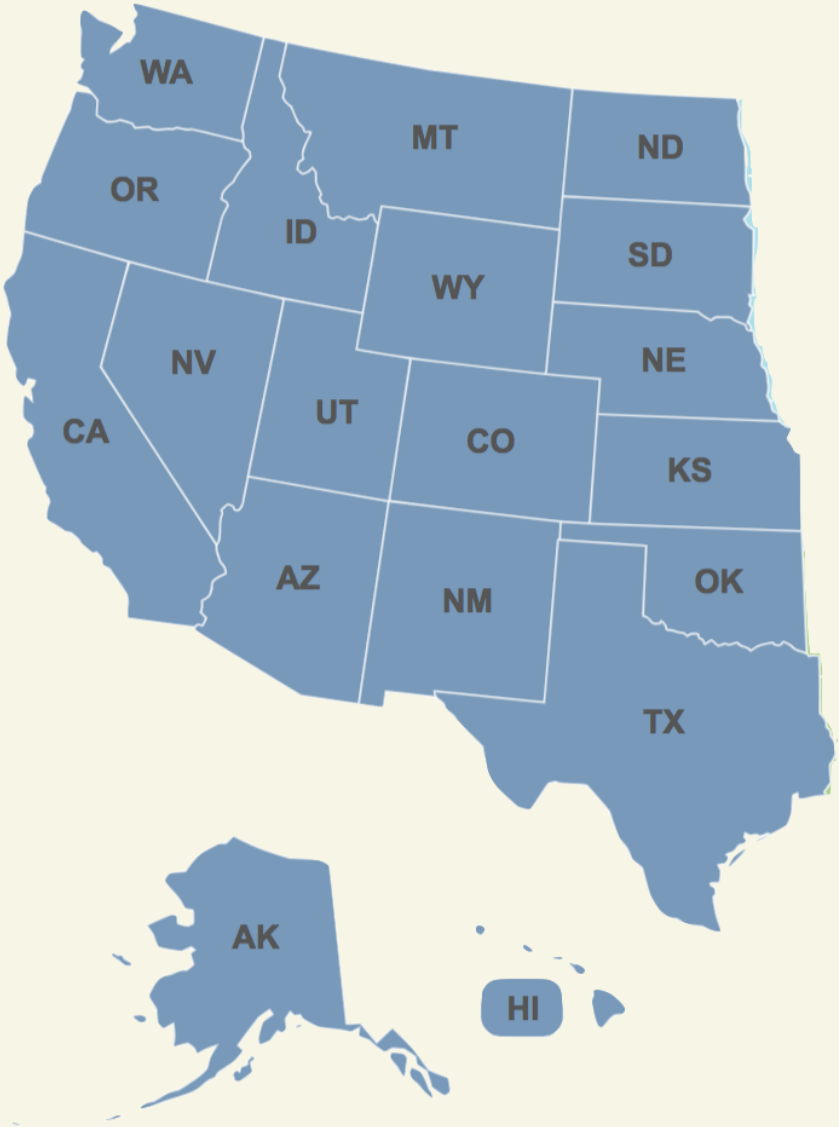
9,100

Public Libraries

Public-Use Airports



4,800



2,200

Public-Use Airports

20+

STEM Ecosystems

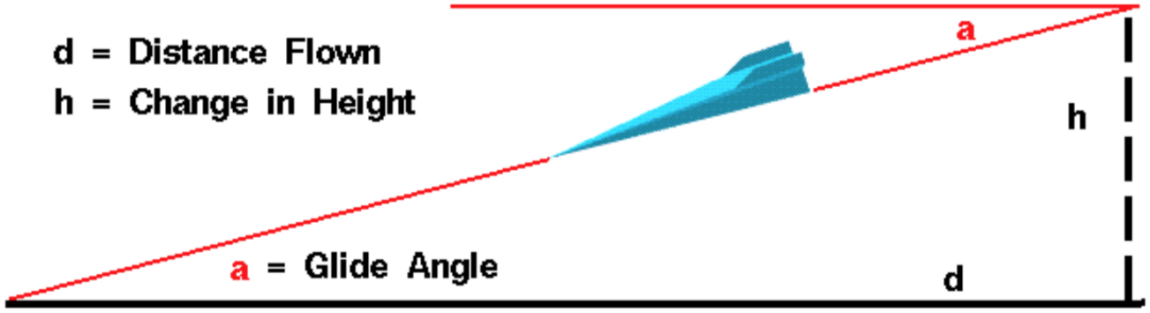
Collaborate

Connect

Glider Trajectory Problem

Glenn Research Center

d = Distance Flown
h = Change in Height



From Trigonometry: $\tan(a) = \frac{h}{d}$

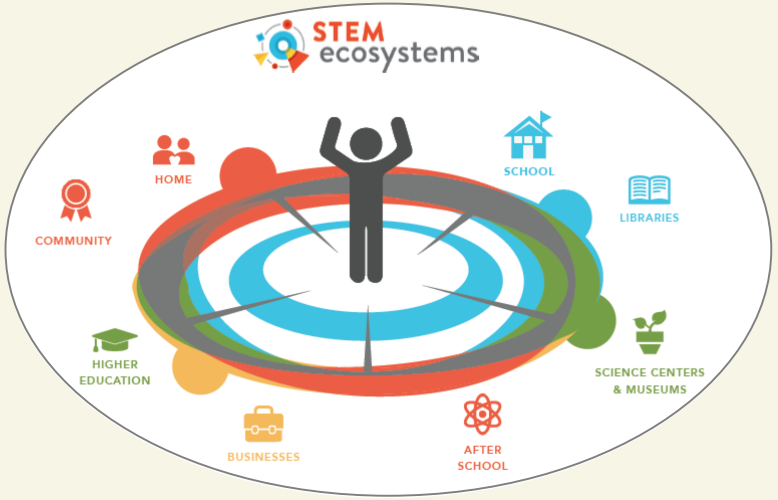
From Balance of Forces: $L\cos(a) + D\sin(a) = W$

$L\sin(a) = D\cos(a)$

D = Drag
L = Lift
W = Weight

Measure: height (h), distance (d), and weight (W).

Education

Research

Public Education