Give Lift to Your CTE Program Through Aviation

Cindy Hasselbring
Sr. Director, High School Aviation Initiative, AOPA

Pat Cwayna
CEO, West Michigan Aviation Academy

Dave Sebuck
Dean, Aviation, West Michigan Aviation Academy

Why Aviation/Aerospace?

North American Workforce Needs

2017-2036

Pilots
117,000

Technicians
118,000

Source: 2017 Boeing Pilot and Technician Outlook

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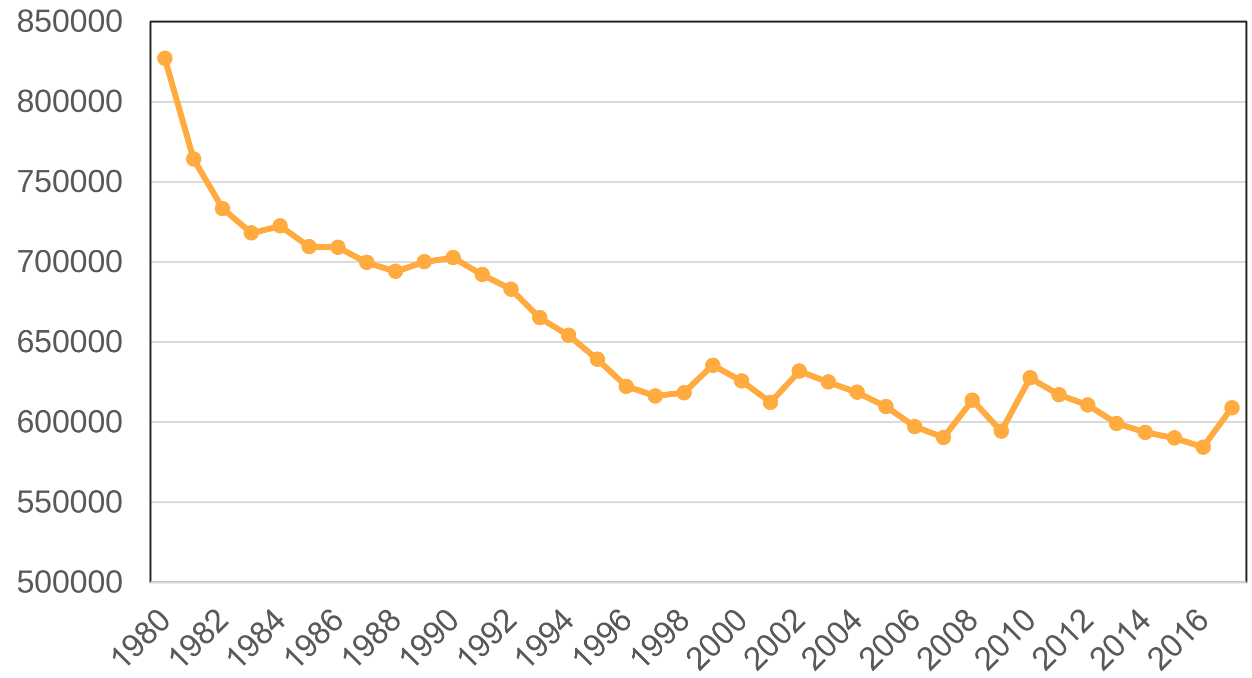
Active Certificated Airplane Pilots, U.S.

1980 827,071 active pilots 2017 608,895 active pilots



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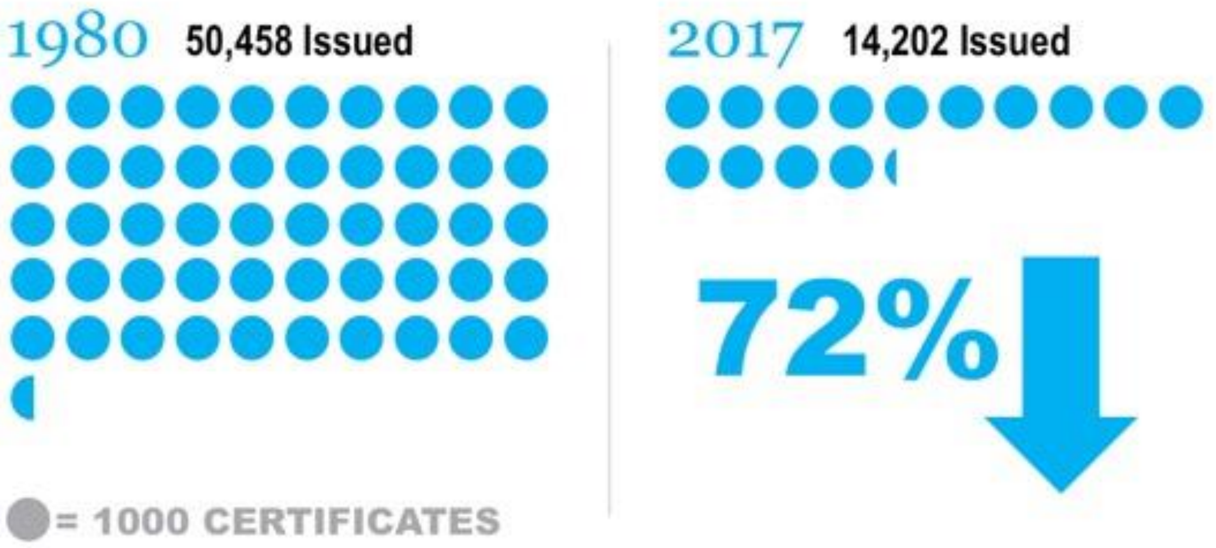
FAA Private Pilot Certificates Issued



Private Pilots

WEST MICHIGAN
AVIATION ACADEMY

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HIGH SCHOOL AVIATION STEM CURRICULUM

The Basics -

- Three Career and Technical Education pathways
  Pilot
  Aerospace engineering
  Drones (UAS)

- Industry credential in each pathway

- Four year program, can implement individual courses

- Thanks to donations to the AOPA Foundation, this curriculum is offered at no charge to high schools.

FOUR YEAR CURRICULUM OUTLINE

	9th Grade		10th Grade		11th Grade		12th Grade	
	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2
Pilot	Principles of Aviation & Aerospace	Exploring Aviation & Aerospace	Introduction to Flight	Aircraft Systems	Private Pilot Fundamentals I	Private Pilot Fundamentals II	Aviation Safety	Pilot Capstone
Unmanned Aircraft Systems	Principles of Aviation & Aerospace	Exploring Aviation & Aerospace	Introduction to Flight	Aircraft Systems	UAS Operations I	UAS Operations II	UAS Design & Applications	UAS Capstone
Aerospace Engineering	Principles of Aviation & Aerospace	Exploring Aviation & Aerospace	Aerodynamics for Engineers	Principles of Engineering for Aerospace Applications	Aerospace Materials	Aerospace Engineering Drawing	Advanced Aerospace Design	Aerospace Engineering Capstone

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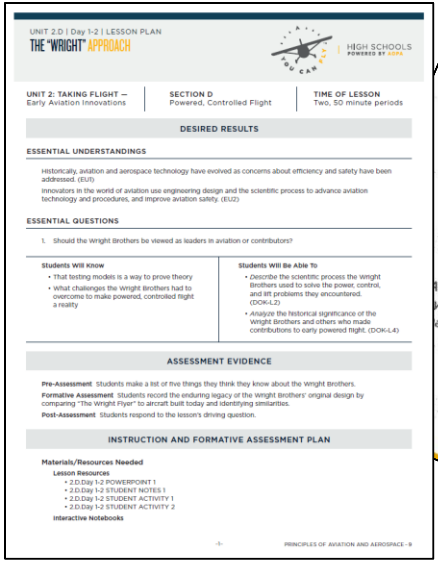
Lesson Resources

- Lesson Plans
- PowerPoints
- Student Projects
- Student Notes
- Student Activities
- Student Assessments
- Teacher Notes
- Teaching Aids



UNIT 2.D | Day 1-2 | LESSON PLAN

THE "WRIGHT" APPROACH

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UNIT 2: TAKING FLIGHT — Early Aviation Innovations	SECTION D Powered, Controlled Flight	TIME OF LESSON Two, 50 minute periods

DESIRED RESULTS

ESSENTIAL UNDERSTANDINGS

Historically, aviation and aerospace technology have evolved as concerns about efficiency and safety have been addressed. (EU1)

Innovators in the world of aviation use engineering design and the scientific process to advance aviation technology and procedures, and improve aviation safety. (EU2)

ESSENTIAL QUESTIONS

1. Should the Wright Brothers be viewed as leaders in aviation or contributors?

Students Will Know

- That testing models is a way to prove theory
- What challenges the Wright Brothers had to overcome to make powered, controlled flight a reality

Students Will Be Able To

- *Describe* the scientific process the Wright Brothers used to solve the power, control, and lift problems they encountered. (DOK-L2)
- *Analyze* the historical significance of the Wright Brothers and others who made contributions to early powered flight. (DOK-L4)

ASSESSMENT EVIDENCE

Pre-Assessment Students make a list of five things they think they know about the Wright Brothers.

Formative Assessment Students record the enduring legacy of the Wright Brothers' original design by comparing "The Wright Flyer" to aircraft built today and identifying similarities.

Post-Assessment Students respond to the lesson's driving question.

INSTRUCTION AND FORMATIVE ASSESSMENT PLAN

Materials/Resources Needed

Lesson Resources

- 2.D.Day 1-2 POWERPOINT 1
- 2.D.Day 1-2 STUDENT NOTES 1
- 2.D.Day 1-2 STUDENT ACTIVITY 1
- 2.D.Day 1-2 STUDENT ACTIVITY 2

Interactive Notebooks

-1- PRINCIPLES OF AVIATION AND AEROSPACE - 9

HIGH SCHOOLS POWERED BY AOPA

CURRICULUM DEVELOPMENT TIMELINE

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
9th grade	Develop Courses	Field Test	Implement			
10th grade		Develop Courses	Field Test	Implement		
11th grade			Develop Courses	Field Test	Implement	
12th grade				Develop Courses	Field Test	Implement

SEM 1 – PRINCIPLES OF AVIATION AND AEROSPACE

Unit 1 Aviation and Aerospace Today

Unit 2 Taking Flight – Early Aviation Innovations

Unit 3 From Theory to Practical Reality **–** Rapid Developments in Powered Flight

Unit 4 To the Stars – Making Jet and Space Travel Possible

Unit 5 Creating the Future – What's New and Next in Aviation and Aerospace

Unit 1 Aviation and Aerospace Today

HEAVY LIFT ROCKET ACTIVITY

Task: Design a balloon rocket to carry weights to the ceiling.

UNIT 1.A | Day 2 | STUDENT ACTIVITY 1

THE ENGINEERING DESIGN PROCESS IN ACTION

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HEAVY LIFT ROCKET ACTIVITY

Name ______________________

Class ______________________

MISSION

You have been assigned to design, build, and test the next generation of heavy lift rocket. Heavy lift rockets will help the space program progress by lowering the cost of sending cargo and supplies into space.

DIRECTIONS

- Use the materials provided to lift as much cargo (paper clips) into space as possible on a given launch
- You can use any or all of the materials provided to develop your rocket. Just be sure to follow the engineering design process (EDP) to help achieve your goals.
- How to launch:
  - Use the fishing line or smooth string that is attached to the ceiling as a guide for the rocket's path
  - Thread the string/line through the straw(s) so that the straw(s) can slide straight up toward the ceiling as propelled by your rocket
  - The rest of the design is up to your team. Your goal is to get as many paper clips (cargo) as possible to reach the ceiling (space) using your launch system.
  - You are not limited to how many times you launch, but you should continue to refine your design to carry more paper clips
- Keep a record of your results on this paper (see below)

MATERIALS (PER TEAM)

- Large binder clip
- Fishing line/smooth string
- 4 long balloons per team - 5" x 24"
- Bathroom size (3 o.z.) paper cup
- 2 straight drinking straws
- 50 small paper clips
- Sandwich-size plastic bag
- Masking tape
- Wooden spring-type clothespins (optional)
- scissors

USE THE ENGINEERING DESIGN PROCESS

- Identify the problem
- Identify criteria and constraint
- Brainstorm possible solutions
- Select a design
- Build a model or prototype
- Test the model and evaluate
- Refine the design
- Share the solution

Unit 2 Taking Flight- Early Aviation Innovations

LESSON: Build and Test a Wind Tunnel

LESSON MATERIALS INCLUDED:

Lesson Plan
PowerPoint
Student Notes
Teacher Aid
Student Activity

BUILD AND TEST A WIND TUNNEL – Lesson

UNIT 2.D | Day 3-7 | LESSON PLAN

BUILD AND TEST A WIND TUNNEL

UNIT 2: TAKING FLIGHT — Early Aviation Innovations | SECTION D Powered, Controlled Flight

DESIRED RESULTS

ESSENTIAL UNDERSTANDINGS

Historically, aviation and aerospace technology have evolved as concerns about efficie
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Innovators in the world of aviation use engineering design and the scientific process t
technology and procedures, and improve aviation safety. (EU2)

ESSENTIAL QUESTIONS

1. Should the Wright Brothers be viewed as leaders in aviation or contributors?

Students Will Know

- How the Wright Brothers improved their designs through the use of a wind tunnel
- Which airfoils create more lift by looking at their shape and characteristics

Students Will Be Able

- *Describe* the scienti
Brothers used to so
lift problems they e
- Analyze the histori
Wright Brothers an
contributions to ea

ASSESSMENT EVIDENCE

Pre-Assessment Watch the video and ask informal driving questions.

Formative Assessment Ask students open-ended questions throughout the build of th
to gauge student understanding.

Post-Assessment Use a 3-2-1 exercise to help students reflect on what they've learne

INSTRUCTION AND FORMATIVE ASSESSMENT P

Materials/Resources Needed

Lesson Resources

- 2.D.Day 3-7 STUDENT NOTES 1
- 2.D.Day 3-7 POWERPOINT 1
- 2.D.Day 3-7 TEACHER AID 1
- 2.D.Day 3-7 STUDENT ACTIVITY 1

-1- PRINCIPLES OF AVIATION AND AEROSPACE - 9

DESIRED RESULTS

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1. Should the Wright Brothers be viewed as leaders in aviation or contributors?

Students Will Know	Students Will Be Able To
• How the Wright Brothers improved their designs through the use of a wind tunnel • Which airfoils create more lift by looking at their shape and characteristics	• *Describe* the scientific process the Wright Brothers used to solve the power, control, and lift problems they encountered. (DOK-L2) • *Analyze* the historical significance of the Wright Brothers and others who made contributions to early powered flight. (DOK-L4)

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BUILD AND TEST A WIND TUNNEL - Lesson

Lesson Summary

This lesson is day three through seven of Unit 2, Section D. Section D comprises eight days.

Day 1- 2: The “Wright” Approach
Day 3 - 7: Build and Test a Wind Tunnel
Day 8: The “Wright” Attitude

Throughout the multi-day lesson, students will build a wind tunnel as a class and then build airfoils to test in the wind tunnel. The class will start with a video about a very precise wind tunnel used today. The students will then explore the reasons why the Wright Brothers built a wind tunnel and the process they used to test airfoils.

Students will then build a wind tunnel, learn about airfoils, build their own airfoils, and test their airfoils. It will take about two lessons to build the wind tunnel, an additional two lessons to build their airfoils and the airfoil mount, and one final day to test the airfoils, summarize their findings, and present them to the class. Students will build and test airfoils in small groups.

The teacher will use a use a 3-2-1 exercise to help students reflect on what they've learned.

Background

The students have been learning about the Wright Brothers and their decision to measure the lift and drag on their various airfoils using a simple wind tunnel. They built airfoils, tested them, identified areas for improvement and then re-tested the designs. They were the first to use this process to systematically test their theories and design their gliders and airplanes.

Safety

- Actively supervise students during the activity. Be ready to offer guidance in situations where safety could be compromised.
- Make sure students use eye protection. Have available insulated gloves for handling hot objects and pads for setting down objects with heated surfaces.
- Explain how to safely store sharp objects on an active workspace when they are not in use. Students should not be holding sharp objects or tools when they are not in use.
- Sharp tools should be stored in their protective cases when not in use.

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Learning Activity	Assessment
Engage Show the video “Boeing 737 MAX Winglets in the Wind.” (Length 2:08) The students will get an understanding of the precision and scale of today's wind tunnels. https://www.youtube.com/watch?v=vD828p9Nt0U Ask students the following questions and lead a class discussion: *Why are wind tunnels used to design aircraft? What do they measure? A wind tunnel provides a means to test aircraft and their components in order to determine their performance and behavior in the air. Wind tunnels provide a way to test objects in a much more cost effective and safe manner. Wind tunnels allow for the measurement of aerodynamic forces and airflow around an object. The objects tested can be entire aircraft models, airfoils, engines, rockets, and more.* *What other industries besides aviation use wind tunnels to test designs? The automobile, boating, and motorsports industries all use wind tunnels. The sporting goods industry uses them to test things like helmets and golf balls*	**Pre-Assessment** Watch the video and ask informal driving questions.

Lesson

NGSS STANDARDS

Three-dimensional Learning

- **HS-ETS1-1 -** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
  - Science and Engineering Practices
    - Asking Questions and Defining Problems
    - Constructing Explanations and Designing Solutions
  - Disciplinary Core Ideas
    - ETS1.A: Defining and Delimiting Engineering Problems
  - Crosscutting Concepts
    - Systems and System Models
    - Influence of Science, Engineering, and Technology on Society and the Natural World
- **HS-ETS1-2 -** ADesign a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
  - Science and Engineering Practices
    - Constructing Explanations and Designing Solutions
  - Disciplinary Core Ideas
    - ETS1.C: Optimizing the Design Solution
  - Crosscutting Concepts- none

Post-Assessment

Use a 3-2-1 exercise to help students reflect on what they've learned.

STANDARDS ALIGNMENT

4. Looking through the viewing window, take note of the weight in grams (to the tenth or hundredth) before the wind tunnel is turned on

The students will then summarize the results and present their findings to the class.

If the teacher desires and time allows, the students can use the engineering design process to design and test their own airfoil.

BUILD AND TEST A WIND TUNNEL – Teaching Aid

BUILD AND TEST A WIND TUNNEL

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BUILD A WIND TUNNEL

MATERIALS (Per Wind Tunnel)

- Large pieces of cardboard cut into the following pieces
  - Four (4) 21" x 25" x 8" (these are for the intake)

    These pieces will be in the shape of a trapezoid. Your dimensions might vary based on the size of your fan. In this case, a 21" square frame fan was used. Adjust the longer parallel side of the trapezoid to fit your fan. The shorter parallel side should always be 8", the size of your tunnel. The angled sides of the trapezoid panel will be shorter or longer based on the size of your fan. Have the students calculate that distance as a geometry exercise if you wish.
  - Four (4) 40" x 8" (these are for the tunnel)
- Box fan (highest powered fan available)
- Box knife
- Metal straight edge
- Measuring tape/ruler
- Drinking straws (recommend using jumbo size)
- One (1) 8" x 10" piece Lexan/Plexiglass (can be purchased pre-cut at a major hardware store)
- Duct tape
- Hot glue gun and glue sticks
- Digital scale (measures to 0.1g, at a minimum)
- Safety glasses

SAFETY

- Actively supervise students during the activity. Be ready to offer guidance in situations where safety could be compromised.
- Make sure students use eye protection. Have available insulated gloves for handling hot objects and pads for setting down objects with heated surfaces.
- Explain how to safely store sharp objects on an active workspace when they are not in use. Students should not be holding sharp objects or tools when they are not in use.
- Sharp tools should be stored in their protective cases as soon as you finish using them.

HIGH SCHOOLS POWERED BY AOPA

1 Measure and cut the pieces of cardboard

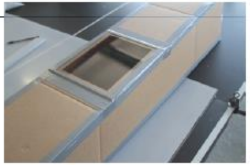
2 Duct tape three of the four 40" x 8" tunnel pieces together on the long edges. Leave one edge untaped.

3 On one end of the 40" x 8" tunnel, glue the straws down using hot glue. The straws will straighten the turbulent airflow coming from the fan. Using jumbo straws will reduce the time needed to complete this step and produce the same results.

BUILD AND TEST A WIND TUNNEL – Teaching Aid

4 On the top (untaped) 40" x 8" tunnel flap, cut a hole for the sheet of Lexan. Ensure the hole is smaller than the area of the Lexan so it can be taped in place from the outside and not fall through the hole. (i.e., 8"x10" Lexan = 7-1/2" x 9-1/2" hole)

5 Tape the last 40" x 8" tunnel piece into place to make a square tube. Tape the Lexan onto the tunnel from the outside.



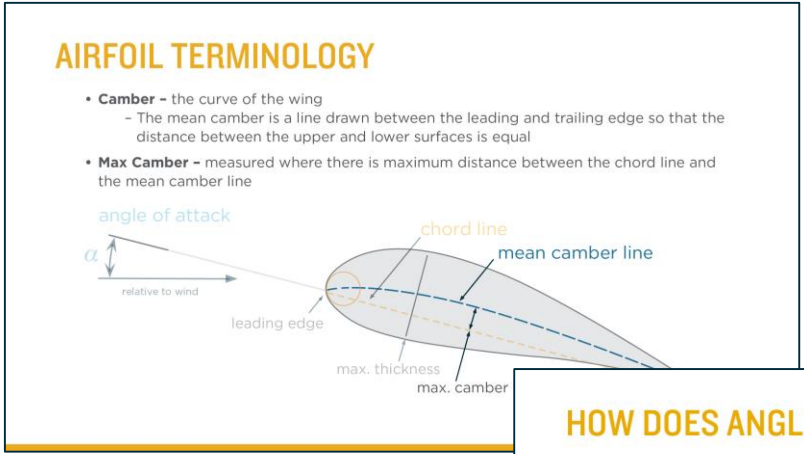
6 Tape the four trapezoid-shaped cardboard pieces for the intake together, and then tape them around the fan. Ensure that you seal the area around the fan with duct tape as best you can.

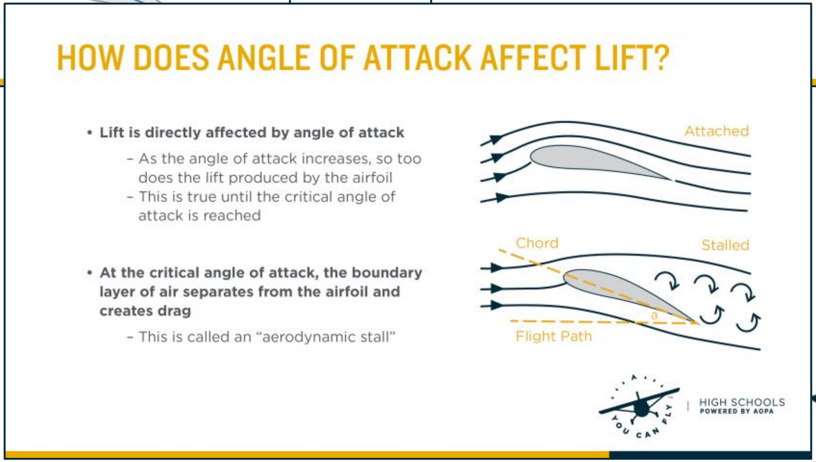
7 Make two support stands to hold up the tunnel. Cut four rectangular pieces of cardboard at the proper height. Cut a slit halfway down each piece and slide them together to make an "X"

8 Duct tape or hot glue the stands to the bottom of the tunnel.

9 Duct tape the tunnel to the intake.

BUILD AND TEST A WIND TUNNEL – Presentation





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BUILD AND TEST A WIND TUNNEL – Student Activity

UNIT 2.D | Day 3-7 | STUDENT ACTIVITY 1

BUILD AND TEST A WIND TUNNEL

HIGH SCHOOLS POWERED BY AOPA

BUILD AND TEST AIRFOILS

Name ______________________

Class ______________________

You have been learning about the Wright Brothers and their decision to measure the lift and drag on their various airfoils using a simple wind tunnel. They built airfoils, tested them, recognized areas for improvement, and then re-tested the designs. They were the first to use this process to systematically test their theories and design their gliders and airplanes.

WHAT IS AN AIRFOIL?

Write the definition of the following.

Trailing Edge ______________________

Leading Edge ______________________

Chord ______________________

Angle of Attack ______________________

Thickness ______________________

Mean Camber ______________________

Max Camber ______________________

Symmetrical Airfoil ______________________

Assymetrical Airfoil ______________________

Planform ______________________

Span ______________________

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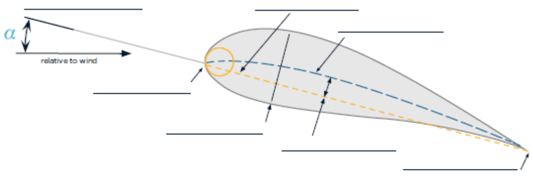
Label the parts of the airfoil



Characteristics of an airfoil that influence lift

- Curved surfaces produce more lift than ______________________ surfaces
- Curved surfaces also produce more drag. They learned that a curved surface with a ______________________ is ideal
- Airfoils with the curve closer to the ______________________ produce more lift
- Airfoils that are ______________________ and ______________________ create more lift
- ______________________ airfoils create lift at zero angle of attack

BUILD AND TEST

In small groups, you will build two airfoils out of foam board. Each group will build one symmetrical airfoil of a given chord and span, and one asymmetrical airfoil of a given chord and span. You will test the airfoils in your new wind tunnel to determine which airfoil creates more lift.

Both of your airfoils will have a chord of 6" and a span of 5-1/4".

Finally, you will summarize the results of your airfoil test and present your findings to the class.

MATERIALS (per group)

- Airfoil Mount (assume each group builds one airfoil mount to test both airfoils)
  - Foam board pieces (recommend using standard white foam board from Dollar Tree)
    - One (1) 6" x 6"
    - Eight (8) 1" x 3"
  - Wire (can be from a wire hanger)
    - Three (3) 7-1/2" pieces of wire

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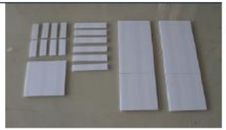
- Symmetrical Airfoil
  - Foam board pieces
    - One (1) 16" x 5-1/4"
    - Three (3) 5-1/4" x 1"
- Asymmetrical Airfoil
  - Foam board pieces
    - One (1) 16" x 5-1/4"
    - Three (3) 5-1/4" x 1"
- Box knife
- Metal straight edge
- Measuring tape/ruler
- Hot glue gun and glue sticks
- Pliers/wire cutter
- Protractor
- Safety glasses

SAFETY

- Use eye protection.
- Have available insulated gloves for handling hot objects and pads for setting down objects with heated surfaces.
- Do not hold sharp objects or tools when they are not in use.
- Sharp tools should be stored in their protective cases as soon as you finish using them.

1 Gather all materials

2 Measure and cut the foam board pieces needed for the airfoil mount and both airfoils



BUILD AND TEST A WIND TUNNEL – Student Activity

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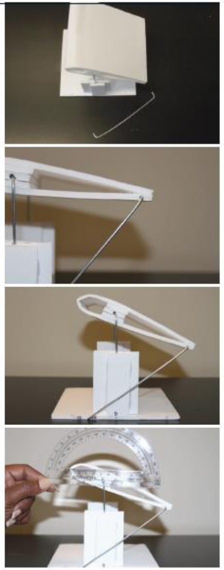
SYMMETRICAL AIRFOIL

Bend the third 7-1/2" piece of wire at both ends. Insert one end of the wire into the trailing edge of your airfoil.

Using the protractor, measure 0, 15, and 30 degrees angle of attack. Insert the wire into the base of the airfoil mount that corresponds with the 3 different angles of attack.



TEST YOUR AIRFOILS

Before you test the airfoils, hypothesize which airfoil will create more lift. How will angle of attack influence the lift created? Explain your reasoning.

To measure the lift of the airfoils, you will note the weight the airfoil assembly exerts on a digital scale before the wind tunnel is on and while the wind tunnel is on.

Take the following steps to measure lift:

1. Place the digital scale inside the wind tunnel
2. Ensure the digital scale has been "zeroed" out
3. Place the airfoil mount and the symmetrical airfoil on the scale
4. Looking through the viewing window, take note of the weight in grams (to the tenth or hundredth) before the wind tunnel is turned on
5. Turn on the wind tunnel (ensure the fan is at the highest power setting)
6. After a few moments, take note of the new weight in grams (to the tenth or hundredth)
7. Subtract the weight found in step 6 from the weight found in step 4 to determine the amount of lift generated.
8. Repeat these steps for both airfoils and the different angle of attacks

	ANGLE OF ATTACK	WEIGHT IN GRAMS BEFORE	WEIGHT IN GRAMS DURING THE TEST	LIFT GENERATED (G)
SYMMETRICAL AIRFOIL	0 degrees			
	15 degrees			
	30 degrees			
ASYMMETRICAL AIRFOIL	0 degrees			
	15 degrees			
	30 degrees			

Which airfoil produced the most lift? Explain why.

Which airfoil produced the most lift for a given angle of attack? Why?

Go back to your wind tunnel with your asymmetrical airfoil. Mount the airfoil upside down so that the cambered side of the airfoil is facing the scale. Place the entire airfoil mount on the scale with the leading edge pointed towards the fan. Note the weight again before turning on the fan. What happens to the weight once the wind tunnel is turned on? Why?

What would you expect if we did the same exercise with the symmetrical airfoil?

Share your findings

An important aspect of engineering design is presenting your findings. Put together your results to share with the rest of the class. Be prepared to describe what limitations you encountered, errors you made, and ideas you have for improving the design of your airfoils and improving the testing methods.

SEM 2 – EXPLORING AVIATION AND AEROSPACE

Unit 6 Aviation Safety and Oversight
Unit 7 Exploring Careers in Aviation and Aerospace
Unit 8 Aviation Innovation and Problem Solving
Unit 9 Innovation Challenge
Unit 10 Thinking about a Career in Aviation

Accident Case Safety-NTSB “Go Team”

- Can we really know what went wrong?
- Everyone takes a role on the “Go Team”, learn the functions and how they fit together.
- Students present findings and share recommendations.

UNIT 6.B | Day 4-6 | STUDENT ACTIVITY 1

ACCIDENT CASE STUDY

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COLGAN AIR FLIGHT 3407

Name ______________________

Class ______________________

Using the information contained in your accident-case-study packet and a reanimation video, your “Go Team” will evaluate the crash of Colgan Air Flight 3407. Each team will present its “findings” and “recommendations” upon completing the study.

STEP 1

Each member of your team will choose one element of the “Go Team.” If you have less than seven members, some students will need to accept more than one “Go Team” responsibility.

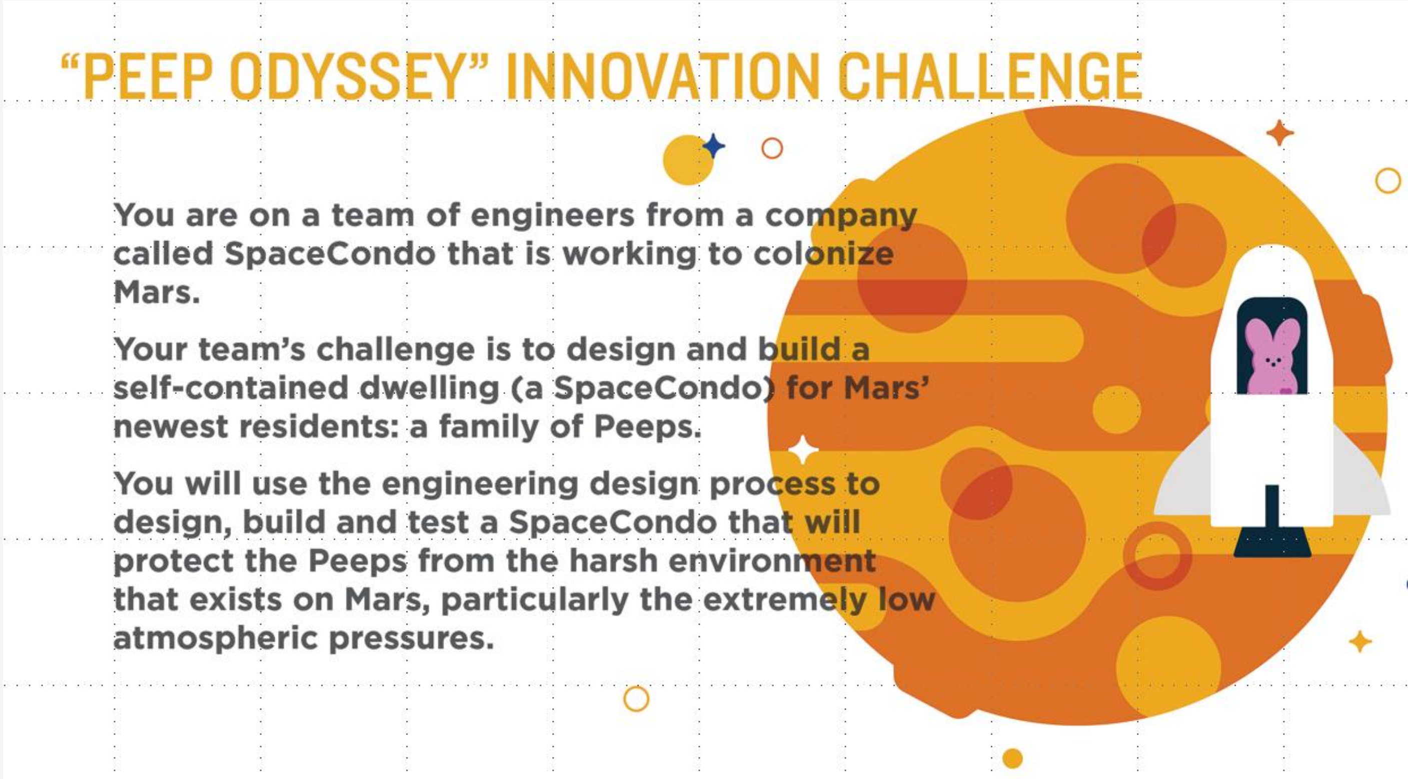
“GO TEAM” RESPONSIBILITY	TEAM MEMBER ASSIGNED
OPERATIONS Collect history of the accident flight and crewmembers’ duties for as many days before the crash as appears relevant.	
STRUCTURES Document the airframe wreckage and the accident scene.	
POWERPLANTS Examine engines (and propellers) and engine accessories.	
SYSTEMS Study components of the plane’s hydraulic, electrical, pneumatic and associated systems, together with instruments and elements of the flight control system.	
AIR TRAFFIC CONTROL Reconstruct the air traffic services provided to the pilot, including acquisition of ATC radar data and transcripts of controller-pilot radio transmissions.	
WEATHER Gather all pertinent weather data from the National Weather Service, and sometimes from local TV stations, for a broad area around the accident scene.	
HUMAN PERFORMANCE Study crew performance and all before-the-accident factors that might be involved in human error, including fatigue, medication, alcohol, drugs, medical histories, training, workload, equipment design and work environment.	

Unit 7 Exploring Careers in Aviation and Aerospace

- Students will learn more about aviation careers, education, training and certification requirements.
- Careers include:

  Flying aircraft and drones
  Aerospace engineer
  Air Traffic Controller
  Aircraft Mechanic

Innovation Challenge



HIGH SCHOOL AVIATION STEM CURRICULUM

The Process -

- 29 high schools field testing 9th grade curriculum during 2017-18 school year
- External evaluators are collecting data and feedback on the lessons and materials.
- Will utilize feedback to make improvements, ready for full implementation of 9th grade curriculum, 2018-19 school year.

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What is being said from our field test teachers…

“I want you to know how much I enjoy teaching this new course! It is an awesome course and our students love it!”

“I really appreciate AOPA’s effort to listen to our input and make improvements to the curriculum! I’m excited to see what next semester holds!”

HOW CAN I USE THE AOPA CURRICULUM?

- Register to receive frequent updates about the curriculum on the AOPA High School website
- Will have webinars in 1st quarter 2018, to share more information as it is available
- Apply to use the curriculum on our website, youcanfly.aopa.org/high-school, starting late February 2018
- Attend professional development for teachers using the curriculum on June 25-27, Frederick, MD, in-person (recommended) and virtually.
- Join the AOPA Hangar online community, "High School Aviation" group

youcanfly.aopa.org/high-school

YOU CAN FLY™ | HIGH SCHOOLS POWERED BY AOPA

Flight Science Required Courses

Grade 9
- Intro to Aviation
- Aviation History & Literature

Grade 10
- Preflight Planning
- Intro to Aviation Weather

Grade 11
- Private Pilot Ground School

Grade 12
- Flight Science

Highly Recommend Glider Camp Participation

WEST MICHIGAN AVIATION ACADEMY

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Preflight Planning

10 Weeks

- Atmosphere
- Takeoff and Landing Data
- Weight and Balance
- Crosswind Calculations
- Density Altitude Calculations
- VFR Charts
- E6B Flight Computer
- Navigation Log
- JayBird Desktop Simulation – Landing Challenge

Goal: Identify future PPGS students

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AVIATION ACADEMY

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Private Pilot Ground School

Full Year

- Jeppesen Textbook
- Red Bird Advanced Training Device
- Jay Bird Simulators
- Student Binder
- Articles
- Video

Goal: Earn endorsement then…

Pass FAA Written

Flight Science

Full Year (Two class periods 6-7)

- Jeppesen Flight Syllabus
- Student Grade Binder
- Red Bird Advanced Training Device
- Jay Bird Simulators
- Articles
- Video
- System Subject Matter Expert (SME)
- Private Pilot FAA Practical Test Study Guide (Jeppesen)
- Oral Exam Guide (ASA)

Goal: Private Pilot Certificate

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3 Main Areas of AOPA High School Aviation Initiative

1. High School Flight Training Scholarship Program
2. Annual High School Aviation STEM Symposium
3. **High School Aviation STEM Curriculum Development**

HIGH SCHOOL FLIGHT TRAINING SCHOLARSHIP PROGRAM

- 44 awards made, $5,000 each for initial flight training expenses
- Accomplishments - 1 IFR, 8 private pilots, 13 soloed
- Requirements – current high school students, ages 15 to 18 yrs. old, minimum 2.75 GPA
- 2018 program – opens on Feb. 1, closes on May 2, winners notified in June

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HIGH SCHOOL AVIATION STEM SYMPOSIUM

- For high school educators and administrators
- Sharing of best practices by high school educators
- Connection to industry
- Learning, networking, collaborating, sharing

The next symposium will be held on November 5 and 6, 2018 in Louisville, KY.

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AOPA HANGAR

- "High School Aviation Group"
- Online community group focused on high school aviation education
- Maintain connectivity throughout the year
- Learn about new topics
- Share lessons learned

Sample Topics:

Starting a new aviation program
High school flight training programs
Using flight simulators
How to recruit students
Drones
Building an airplane

hangar.aopa.org

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For more information:

youcanfly.aopa.org/high-school	**westmichiganaviation.org**
cindy.hasselbring@aopa.org	pcwayna@westmichiganaviation.org

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