PATH TO AVIATION

PILOTS, WHAT INSPIRED YOU TO FLY?

Was it the daily ride past your local airport on your way to school? Or a ride in an airplane with your grandfather or favorite uncle? Maybe it was the airline flight to a family vacation? Or was your passion sparked simply by staring at the blue skies and watching a jumbo jet fly overhead? However you started your adventure, sharing the dream of flying is one of the best gifts you can pass on to the next generation of aviators.

As a pilot, you're part of a select group of Americans. Less than one-third of one percent of us know how to fly an airplane. That makes you special. But who will be there to foster a young person's love of flying if he or she has no one in their lives connected to aviation? You are the answer. You can share your passion for flying and your knowledge with local students by volunteering to visit classrooms and talk with students about your experiences in aviation and potential careers.

Our schools rely immensely on volunteers like you to enrich classrooms experiences and become mentors for young people. You can outline the challenges and rewards of flying whether for pleasure or as a professional career—while helping teachers bring excitement and energy to lesson plans. You know how aviation uses core subjects to make flying a reality. Help a teacher or student learn how to make the connection too. The common denominator for all who start to fly is some kind of inspiration and contact. You can provide that. History class may seem boring until a student hears about Amelia Earhart and how she flew Eleanor Roosevelt from Baltimore to Washington, D.C., discussing current events along the way. Physics class takes on a whole new dimension when the problem involves determining how much jet fuel it takes an SR-71 to fly from Mojave, California, to Houston, Texas. And imagine how much fun English class would be if students had to spell out words phonetically like, "INDIA-FOXTROT-LIMA-YANKEE?" "I FLY!"

Take every opportunity you are given—create opportunities—to reach out to young students and encourage them to think about the joy of flying and how it fits into everything they must learn. You can plant the seeds of aviation by connecting it to history, math, science, communications, and so much more. Our schools today need all the help they can muster to keep students focused on learning. Aviation needs new flying enthusiasts and career pilots in our future to keep us strong. Together, we can turn dreams into reality and make learning practical yet fun.

MAKE THE CASE FOR AVIATION. For a pilot interested in sharing his or her experience with students, the road to the schoolhouse may not be so easy unless you know an educator with an affinity for aviation. Schools are under pressure to perform well, and administrators and teachers seek to link most classroom activities to the corresponding state's educational standards. While pilots use math, physics, science, and communications skills every time they fly, it will be up to you to make this connection clear. Before you barnstorm into a classroom, get a feel for the parts of the curriculum that overlap with general aviation by visiting your state's department of education or public schools web site. No one expects you to prepare an entire course, or even a lesson plan, but the research puts you in a better position to be a valuable resource to work with a teacher or class. Regardless of whether you fly professionally, or for pleasure, you will be an instant hit—you're a pilot! But in today's competitive school climate, if you can provide sustenance instead of a "snack", you stand a much better chance of breaking through.

MEET THE TEACHER.

If you don't have direct ties to a particular school or class, call a local middle or high school and ask about any upcoming career day, or other opportunity to talk to a class about aviation. If a teacher extends you an invitation—or once you have made connections with a particular teacher or principal—arrange to meet with that person at the school. This first contact is important in order to ensure your presentation is on target and appropriate to the class subject and age group, and to allow the educator to ask any questions of you—including a description of your aviation background and training—prior to your presentation.

At this meeting, confirm the date and time of your visit and discuss any equipment requirements you have, such as a video monitor, overhead projector, and photocopier to make handouts. Find out how many copies the school needs if you plan to make them yourself. Teachers must order equipment in advance, and they may not have specialty equipment if you are bringing in a laptop for your presentation. You also should visit the room in which you will be speaking to get comfortable with the setting.

Be sure to discuss how the teacher might prepare students for your visit. Remember the parents: They are often the key to maintaining their child's interest in aviation after you've left the classroom. Materials to take home can have a lasting impact.

FOCUS ON THE AGE GROUP.

Every age group has different needs, expectations, and abilities. Middle and high school students have reasonable attention spans and have had some preparation in math and science that help them relate to your presentation. No matter the age, students will like something tangible to take away from your visit, even if it's simply a paper airplane, an old chart, or a picture of a cool airplane.

FORM YOUR PRESENTATION.

Make it personal! Share with students some insight into your world of flying. Talk about how you got started and the fun you've had as a pilot. Tell them about a time you flew somewhere very special to you. The look on your face and your body language as you tell these personal stories will make an impression.

If you had trouble with math in school, say so! If math makes more sense to you now that you are a pilot, be sure to share that with the students, too. Use an example of the simple math you might use to plan a flight if you're addressing an age group developing those skills.

Bring aviation photographs, videos, slides, and *AOPA Pilot* magazines from your collection. If you can, leave them behind for a display, or donate them to the school.

ESTABLISH YOUR EXPECTATIONS, AND BE READY FOR THEIRS.

You're going back to school, but in a different role. Be sure to arrive early enough to set up your presentation. During your initial discussion with the teacher find out if you need to sign in at the main office or show identification. Once you're in the classroom, test your equipment and be sure your props and notes are in order. Here are some tips for managing the presentation:

- Help students understand why you are there. Everyone has expectations, so be sure to state yours. If you want, suggest that you will take questions throughout your presentation. You can put everyone at ease by suggesting how you would like them to respond: "When you raise your hand and I call on you, please tell me your name."

- Students might be impressed that you are a pilot but they'll judge you by how you act and what you say and how you treat them. Show respect to the teacher and students. Students won't respect someone who doesn't respect them. You can address your audience as "ladies and gentleman," especially in high school, to set the tone.

- Remember that the younger the age group, the more activity you need in order to keep their attention. It's helpful to show photographs, videos, or run a flight simulation.

- Get students involved with the presentation. Engage them with hands-on projects. Have student volunteers help hand out materials, hold models, and answer questions you ask them.

- When you ask for participation, try to encourage everyone. Don't exclude anyone.

- Be careful using jargon. We pilots have our own language. Be sure you translate any aviation terms into plain English.

- Dress the part. If you fly professionally, wear your uniform. If you fly for fun, you can wear a flight suit, coverall, shirt with airplane embroidery or an N-number, or flight jacket and, of course, an AOPA cap.

- Be enthusiastic and make the presentation positive. Smile. Don't belabor any negatives; address them and move on. It's important for these students to know for certain that you love flying and being a pilot.

SEND US YOUR PICTURES OR STORIES:

We want to hear about your classroom visit. If you can, send us an email with your story and maybe some digital pictures of you and the students in the classroom or out at the airport. Send your email to PATH@aopa.org or drop us a note at AOPA PATH, 421 Aviation Way, Frederick, MD 21701.

- Be sure to pace yourself to accomplish your program within the time allotted. Save time at the end for questions and answers, about 15 minutes, depending on the group size.

FOLLOW UP WITH THE CLASS.

You want to get these students out to the airport if you can. So start by writing a thank you note to the teacher, principal, and others at the school who supported your efforts.

Don't end your dialogue with students when you leave the classroom. Ask them to write to you with any questions. Leave paper and self-addressed, stamped envelopes, or your email address, for them. Some students may be intensely interested in aviation and want to meet with you again—perhaps to see a real airplane or take an introductory flight. This may prompt the teacher to work with you to develop a field trip or invite you to return for another session with the students.

This four-seat Cessna 172, used frequently for training new pilots, is the world's most popular airplane.

BASICS OF FLIGHT. Even though you can't bring a full-size airplane into the classroom, you can make your presentation a hit by starting with a model of an airplane, going over the parts, and covering the basic theories of flight. Start simple and encourage students to participate: "What do the wings do? Wings produce lift." "What does the propeller do? It produces thrust." Secondary students should all be familiar with gravity, but what about drag?

While in the classroom, you also can lead the students in a project to demonstrate flight control concepts and the four forces of flight. Have everyone build a paper airplane. Add paperclips for weight and ask the students how they think it will affect the airplane's ability to fly.

Beyond the model airplane itself, if you have access to a cockpit mockup or poster (which you might be able to borrow from your local flight school) you can use it to show students around the instruments, flight controls and radios. Perhaps point out how our standard navigation radios used for flying share the same frequency as a basic FM radio; aviation just starts at 108 MHz where FM radio ends.

Some students may be familiar with PC-based flight simulator programs from companies like Microsoft. If you are able to bring a laptop, and you or the school have an LED projector, use the program to demonstrate maneuvers and let students have a try at the controls.

Like the paper airplane, your presentation does not have to be high-tech. You can bring other props into the classroom, such as headsets, your flight bag, charts and hand-held flight computers. If you have old sectionals, pass them around for students to look at and find different landmarks. Print out the day's radar chart and make color copies for the students to forecast the next day's weather. Ask them how their predictions might affect a flight.

CLASSROOM TOOLS

Go to www.aopa.org/path and check out the "Classroom Tools" section for a PowerPoint slide presentation that you can use during your classroom visit. Feel free to use the entire presentation or just select slides.

Links to a gallery of photos for your use also can be found in the classroom tools section.

WHAT TO COVER:

- Parts of the airplane
- Four forces of flight: lift, drag, thrust, and weight
- Control surfaces, devices, their functions
- How changes to the control surfaces or Center of Gravity change the airplane's flight
- How different airplane designs reduce weight and drag
- Tools a pilot uses in flight

WHAT TO BRING:

- Aircraft model
- Cockpit or instrument panel mock-up
- Paper, paper clips, and tape for building paper airplanes (see Module 3)
- Laptop with flight simulator program
- Flight bag with headset, charts, kneeboard, flashlights, handheld GPS and/or transceiver
- Old sectional charts
- Weather graphics printouts

WHY IT WORKS.

This is your opportunity to introduce the magic of flight to students and their teacher. You're talking with middle or high school students, so give them a little credit and follow their lead. Give them ample opportunity to ask questions throughout your presentation and adjust your answers to meet their level of understanding.

A Piper Cherokee flies downwind on approach to a rural airport.

FLYING IS FUN. Here's your chance to demonstrate the best parts of flying. If possible, have a passenger videotape a local flight with you. Be sure to have your passenger film local landmarks from the air—especially the school, sports arenas, and parks—so that you can point them out during your presentation.

If possible, show a video of a pilot doing aerobatics, taken from either the cockpit or from the ground at an airshow.

Show pictures of your local airport; if you have access to a large, overhead shot of the airport layout, use that. Talk about the kinds of airplanes that fly from your airport, and show pictures of these different types. If your airport has a control tower, show pictures of the tower and some of the controllers who work there—especially if you can show them talking on the radio to pilots.

Talk about the different jobs available in aviation and specifically the various pilot jobs available. Maybe students are only aware of airline pilot jobs, but there are many more: flying executives as a corporate pilot, flying helicopters as a medevac, Customs, or Coast Guard pilot, flying search and rescue missions as a member of the Civil Air Patrol, fighting fires as a tanker pilot, teaching people how to fly as a flight instructor, and selling airplanes to people as a demonstration pilot—to name a few.

Bring photos of the places you've flown as a pilot. Mark up a chart with your longest cross-country flight and show them a flight log from that journey. Some students have yet to leave their hometown, so even a trip to your state capital may seem like a trip around the world to them.

Talk about how you learned to fly. How you got started. Where you went to learn. How long it took you. Explain how nearly anyone can learn to fly who meets the age and English-speaking requirements—even people with disabilities fly.

WHAT TO COVER:

- Pilots in flight—you, airshow pilots, military demos
- Your local airport
- Careers in aviation
- Places you've been
- Learning to fly

WHAT TO BRING:

- Videos
- Photos of your airport, your airplane, other airplanes
- Photos of people in aviation careers
- Charts and photos of places you've been
- Textbooks, logbooks, and other training materials
- Your pilot and medical certificates

FIELD TRIPS CAN BE GREAT to highlight different kinds of aircraft. If you are able to arrange a class visit to the airport, be sure to plan ahead with fellow pilots and your local FBO to show high-wing and low-wing aircraft, maybe even a taildragger. Make arrangements so each student can sit in the cockpit of at least one airplane—one they might fly during flight training. Work with their teacher to ensure proper supervision. And remember that when you fly into Class B airspace, you need to get a clearance. So when planning a field trip to the airport, keep in mind that most children need a clearance—from mom and dad—to join you for a day of adventure, even on the ground.

HOW IT WORKS.

Like anyone, when young people approach an airplane, they want to know what specific parts of the airplane do. They point to the flaps and ask questions one on top of another: "What are these?" "How do they move?" "Why do pilots use them?" Then, before you have a chance to finish, they're on to the ailerons, the elevator, the rudder, and the antennas sticking up from the fuselage. The airplane is a fascinating machine, and by walking them down the flight line you can open their eyes to the variety of airplanes that fill the skies.

If at all possible, pre-arrange to find a cockpit they can sit in. If they can move the control yoke, so much the better, but at least put them in a position to see the nerve center of the airplane. Help students imagine themselves as a pilot.

From the airplane, move to either the control tower (if you have access to one at your field) or to an FBO (fixed-base operator), where the students can see how the process of getting an airplane in the air develops.

Because of security concerns and regulations, you must coordinate a visit to the control tower in advance. Contact phone numbers for particular control towers are available in AOPA's *Airport Directory*.

At the control tower, if you pick a slower-work time, most controllers are happy to take a few moments to escort the students to the tower cab and show them their perch and what they do. Up there, students can see the radios that controllers use to talk to pilots, the monitors they use to sequence arrivals and departures, the flight strips they use to track airplanes on the ground and in the air, the telephones to call ATC

Pilots and their families check out the variety of aircraft on display during a weekend fly-in.

and flight service, and the light gun that they use to signal airplanes without radios.

At the FBO, you can visit with the staff about how many pilots they see on a given day, and where they've flown in from. You can point out to the students the line staff who service the airplanes. Arrange in advance to stop by the maintenance hangar to talk to mechanics about the work they do. If you can find an airplane with the cowl off, or an engine on a test stand, have the mechanics point out the parts of the engine and how it turns the propeller.

No matter what your destination is at the airport, it's best to save the trip for a small group of students, preferably no more than six to eight per adult, depending on age. If you have a larger group, enlist other pilots to help you, and split the group up so that each child has good access to every person and site at which you stop. And it's easier to keep a small group safe on an active ramp or in a shop.

PLACES TO GO:

- Airplane in a hangar
- Aircraft on the flight line
- Aircraft in the maintenance shop
- Control tower cab (or base)
- FBO front desk and line

PEOPLE TO MEET:

- Pilots with various jobs
- Air traffic controllers
- CFIs
- FBO front desk staff
- FBO line staff
- A&P mechanics
- Airport manager

AS A PILOT, you might fly for recreation, business, or as a career. When aviation is your job, it might not be difficult to describe how you found your calling, what steps it took to attain your career goals, and what opportunities are for growth. Even if flying is your avocation, rather than your profession, like many of us, you are exposed to a variety of individuals who have made a career in aviation. Consider every person you call upon in the course of planning and executing a flight: what do they do and how have they made aviation their life's work?

The young people you speak with may not have thought ahead to what they want to do after they graduate. But many of them will have considered their options and have a good idea of what career path they want to pursue, especially if you address high school juniors and seniors.

As one of the fastest growing segments in the transportation industry, aviation is a huge resource for jobs in virtually every major skill area. With advancing technology—such as glass cockpits, GPS, ADS-B, WAAS, and datalink weather and traffic—large numbers of talented people will be needed to keep up with ever-expanding opportunities.

AVIATION ACRONYMS

GPS: Global Positioning System
ADS-B: Automatic Dependent Surveillance - Broadcast
WAAS: Wide Area Augmentation System

We need more pilots to sustain the aviation industry for the future, but careers in aviation are more varied than just pilots. The numbers tell the story: As domestic air travel returns to its pre-September 11 levels, the general aviation fleet is growing at just over one percent each year and the turbojet fleet is growing at about 3.7 percent, thanks to projected demand for very light jets and traditional business jets. The U.S. currently has more than 650,000 pilots—of all types and ratings—but the FAA said that the number of jobs in commercial aviation was expected to grow to more than 9 million by 2005!

In addition to well-known careers in the cockpit of both commercial and general aviation aircraft, young people might consider other important careers related to flying. For example, emergency medical services, law enforcement, news and traffic reporting, surveying and mapping, agricultural services, pipeline patrols, forestry and wildlife management. They also might consider ground support roles, avionics, maintenance and design.

When you can visit with secondary students in their classroom, you are reaching them at a perfect time to plant the seeds for a career in aviation. Urge them to continue their studies, because it can only help them pre-

pare for the training they will need after high school, either in a technical, vocational or university environment.

Check out the inside-back cover of this handbook for contact information for AOPA to request "Careers in Aviation." This brochure is available for students, guidance counselors, parents, and anyone with an interest. "Careers in Aviation" outlines different jobs and their educational requirements, as well as identifies potential employers. Some of the careers you can discuss include:

Air traffic controller
Airframe and powerplant mechanic
Aircraft manufacturing technician
Aerospace engineer
Avionics technician
Agricultural pilot
Airline pilot
Air freight pilot
Airport manager
Computer programmer
Corporate pilot
Flight attendant
Flight instructor
Financial manager
Flight dispatcher
Meteorologist
Operations chief
Security officer

A corporate pilot prepares his airplane for flight.

HOW WOULD YOU LIKE TO BE INSTRUMENTAL IN BRINGING A NEW PILOT INTO THE RANKS?

AOPA's Project Pilot program was developed to help members successfully identify and mentor future pilots. Backed by the resources of AOPA and *AOPA Flight Training* magazine, Project Pilot mentors help guarantee the best possible introduction to flying for the students under their wings—from first flight to certification. When you identify someone with a desire and ability to pursue a pilot certificate, enroll them and you online to join Project Pilot.

Links to many resources are available at AOPA's web site, **www.projectpilot.org** including:

- How to start learning to fly
- Finding a flight training program
- Information for pilot mentors and student pilots
- Frequently asked questions
- Project Pilot Update, where you can access an expanded version of the regular *AOPA Pilot* magazine feature, see photos of Project Pilot mentor-student teams, and read success stories of former Project Pilot students who are now certificated pilots
- Photo guidelines, for submitting photos of you and the student(s) you mentor
- Resources for Project Pilot mentors and students

Contact Project Pilot through AOPA's Pilot Information Center at 1-800/USA-AOPA (872-2672).
Visit Project Pilot online at www.projectpilot.org

FREE OFFER FOR *AOPA FLIGHT TRAINING* MAGAZINE

If students are ready, and have the resources, help them reach the sky early by introducing them to *AOPA Flight Training* magazine with a free, six-month subscription and introductory membership to AOPA.

Students receive six copies of this critically acclaimed, monthly magazine filled with usable, real-world information from experienced pilots. Six risk-free months of AOPA membership opens up all of the resources of the world's largest aviation association. See ft.aopa.org/FTfree or call 1-800-USA-AOPA (872-2672) for complete details.

ACTIVITY: Wheelbarrow pilot

Photocopy this activity for classroom use.
Go to www.aopa.org/path for student worksheets.

SINCE YOU CAN'T TAKE A CLASSROOM IN THE AIR,

you can duplicate some of the sensations associated with controlling an airplane with this activity.

MATERIALS:

Wheelbarrow
Model airplane

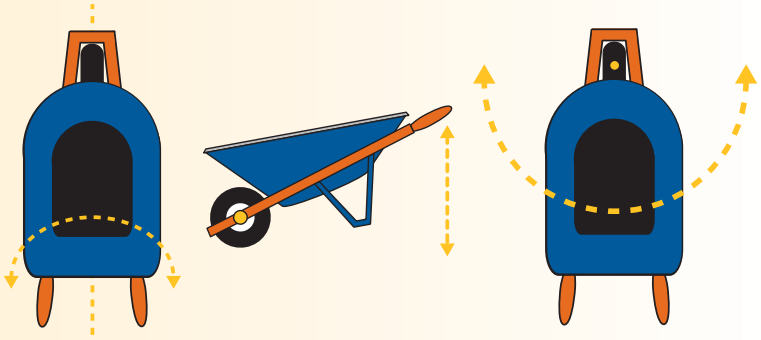
TO DO IT:

- Divide the students into teams of two.
- Each team takes a turn at the wheelbarrow: One person sits in the wheelbarrow, holding the model airplane "straight and level," and the other person takes the handles (control yoke) of the wheelbarrow to manipulate it.
- As the person in the wheelbarrow banks the airplane left and right, the person at the "controls" of the wheelbarrow tips that person (gently) left and right. This simulates turning the control wheel or stick in the airplane into left and right banks, and gives the person in the wheelbarrow a similar sensation as they would feel in the airplane when the control wheel actuates the ailerons on the wings.
- As the person in the wheelbarrow pitches the airplane nose up and nose down, the person at the controls also pitches the wheelbarrow back and forward (never coming close to dumping the passenger inside!). This simulates the feeling when a pilot pushes forward or pulls back on the yoke, activating the elevator on the rear of the airplane.
- As the person in the wheelbarrow yaws the airplane, turning the nose left and right, the person at the controls spins the static wheelbarrow left and right on its front wheel. Again, this simulates what it feels like to yaw (maneuver the airplane about its vertical axis) the airplane with the rudder pedals inside the cockpit.
- In order to make a "coordinated turn" the pilot must use bank to start the turn and yaw to align the airplane's fuselage with the direction of the turn.
- Demonstrate how it would feel for these control inputs to work together, using the model airplane (by the person in the wheelbarrow) and the wheelbarrow itself (by the person at the controls.)

Note: Adapted from "Women/Leaders Take Flight" seminar, presented by Linda Castner.

NOTE:

If you cannot find a wheelbarrow—or school policy won't allow students to climb into one—find a shallow cardboard shirt or gift box and place a doll or action figure in the open box. Students can manipulate the box like the wheelbarrow to see how the controls might work.



AOPA's Piper Archer flies over suburban Maryland.