The Art of Teaching & Learning

The following covers the relationship between student and instructor and includes my observations and conclusions.

When I started flying my Bensen Gyrocopter in the 70's all I kept hearing and reading was accidents and incidents. As the years continued so did the saga of Gyrocopter accidents and fatalities.

As other Gyroplanes/Gyrocopters designers marketed their make and model Gyroplanes in the US market the accident rate continued therefore establishing a terrible safety reputation as it continues 40 years later. Even as more flight instructors became available the porpoising and power pushover accidents became the dominant cause of the many Gyroplane fatalities. This being a concern for the Federal Aviation Agency- FAA is one of the primary reasons for not allowing light sport Gyroplanes in this country fully assembled and Ready To Fly.

For several years now there have been a lot of European Gyroplanes of different makes and models in kit form being constructed and flown in the United States. The European Gyroplanes are very well designed and very stable in the air however the accident rate has not improved much that I have noticed. The power pushover and porpoising accidents are pretty much nonexistent with these new European Gyroplanes. The common accidents with these new European Gyroplanes are rotor blade flap on takeoff and roll over on landings. "WHEN PROPERLY APPLIED," the takeoff and landing procedures, that have been around since the introduction of the single place Gyrocopter have been proven successful over the years. They can be applied to any two bladed teetering rotor blade system that most Gyroplanes incorporate today.

These new European Gyroplanes continue to add to the accident/incident rate with either rotor blade flapping on takeoff resulting in loss of control and roll over or roll over after landing; both resulting in substantial damage and possible injury.

Gyroplanes can be very unstable during ground operations especially during takeoffs and touchdowns during landing. Being a tricycle gear configuration and very short coupled, especially with the single place Gyroplanes and the side-by-side seating arrangement. The tandem configuration has a longer distance between the nose wheel and the main wheels and

that provides more stability to prevent roll overs.

If you try to fly a Gyroplane like an airplane in a flat attitude on takeoff and landing, it will increase the chances of rotor-blade flapping on takeoff and roll over upon landing.

The nose wheel should be the first wheel off during takeoff and held at a high attitude. During Landing the nose wheel should be held at a somewhat high attitude and the last wheel to touch the payment. This is a soft field takeoff and a soft field Landing configuration.

I encourage all my students to utilize that style of takeoff and landing using a little power just before final flare on each landing. Especially with Gyroplanes using unitized steering where nose wheel is coupled with the Rudders. With most U.S. Gyroplanes having tail wheels and low RPM pre-rotators, forces the pilot to use good rotor blade spin up management during the initial take off. This becomes common practice during the teaching-learning process and is Paramount for a safe take off, especially the first take off of each flight.

I would prefer a student taking off slightly on the backside of the power curve with proper rotor RPM and Runway alignment gaining proper climb speed and ground effect with a chance of settling, ,.rather than taking the chance of too much forward cyclic, flat attitude flat rotor disk, possible low rotor RPM and High Ground speed. There are only a few basic Maneuvers along with some takeoffs and landings to become safe and proficient when flying a Gyroplane.

It seems obvious to me as a flight instructor that Gyroplane accidents are not related to make and model as was earlier thought, with the Bensen Gyroplane. I've experienced the following Gyroplanes in the past 40 years, training building and flying the Benson, Air Command, Rotary Air Force (RAF), Sparrow Hawk and now the present-day European makes and models. In my opinion, there is a serious ongoing Flight Training issue that's the cause of the bad reputation of the sport. Perhaps it's the quality of training or the lack of sufficient flight hours and experience in make/model.

Of course there will always be a small percentage of Pilots that push and exceed the aircraft's capabilities.

Having to take the FAA F.O.I. fundamentals of instructions written test. One would find the subject matter of this test anything but fundamental.

Teaching can be a challenge at times and so very rewarding both for the instructor and by far most important for the student. Proper effective Communications is very challenging. Most often your personality will control the method of how you teach and in many cases this

creates a conflict with the students personality regarding the way that person learns.

Before I begin instructing a new student, I'll inquire about their preferred methods of learning. It could be either by explanation discussion, training videos or actively learning by doing. Learning by doing is by far the most productive method. Just a general conversation at first will enlighten you both regarding the comfort zone.

The new student has some apprehensions:

1. Being at a new location
2. Learning a new sport
3. Unknown expectations
4. Putting your full trust and safety in the hands of the flight instructor

Recommended Guidelines for teaching students with no prior experience

Begin with basic understanding all the flight controls in the following order.

1. Cyclic, rudders and this should be done before flight.
2. Flight Training should begin with the student learning the cyclic control only, with the assistance from the instructor. Concentrate on takeoffs and landings and pattern work.
3. Once safe consistent cyclic control is accomplished then you can add Rudder coordination with the cyclic controls, still doing takeoff and Landings.

The instructor must share the knowledge not try to impress the student.

Do not be opinionated.

During the initial primary Flight Training, based on very limited knowledge and experience, the student's reactions and movements of the flight controls will be jerky and mechanical.

As the student becomes more experienced with reaction time and control inputs, his/her control movements will become smoother.

This change in behavior comes from feeling what the Gyroplane is doing as it moves in various directions in small increments. The Gyroplanes rotor disc is independent of the rest of the aircraft regarding movement, therefore creating a lag in control response. You more or less fly by the "seat of your pants". Remember you fly the ROTOR DISC not the fuselage.

The major difference between a Gyroplane and a fixed-wing aircraft, takeoff is that full

power is not applied at the beginning of the Gyroplane takeoff run. The power is only applied as fast as the rotor will accept the incoming air flow.

This tactile touch control is sometimes very challenging for the student to achieve and may require extensive amount of training/practice. Remember the cycle control is moved with small pressures induced, instead of large movements.

(FLIGHT INSTRUCTORS ABILITY TO STAY OFF OF THE CONTROLS AS MUCH AS POSSIBLE, WHILE FLIGHT INSTRUCTING.)

Before I first begin flight instructing, I had accumulated approximately 2000 hours in my Bensen Gyroplane. I had also spent several years training in the Bensen Gyroglider. For those of you that are not familiar with that, it's a Gyroplane frame that seats two people side by side, only having the cyclic control and nose wheel steering. This Gyroglider is attached to a vehicle with a 75-foot good rope and is towed back and forth on the runway. We had very good results with this style of Flight Training.

Some of those many Pilots I trained back in the 80's and 90's are still flying today.

I'm sure some of today's flight instructors would get a chuckle out of reading this but it was our only choice at that time.

In 1989 I became a FAA certified flight instructor for Gyroplanes and I also was proud to have a Parsons tandem Gyroplane trainer, powered by a two-cycle McCulloch drone engine 90 horsepower.

I remember a few of my first students very well even with as many years of flying Gyroplanes and the many people I trained in the Gyroglider, this was in many aspects quite an experience.

I can recall as a new flight instructor just starting training in a powered Gyroplane tandem trainer. I was challenged by and learned from all my students. If the instructor accepts learning from various students, the benefits are shared by all. Remember the student and the instructor must work together.

Allowing the student to have as much control of the Gyroplane as is SAFE, is one very important skill a Gyroplane flight instructor must achieve. This may require many hours of flight instruction by the CFI.

If the flight instructor continues to manipulate the controls during flight instructions,

he will give the student a false sense of flight control imputes. The result can be a serious flight control problem especially during the students first solo flight. I have had to give transitional training to pilots that have been exposed to this situation.

When teaching in a Gyroplane that has heavy control stick forces, the flight instructor can continue to make slight control inputs without the student being aware, because of the control inputs being so minut. These control stick inputs by the CFI for the most part will not be felt by the student. The instructor should always explain the control Corrections that are administered at that time.

As the Flight Training continues with the same student, after several hours the flight instructor will be able to predict the students reactions and control inputs.

This allows the student to become more in control with less input from the instructor. THIS IS PARAMOUNT!!!

Not all good gyroplane pilots make good flight instructors.

A few of Ron's many students