



MAKING AVIATORS

The formative first 25 hours

By Jason Miller

The Power of Primacy in Flight Training

The law of primacy states that the first way we learn something is often the way we continue to do it. In aviation, this principle is not just a psychological quirk — it's a powerful force that shapes a pilot's long-term behavior. Once a habit or technique is learned, especially early in training, it becomes deeply ingrained. Even if that habit appears to have been replaced, it often lies dormant, ready to resurface under stress or pressure. In this way, primacy isn't just persistent — it can be unyielding.

Altering a behavior established under the influence of primacy is not a casual undertaking. It's comparable to correcting a bone that healed improperly. To set it right, you must first break it again, realign it, immobilize it, and allow time and structure to solidify the correction. In flight training, this process translates to immersive, often intense retraining, followed by meticulous standardization and long-term reinforcement.

This is why the early stages of private pilot training — especially the first 25 hours — carry immense responsibility for the CFI. During this phase, we don't just teach how to operate an aircraft;

we establish a student's foundational relationship with flying itself.

These initial hours set the tone for everything that follows. From basic control inputs like how to hold the yoke or position the feet on the rudder pedals to managing the throttle or scanning for traffic, these are not just techniques. They're habits being formed. We also teach essential aeronautical skills: aircraft control across the airspeed envelope, stall recognition and recovery, and cockpit discipline. But beyond mechanics, we're shaping mindset, judgment, and risk tolerance. We're not just training pilots — we're crafting aviators.

Ritual, Standardization, and the Making of Aviators

Standardization is more than a tool for consistency — it's a pathway to transformation. Through ritualized behavior, students can begin to shift their identity from casual participants to serious practitioners of flight. This is the essence of becoming an aviator.

Anyone who has ever worn a uniform — whether military, school, or professional — understands the psychological shift that comes with donning that identity. It prepares the mind for performance. For the majority of general aviation pilots who fly around the periphery of their day jobs and personal lives, the airport can become a battleground of distractions. The discipline of ritual is what helps them refocus and perform with safety and precision.

Start building these rituals from day one. In those formative 25 hours, ensure each lesson begins with a thoughtful review of the PAVE checklist (Pilot, Aircraft, enVironment, and External pressures). Teach students to adopt this as a foundational mental model for every flight. Insist on full, structured weather briefings, not just a quick glance at the METAR and TAF. Standardize how they gather weather data, how they conduct preflights, and how they approach each stage of flight preparation.

Create habits around structured briefings: passenger safety, pretaxi, CIGAR, and pretakeoff. The goal is to establish a disciplined rhythm to their flying, one that supports safety, builds confidence, and makes proficiency easier to maintain over time.

By embedding these habits early, we're not just preparing students to pass checkrides — we're preparing them for a lifetime of safe, professional airmanship.

Where to Look, When to Look There, and the Lindbergh Reference™

Every control problem in an airplane has a visual solution. It's all about knowing *where to look* and *when to look there*.

There's an old aviation saying that sums it up perfectly: The only difference



between a good pilot and a bad pilot is that a good pilot fixes the mistakes before the bad pilot even notices them.

Nowhere is this more evident than in aerobatics. Aerobatic pilots are masters of visual flying, using precise visual cues and well-defined reference points. If you look at their planes, you'll notice a sighting device on the left wing, which helps them visually align the aircraft with the horizon or other reference points. It seems obvious, but few pilots truly master visual reference flying. Yet, this is how airplanes are meant to be flown.

These visual references are universal across most aircraft and absolutely critical to instill in your students during their first 25 hours. One of the most overlooked tools? The left-wing view.

I constantly remind students to use it:

- **During climbs**, to set and maintain the correct V_Y pitch attitude.
- **At level-off**, to confirm the aircraft

is actually level — and doesn't just "feel" level.

- **During descents**, to establish and hold a new sight picture and avoid creeping back to level flight.

The left-wing view is simple, powerful, and dramatically underused. There is also a small, easily overlooked area in the side of the forward window of many aircraft. This was famously used by Charles Lindbergh when flying as an airmail pilot with mail bags restricting his forward view, and also during his historic Atlantic crossing with no forward visibility over the nose. That little sliver of view might just be the most valuable visual reference in the cockpit, and it has gone by many names. Rod Machado calls it the "pizza slice." I used to call it the "golden reference" and now call it the Lindbergh Reference™.

Whatever you call it, most aircraft designers deliberately carve out that



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portion of the panel or window frame for good reason. When an airplane pitches up — during a climb, slow flight, stall, or soft-field takeoff — forward visibility often disappears as the horizon vanishes behind the cowling. This is when the Lindbergh Reference™ comes into play. Pilots can shift their view to that cutout and still clearly see the horizon, giving them the visual cues they need to fly accurately even without a direct view ahead. Pitch, roll, yaw — it's all there.

Instruct your students to use it during climbs, slow flight, stall recovery, soft-field takeoffs, landings, or any time a nose-up attitude restricts the forward view. Mark reference points directly on the window with a dry-erase marker or grease pencil: one for the pitch attitude required to maintain V_Y , one for level cruise, and one for descent. These simple marks will train them to look in the correct place when they have no other visible reference. They will build both muscle memory and visual confidence during some of the most critical phases of flight.

In those crucial first 25 hours, disconnect students from their dependency on instruments. If you're in a steam-gauge airplane, cover the primary flight instruments. Don't use suction cup covers — just a single piece of paper skewered over a knob. Let them look if they really need to, but they'll have to physically remove the paper. You'd be amazed how well this breaks the habit of fixating inside the cockpit.

In a glass panel aircraft, simply darken the PFD and use backup instruments for occasional checks.

By doing this, you're not just teaching them *how* to fly — you're teaching them *how to see*, how to “get out of the cockpit.” You're reinforcing a critical truth of aviation:

- **90 percent of your attention should be outside the airplane.**
- **Only 10 percent should be used to check the data inside.**

You're connecting them, viscerally and permanently, to the concept that **pitch + power = performance**.

As power decreases, your students will see pitch increase. They'll feel the change in control pressures. They'll sense the rudder input required to stay coordinated. Bit by bit, they begin to internalize the relationships between pitch, power, coordination, and airspeed. You will almost see your student connecting the dots as they are forced to adjust the pitch while also needing to adjust their pressure on the rudder, thus building the fundamental connection with sight picture, speed, coordination, and integrated flight instruction. They work. And they lead naturally into the next step: stall training.

Introducing the Stall

Once your students are comfortable flying at MCA — and seeing coordination visually — it's time to push just a bit further. What happens when they slow down a little more and pull a little harder? If they've been watching the Lindbergh Reference™ for yaw, the stall will break straight ahead. That's your moment to teach: **Stalls are recovered with pitch, not with power.**

Don't touch the throttle. Simply reduce the angle of attack by easing off the back-pressure. Bring the airplane back to MCA. Keep the reference point steady — no yaw. Do it again. And again. Help your students tune in to the sound of the slipstream fading, the feel of mushy controls, and the stall warning horn followed by tail buffet.

You're not just teaching them to recover from stalls — you're teaching them to *recognize the signs* well in advance. You're teaching them *where to look, what to feel, and how to react*.

How to Hold the Yoke, Set the Seat, and Use the Throttle

All of this training starts with one simple truth: You can't shoot pool if the balls are still moving. Set up the cockpit properly before you take off. That means:

- **Consistent seat height:** Teach students to adjust it every time, not to just accept the last pilot's settings.
- **Foot position:** There are two positions: one for taxiing and one for flight.

Basic Aircraft Control and Stall Recovery

Teaching basic aircraft control in a light single-engine airplane should be straightforward, but only if you take the time to lay a solid foundation. Begin with the essentials: coordinated use of flight controls, management of left-turning tendencies, and the primacy of one simple, critical fact: **Stall recovery is about angle of attack. Release back-pressure and you recover the airplane.**

If you build these principles into your students from the beginning, everything else — ACS maneuvers, checkride prep, and confidence — comes easier. Here's how to do it right.

First, reduce reliance on instruments. Remove quick-reference access to the primary flight instruments (as discussed earlier) and leave only the altimeter visible. Mark a simple **X** in the Lindbergh Reference™. This single mark becomes your student's visual anchor. It shows pitch and yaw in a way no instrument can.

Use that X and move the airplane through the entire speed range — from cruise down to minimum controllable airspeed (MCA). Demonstrate the relationship between pitch and power. Slow down deliberately. Cruise power to 2000 rpm, then 1800 ... 1500 ... and so on. Then back up again.

- **Throttle control:** Know when to grip it, and when to let go.
- But perhaps most importantly, **teach them how to hold the yoke.**

One of the most common and costly bad habits in private pilot training is an overly tight grip on the yoke. A death grip leads to a cascade of problems such as poor trim usage, inability to hold altitude, and fighting the airplane instead of flying it.

The yoke should be held like the hand of a newborn — firm but gentle. If your student is clenching it, try this simple exercise: Have them place a pen across the first and third fingers, with the second finger over the top. It's uncomfortable to grip the yoke tightly this way — and that's the point. It trains them to fly with finesse and use trim to control pressure.

Perfecting the Art of Instruction

In the end, this isn't just about passing



a checkride. It's about what you bring to the cockpit: your clarity, your consistency, and your commitment to building habits that last a lifetime. It's about creating aviators: people who respect the airplane, ritualize their actions, and fly with purpose. That starts in hour one. Teach them where to look. Show them how to feel. Give them the tools.

Humans have been flying single-engine airplanes for nearly 125 years, and yet we still find it challenging to teach these basics. How to sit in the airplane. How to control it through the speed range, manage the left pull of the engine through various speed ranges and power settings, and deal with stalls

if they should occur. It's fairly simple. These lessons, taught early and well, are the foundation of all good flying. **NAFI**

Jason Miller is a CFII with more than 20 years of flight instruction experience. He is the founder of The Finer Points, a leading resource for pilots seeking to refine their flying skills and deepen their understanding of aviation. Through The Finer Points podcast, YouTube channel, and training programs, Miller combines storytelling, real-world experience, and FAA standards, making complex topics accessible and memorable. Miller was named the 2009 FAA Flight Instructor of the year for the Western Pacific Region. When he's not teaching, Miller can be found flying around the Western United States, speaking at aviation events, and producing educational content for a global community of aviators. Learn more and download the free ground school flight training app at learnthefinerpoints.com.



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