GLIDING NZ COACHING

FURTHER
FASTER
HIGHER

Gliding New Zealand

Introduction to cross country coaching

Version 1.01

Introduction: why coaching?

To learn to fly, whether in a sailplane, light aircraft, microlight, balloon, helicopter or any other flying machine is a fascinating challenge. It requires study, practise, self discipline and a measure of guts to become a safe and competent pilot.
Each type of aircraft will then lead the pilot down a particular pathway. If, for instance, you've learned to fly in a Cherokee then you may well develop your skills as a bush flying pilot, or you may turn to aerobatics, towing gliders, or even commercial operations.
The newly qualified glider pilot in New Zealand has two obvious choices: he can become an instructor, or he can become a cross country pilot. Choosing to do neither isn't really an option. If you're not going forward, you're going backward, and p ilots who stop learning after their first solo flight are likely, sooner or later, to become bored, disillusioned with the sport and give up gliding. It has long been suspected that this leads to the high dropout rate amongst new solo pilots that we experience in gliding clubs.

So how do we help these new solo pilots to become active cross country soaring enthusiasts, pursuing the sport? Within traditional gliding clubs this has proved to be a problem; not just in New Zealand, but across the world. Active ab-initio instructors are rarely in a position to teach cross country soaring, because they are too busy instructing pre solo students. Gliding clubs themselves are often preoccupied with the business of trial lesson flying and basic instruction, to the detriment of promoting the sporting side of gliding.

Hence the soaring coach. The role of the coach is to help newly trained pilots to attain the levels of skill and airmanship required to take part in the sport of cross country soaring. The coach should therefore be an excellent soaring pilot, with a proven ability to fly safely across country in a variety of weather, soaring systems, types of terrain and different sailplanes. At the same time he should have some of the qualities of the very best instructors: accurate "by the book" flying skills and technical knowledge, sound airmanship, self discipline, and an ability - indeed a passion - to transfer his understanding of soaring to his student.

It is rare to find all these qualities in club pilots. It is, however, possible to help motivated and experienced cross country pilots acquire the skills and knowledge to enable them to start on the road of becoming a good cross country coach. The purpose of this manual is to set out in detail what is required of a coach, outlining the role as described in the MOAP and expanding the details. It makes suggestions as to areas of focus, teaching techniques, best practices and pitfalls to avoid whilst coaching. It aims to represent both the collective views of the GNZ executive and the current GNZ national coach: as such it cannot, and is not intended to be, a complete and unbiased document! There are many different approaches to soaring, and you have to choose a way in which you wish to operate. However despite these shortcomings I hope this document will prove useful to the aspiring coach.

A note for the female pilots, instructors and coaches: for economy and clarity of writing this document uses the male form of the personal pronoun throughout: his, him etc. This in no way implies that only men are any good at this sport - as any coach worth his or her salt knows.

Required flying skills

Coaching in gliding isn't like coaching in most sports. Occasionally, with an advanced student, you may well be able to subtly shape and guide his study and practise, helping him to improve his performance: however, you are much more likely to spend all your time working with pilots that can't actually fly very well at all! This means that, just like ab-initio instructors, your flying must set a good example to the less able or inexperienced pilot.

The MOAP suggests that accredited coaches must fit the following requirements:

- 40 hours solo flying in the last two years;
- Three 300km or longer cross-country flights;
- At least six successful out-landings;
- A minimum of 300 hours gliding experience;
- A minimum of 18 years of age;
- Possess the personal characteristics that in the opinion of the Regional Head Coach will make them a good coach.
- A coach does not necessarily have to be rated in two seat gliders. Lead and follow coaching from a single seat glider or goal / task setting, briefing and debriefing from the ground are all effective coaching techniques.

The first four requirements might give you some idea of the standard of flying skills needed. Bear in mind the additional workload of either flying with a student in a two seater (whether or not the coach is P1) or flying in company with students in single seaters can bring significant extra stress to a cross country venture - an occupation that may already prove difficult and stressful. This can result in poor decision making, incidents or even accidents: all things that we want to avoid.
It is therefore important that anyone who is involved in coaching, either in two seaters or coaching from a second single seater, has enough experience and flying skill to be unfazed by a crisis. Currency and experience are vital: the requirement for 40 solo hours over the last two seasons is an absolute bare minimum. I would suggest an annual target should be in the region of 100 hours or more of cross country flying, especially if the pilot or coach wants to improve further. This implies dedication to the cause: I know it's difficult, but that is why we soar, isn't it? At least we are operating in one of the finest soaring environments in the world: lack of practice due to poor weather conditions shouldn't be an issue.

To return to the flying skills themselves the following areas of expertise are vital:

- *An extremely good look out at all times*
- *Good handling skills, with precise control of pitch attitude and balance*
- *Competent on the launching methods used, current at dealing with launch failures*
- *Competent at field selection, field landing and, if appropriate, aerotow retrieves*
- *Competent at flying circuits and approaches*
- *Confident and comfortable with stalling, spinning, and the grey areas in between the two*
- *Safe when ridge soaring, even when under pressure*
- *Competent at reading the sky and centering thermals*

This list of skills is only a starting point:, but don't be daunted, because most of us will fall short somewhere: there is always room for improvement.

Knowledge: finding the information

For those coaches who haven't gained instructor ratings (and perhaps for those that have) I would recommend that you read the BGA's instructing manual. As a coach - and not an instructor - you are not expected or rated to teach basic flying exercises: however, remember at the same time that you must take responsibility for the safe conduct of the flight. If the two seater crashes you are going to get hurt, and if your student has an accident in a single seater flying in company with you then at the very least you will look stupid. At worst you might just be held responsible. This means that you must understand exactly what your student is doing with the aircraft at all times, therefore you must posses some instructor skills

The BGA manual is an excellent resource for those wishing to improve their understanding of how best to perform mundane tasks such as taking off, flying a circuit, recovering from a stall and so on. There are right ways and wrong ways to go about these things: the "right" way is the one proven by experience to result in the least accidents. It is perfectly possible to get into the habit or doing something the "wrong" way - and get away with it. For a while. So please study, tidy up your flying, and pay attention to recommended standards and procedures. You owe it to your student, and it may save your own life.

Cross country soaring skills are, of course, essential. Coaching soaring is nothing like most of the other forms of sporting coaching that you may come across. One needs to be a skillful soaring pilot merely to survive in the New Zealand cross country environment. It is not possible to coach the sport unless one can perform well, hence the requirements listed in the MOAP: 3 x 300km cross country flights, six successful out landings. As stated before, this is a rock bottom experience level, but one has to start somewhere! Of course the challenge runs deeper than this: in order to teach cross country soaring a coach also needs to understand why he flies in a particular way or decides to take this course and not that one. There are many expert cross country pilots - indeed, some of the very best - who have no ability at all to explain what they are doing. It doesn't seem to slow them down!

This manual contains very little information on soaring techniques: there isn't room. My own ideas on the subject are contained in the Soaring Engine series of text books, where I've set out the information that a cross country pilot may need in the simplest and most digestible form possible. This manual was produced with GNZ's understanding that this set of text books would be recommended as a starting point for coaches and new cross country pilots: a basic x-c manual.

There are, many other texts on the subject available. You don't have to buy my book! You'll find a bibliography at the end of this document. Unlike basic handling skills there are many aspects of soaring where there is no "right" way to do it. Some techniques work well in some conditions, some in others, and there is always the effect of probability to take into account. This suggests that all cross country pilots may be able to contribute ideas and techniques to our domain of knowledge. I'm always looking for new ideas and different ways of describing the sky we fly in, so if you have an insight please pass it on.

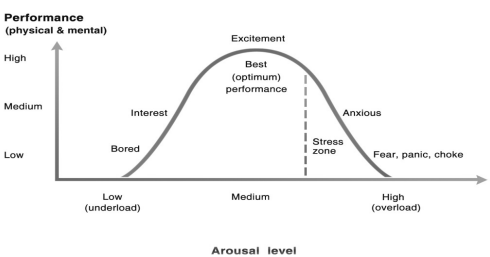
Coaching principles - some of the basics

Every coach will have a different style and his own way of approaching a student. However there are a few fundamentals of sports psychology that particularly apply to soaring. If you can remember and apply the following simple ideas you'll probably be more successful, both in your own flying and in the coaching environment.

The arousal / performance curve or "you can't fly better by trying harder"

Soaring across country is what I think of as a "performance" skill. When things get difficult, you can't pull over, put the handbrake on, and check the manual - or stop, make a cup of tea and mull it over. This makes it a fascinating problem: you have to keep going, perform well - *right now!*
It seems unfair that when engaged in a performance task you cannot do better by "trying harder". It doesn't work - usually the harder you try the worse you perform. Sports psychologists call this the arousal / performance curve. You must understand this if you are trying to achieve excellence in any performance discipline - or coaching others.

The classic "Arousal versus Performance" curve



Low levels of arousal result in poor performance: this is obvious and easy to see on the airfield. When an experienced pilot forgets to put the wheel down, or takes off with the canopy open - as a result of some distraction - this poor performance is often due to the fact that the pilot isn't really engaged with the task. He's done it so many times before...and is faintly bored with the details. The more current and experienced the pilot, the worse this problem can be.
We know how to deal with this: we use checklists, procedures and routines. It doesn't matter that you've done it a hundred times already today: you do the checklist or procedure again, religiously, and you *pay attention.*

Moderate levels of arousal bring good results - the pilot flies as well as he's ever going to - but high levels of arousal can destroy a pilots ability to fly. Imagine, for instance, being unexpectedly dumped out of a wave system into some gnarly valley deep in the mountains. You don't know exactly where you are, or which way is best to go, and you're down in the gloom underneath a ragged 7/8 cloud cover, close to the rocks, getting pounded by rotor turbulence. You know how much of a challenge it is to perform well in these circumstances, and how easy it is to make poor decisions and for the flight to go to pieces. This is a good example of being on the wrong side of the arousal / performance curve, where the ability to perform reduces drastically.

I'm sure you can think of many other examples yourself - almost every stall spin accident, launch failure accident, field landing accident - in most cases the pilot has performed so poorly that it's hard to imagine how it could have happened, and hard to imagine yourself making the same mistake. Unfortunately the arousal / performance curve applies to all of us, even the best. I'll say that again just in case you didn't get it. All of us - so watch out.

It's worth listing the some of the giveaway symptoms of being overstressed in the glider:

Physical tension, gripping the stick
Handling deteriorates - unable to thermal, or to hold attitude / speed, or to co-ordinate rudder with stick
Failure to look around - at worst, tunnel vision (yes, real tunnel vision!)
Deafness - the pilot cannot hear radio calls, the gear warning horn etc
Inability to make decisions (which field?)
Panic (look up the negative g accident history)

If you want to perform well you must plan your flights so as to avoid these problems. Think ahead - don't let yourself get behind the game. Know in advance where the landing areas are and how to find them in a hurry. Fill your flight with "what if" scenarios. What if the wave isn't working on that leg, where the cloud is 8/8 and there are mountains sticking through it? What will I do? What will I do if the rope breaks just over the trees there - at what speed will I fly, where will I point it? What will happen if somebody flies into me during this competition? Can I get out in a hurry and open the 'chute? Always look for the potential modes of failure and plan for them. When the worst happens it isn't so bad, not quite so stressful, because you have a planned way out of the situation. Guess how I know this? I've made almost every dumb mistake in the book - accidental spins, field landing incidents, a mid air collision - and survived because I always expected things to go wrong and planned for it. Well, usually...sometimes I just got lucky.

This goes double for your students. You may have to think for them - in the two seater, when flying in company, or even when task setting and supervising. Even when just moving gliders around on the ground. The best instructors look out for their students automatically - and you must learn to do the same. This is a big challenge, and in fact is probably the heart of being a good soaring coach.

So learn to monitor your own position on the arousal / performance curve, and then start watching your students. Remember that they are only going to learn when they are at a suitable level of arousal - push them too hard and not only will they stop learning but they might well surprise you by doing something incredibly stupid and probably dangerous! This caution and observation of the student is completely normal, the stock in trade of any competent coach or instructor.

Pre - learning: the "Blink" response

As quick as you can, answer the following questions:

What is the capital of France?
What currency do they use in the UK?
What is 24 x 35?

Did the last question stop you in your tracks? But I'm sure you could answer it - eventually. There is a useful model of brain activity that splits our thought processes into two types. "Type one" thinking depends on quick pattern recognition, memory and intuition. You "just know" the answer. Motor memory skills fall into this area as well.
"Type two" thinking is where we wheel out the big guns of the cerebellum: you should be able to work out what 24 x 35 is (840 - just take a moment to remember this...), but you need a clear space and a little time to think about it. Perhaps a pencil and paper...There is no way that you'll ever be able to do this whilst climbing up a tricky ridge, or flying a circuit into a small field because the processing takes up most of your conscious mind.

When you learn a new skill even the simplest tasks may take you into the "type two" style of thinking. Think about how you put together a final glide. Do you remember how you had to study MacReady theory, learn how to use your computer, "work it all out' - before you could go practise in the air?. That was "type two" thinking. Now, of course, you can quickly and easily set up the glide on the computer and, what is more, you'll spot immediately when something isn't right: "type one" thinking, intuition, "just knowing" - what has been called "the Blink response".

Inexperienced pilots are constantly on the edge of the "type two" style of thinking. They don't have the answers laying just to hand as you do. Consequently you need to either take them through the problems step by step in the classroom or feed them the answers in the air - they are not going to work out difficult problems or learn complicated things whilst they are flying. Even something as simple as working out the answer in advance and then memorising it can benefit. How did you learn your pre flight checks? Your multiplication tables?

If you quickly refer back to the previous section on the arousal / performance curve you can now start to see how a bad instructor or coach can completely destroy his student's performance or ability to learn - with devastating results on their confidence and motivation. You may even put them into a risky situation. It's easy to push a pilot into a very high state of arousal, even quite unconsciously, by expecting them to do something they cannot do, or to know an answer to a problem that they cannot work out in the air. This results in a "brain crash" - everything stops. If the pilot is solo, the glider may then also crash...

A good instructor or coach will be aware of his students level of understanding, degree of arousal and state of mind. He can then pitch the difficulty of the task or the flow of information accordingly, knowing that nobody in the P2 seat is ever going to be able to think very clearly whilst airborne. This concept lies right at the heart of successful and safe cross country soaring, competition flying, instructing and coaching.

What was 24 X 35? You know the answer now - 840.

Suitable goal setting, and "process"

There is a lot of talk about the importance of setting personal goals as a way of motivating oneself: indeed it is almost impossible for some people not to set themselves goals. I'm certainly stuck with it, just as a consequence of my oversized ego and general character! But poor goal setting can be detrimental to motivation and performance.

It is easy to accept the goals that your peer group, the situation, or your basic nature lay out for you. In the early days the goals of going solo, getting a QGP, silver distance, gold distance and so on are obvious. And it is reasonably straightforward to go solo, attain the QGP, get a silver distance. From there to gold and diamond badges is a huge step - possibly quite as big as everything the pilot has learned so far. Cross country soaring, weather forecasting, navigation, flight observation, working the loggers and avionics, dealing with airspace and the radio: these are big challenges and of course the pilot is usually trying to do this alone.

A pilot who has just gained his silver distance is very unlikely to have the skills required to fly, say, a 300km triangle. If that is the next goal in his mind he will go through a period of constantly trying and failing to meet his goal: not at all rewarding. He may well convince himself he's a dunderhead and pack it in. The trick is to think harder about goal setting in the first place, not just to blindly charge on to the "next" challenge as laid out by the FAI or the competition committee.

Performance goals and process goals

A performance goal is where one is trying to meet a particular standard. Flying solo, getting a QGP, flying a 300km, climbing for diamond height, winning the worlds - all performance goals. The problem with these is simple - not everything is under your control. It is perfectly possible to turn up for the worlds and land out on the first day because the weather shuts down. Pilots behind you get home when the weather opens up again. Gliding is a game of chance as well as skill: you have to appreciate this.
There is a further disadvantage that comes with performance goals. Imagine you've just run through the start line in a big competition. You glide out across a dead sky to the first soarable area, arriving low down - and you can't climb. Round and around you go, trying to get up...and then the first of the later starters drifts past over head at cloud base. How do you feel? I bet that you would be thinking "damn, I wanted to win this and now I can't - I've already lost 200 points on the first part of the first flight, I'm such an idiot - I don't know why I bother - I might as well just dive it into the ground right now..." and so on. Beating yourself up because you won't meet your goal - and then flying badly because of your poor state of mind.

The answer to both of these problems is to have process goals. A process goal is one that addresses things that you can control. For instance, the goal of making sure that you use the checklist every time to draw the task and set up your computers - or the goal of making sure that every time you take off you have full ballast tanks, tail water, food, hat, sunglasses etc. Perhaps the goal of maintaining a good lookout when under stress, or turing at 40 degrees bank when in the core, or using a learned strategy to look for thermals - the list is endless.

When you have process goals at the foundation of your learning then thinking under pressure becomes much simpler: you can revert to the processes you have learned. The "self talk": from the previous situation becomes much more useful: "hmmm, this is an interesting situation - it obviously is pretty good somewhere because those guys have gone fast until now, so why is it tricky here? It might be waving overhead I suppose - yes, look at the wind coming down the hill and hitting the lake, it's waving here and I'm in the bad bit underneath - I need to go over there upwind a bit..." and Bang!, you climb away. Or not, of course, but at least you will be doing something more useful than beating yourself up.

When you are coaching you must do the same thing - give the student lots of small goals to achieve, don't worry about the larger steps, because they will come eventually. I usually start by setting them the goal of flying the glider accurately in small circles whilst maintaining a good look out - and then I work up from there.

The weakest link and the 80/20 rule

Glider pilots are an odd bunch - the sport is a great place to find obsessive and addictive personalities. This is just fine, no problem with that, but one has to guide the learning process. It is easy for some pilots to get hung up on one particular aspect of the task. This could be MacReady speed to fly, or excessively tight turning in thermals - anything, really. This obsessive focus on just one area is very attractive to anyone under stress: it is a way of staying in a personal comfort zone.

Try to follow these two rules. The first is that you should fix the weakest link in your flying then reassess your skills and move onto the next weak link. It's no use being just brilliant at refinishing and fettling your exquisite open class supership - if you can't fly the damn thing. It is also a waste of time learning to turn in thermals at 60 degrees of bank - because it just doesn't work. You should constantly look at your flying habits, work out what you do most wrong, most often - and find a way to fix it. Try to keep your soaring skill set balanced: there is no point in being exceptionally good in one area if something else will keep slowing you down. This is really hard to do! See process goals, above...look at what you do, work out what you are bad at, set small, short term goals that will help you overcome your weaknesses - and keep revising and reassessing.

The 80/20 rule

You will get 80% of the result for 20% of the effort. Life is too short, and gliding too hard, to put 100% into every aspect of it. For instance, my cloud flying is pretty poor - I'm a bit rough, often lose the thermal, and I get a bit nervous in big clouds. But it's good enough to get up when I have to - which is only occasionally. And it isn't allowed in internationals, so how good does one need to be?

There are some aspects of flight where you have to be 100% - balance and speed control near the ground, looking out - I could go on. But a lot of the problems you will come up against can be fixed quickly and easily with a little effort. So when you look at your weak spots and decide to improve one - don't become obsessed with it. Deal with it and move on. I've noticed over the years that this is a key skill amongst successful pilots - and other top sportsmen that I've met.

Coaching situations: venue and format

There are many different ways to set up a coaching environment. Ground school, two seat flying, single seat flying in company ("lead and follow"), and task flying with pre-flight briefing / post flight analysis are the models that are most commonly used, either on an ad hoc basis or within the more controlled environment of a formal soaring or cross country course. Each of these formats has advantages and disadvantages, and each is more suitable for teaching some aspects of soaring more than others.

Ground School
Classroom time is important. It gives a coach the opportunity to pre-brief concepts that will then be used in the air - see the previous section. Theory lectures can work well, if the coach knows what he is talking about and has reasonable presentation skills. I suggest that you should avoid computers and projectors as much as possible - except for using See You to run through flights in debriefing. The Powerpoint presentation is usually stilted and deathly boring: you are much better off with a clean whiteboard and a set of good coloured pens. It takes some time to develop the skill required to sketch out your ideas: please feel free to crib from my own diagrams in the Soaring Engine volumes - they are designed to be easy to use.

Debriefing sessions are useful. It is usually possible to pick out some parts of the flight that nicely illustrate particular areas of cross country technique. The ensuing discussion is often lively and entertaining: there is nothing like the impact of making a mistake which lands you out or slows you down. Don't be afraid to point out your own mistakes in these sessions. Soaring is a probability driven sport, a gambling game, and it is normal to make intelligent and well reasoned decisions that have poor outcomes. You will also get things completely wrong sometimes: this is an essential part of the learning process for both the coach and the student.

A good coach should be able to talk easily at short notice on the following subjects:

How the lift is created: thermals, ridge, wave and convergence
How to use those forms of lift
Safety when flying on ridges
Safety when flying in the wave
Variometry
McReady theory
Basic sports psychology

This is just a rough outline of the scope of the task: I am deliberately generalising, because you have to work out the details for yourself to become fluent. Each of the subjects listed above is merely the gateway to a whole world of theory and practice, and we haven't even touched on many other interesting areas. But that's fine: it isn't supposed to be easy to get on top of all this. There is plenty of headroom to allow for personal exploration,

Two seat flying

It is essential to get into a two seater to teach basic soaring skills. Thermal centering depends on the ability to turn steeply whilst maintaining complete control of the glider. NB - *this seems to be really difficult!* It must be hard, because few pilots coming through the training system can fly the glider to anything like the standard required to climb well: the first thing to do with almost anybody is to see if they can turn accurately or not.

You should aim to turn at 40° bank whenever you are flying through the best part of a thermal. Sometimes more, sometimes less, but the default angle should be steep. The glider should always be balanced. Inexperienced pilots will have great difficulty in turning tight, keeping the attitude correct, balancing the glider and at the same time working out where the core of the thermal is: you will have your work cut out to improve their flying. For this reason I usually start with a very simple method of centring: tighten the turn whenever the lift is good, open when it isn't. It's not the fastest or best way to climb, but it is easy for an inexperienced pilot to apply when he's wrestling with the aircraft. You'll find information on thermal centering techniques and balancing the glider in The Soaring Engine volume one.

The two seater is also vital for either teaching pilots to soar on ridges or checking that they can do it safely. You must be absolutely confident that your student has learned to stay safe either thermalling close to the ground or soaring on ridges before you send them away to do it by themselves. If you're not rated on a two seater then you will have a problem in doing this. It may be possible to see the quality of another pilot's handling skills when climbing in the same thermal: I can usually spot over the use of too much rudder with the glider skidding around the turn in a nose down attitude - but it is hard to do this. It may be possible to look at someone's ridge flying in another single seater in the same way - but again, I doubt that it would be effective. If you can't fly with someone to check out their handling skills and ridge safety then you should get another competent instructor or rated coach to do it for you. Don't assume they know what they are doing and drag them off into tricky situations: you could find yourself causing an accident.

Two seat flying is also invaluable for exploring different systems of lift - mountain thermals, wave, convergence patterns - as you can point out various features of the environment and talk about them easily. It's much easier to do it on the spot, in the aircraft, than debrief later (although you still need the debriefing time). The disadvantages of using the two seater are simple: you've got to find a decent aircraft (not easy) with a good vario (again, not easy) and the student may get sick. He will certainly become tired, and he will not fly as well with you in the back as he might on his own. To prevent this from happening you should try to allow the student to fly the glider most, but not all of the time. You should also keep the flights relatively short: two to three hours is more than enough.s I usually work on a ratio of maybe 80/20 or 70/30 student to coach stick time, and I will do two flights per day - with different students - instead of one long flight. There are situations where you may operate differently and I've done so many times - some pilots have cast iron stomachs, or simply want to watch the coach fly - but generally you have to remember that the student needs to fly most of the time.

This seriously limits where you can go and what you can achieve on any one day: the glider moves at the student's pace, not yours! If you're flying long distances or achieving high speeds whilst coaching inexperienced pilots - you're probably just showing off and achieving very little training. This is probably the number one mistake you can make whilst coaching - trying to put in a "good" flight. Impressive flights are the coaches' flight - not the student's.

Single seat flying in company

This is often known as “lead and follow” flying. I hate this term, because it implies that the whole point of the exercise is for a student to follow the coach around. You can do this, but usually at the expense of the student losing track of anything around them but the glider ahead. This can be acceptable in the flat lands but may cause problems in a more difficult mountain task area. I suggest a mixed strategy, even in easy or well known terrain: some of the flight is led by the student - in other words, the coach hangs back, shadows the student and watches what he does. Then some of the flight is led by the coach: having worked out what the student is doing, the coach can then take the lead and the student can follow his example. You need to have some radio chat to facilitate this: good communications are fundamental here.

So as an example: when teaching flatland task flying I’ll set a small task and brief for the task - including the observation requirements (TPs, start and finish rules). The student takes off, gets established and flies the start and first leg to the first TP. Meanwhile the coach launches after the student, catches him (this should be entirely the coach’s problem), start with him and follows down the first leg - whilst watching the student’s flying. The second leg is an opportunity to demonstrate how to go faster: it’s usually as simple as turning tighter in the climbs, or running through thermals on track instead of flying around them. Then the last leg is a race: I never try to lead someone down a final glide, it’s not fair on them. Better to be flying independently and then debrief on the result.

In the mountains I might do something similar, except that the focus of the task is more likely to be driven by the shape of the terrain and the challenges it brings rather than the formality of a competition - type task. The student will probably know the local area well, so you can watch whilst he gets established and sets out on a cross country. When he reaches the limit of his own “safe area” you can drop in front and lead him a short way out into the unknown, all the time pointing out landing options, watershed decisions, landmarks and so on. It’s often best to return direct from there into familiar territory - keep the workload low, give the student a chance to keep up. In this way you can introduce the student to new situations, perhaps explore some different types of soaring or at least point out what is available. You can also demonstrate the principles of exploring in the mountains - how to quickly locate the next safe field or route when you cross into a new watershed, how to approach an unfamiliar ridge and so on. See the Soaring Engine volume one for more information on this.

Before embarking on this exercise it needs to be thoroughly briefed. Decide on the radio frequencies to use, and a strategy for dealing with losing communication. Make sure the student is prepared to call you as soon as he is dropping behind or becoming uncomfortable, and remind him that, as P1 in the single seater, he is totally responsible for his own safety. Discuss thermalling protocols - how to maintain station on another glider in the same circle, angles of bank and the fact that you’ll probably have to keep coming down for him.

Mid air collisions are a potential hazard here - you shouldn’t be in any danger of banging into the student when you are following, but he may well get too close to you for comfort when you are leading. Don’t let him sit close above and behind - it’s a dangerous place to be - he should weave a bit and drop back.

There is a particular problem with running on ridges: you must always be level with or underneath the student, not above. This isn't just to make the student more comfortable: when you are higher you will fly further into the ridge line (because the ridge is sloped, not vertical) and this can drag the lower, following glider closer to his part of the ridge than is safe. When climbing, the lower glider must fly figure eights for longer before it becomes safe to circle - again, if you are on top and you start to circle up against the ridge you may tempt the lower glider into circling before it is safe to do so. You will find you are becoming far too familiar with the airbrake lever, continually bringing the glider down again and again to stay in contact with the student. This is normal.

You need compatible single seaters: it is common for the student to have a lowish performance glider whilst the coach has some sort of modern super ship. This isn't going to work. The coach needs to fly something with a similar wing loading, cruising speed and overall performance to the student. A lower performance glider is possible, but a much faster machine makes a mockery of the exercise. I don't like attempting this exercise with more than one follower, and it isn't a great idea to drag someone with you whilst trying to coach in a two seater - you can't give value to the follower unless you fly all the time, and this doesn't usually work for the second pilot in the two seater.

The main disadvantages with this kind of training are that before you can do it safely you need to know that the student is safe on ridges, safe to land in a field and can absorb the work load without getting overstressed. Back to the two seater then? When it works, it's great fun and a real confidence booster: the student gets to fly all the time, probably in a glider that he is familiar with and can therefore handle reasonably easily. The flight can be a real adventure for him, and he gets to see the sport from yet another perspective. It's worth doing it if you can.

Supervised task flying with briefing and debriefing

This is a powerful method of training. If you are running a course or a day's flying for several pilots it makes sense to set this up as a default - then you can go fly the task with one or two pilots either in the two seater on in single seaters, whilst the others get on with it themselves.

Time management is important. How long you spend in the classroom either side of flying depends on the situation. Sometimes you know that there is no possibility of doing any useful flying until the afternoon - but the flying may continue into early evening. In this case you can get two or three short briefings into the morning: typically a weather / ops / task briefing, a debriefing from the previous days' flights, and even a short theory session, preferably something related to yesterday's or today's weather and task flying. I've found this to be a typical pattern when running courses in the southern alps.

On the other hand you might be in a "start early" situation - only time for the weather / ops / task briefing, so you have to debrief in the evening. I try to avoid debriefing immediately after flying, everyone is usually pretty tired - but sometimes it is the only way to clear the deck for the next day. Flexibility is important.

Set tasks for the group that facilitate the classroom work: remember we are in a training situation here so there is no point in trying for big distances and speeds. Unless somebody is trying for a particular badge flight the tasks should be short and well within the capacity of all the pilots. It is quite normal to set, for instance, twice around a 100km task (with the two seater landing, changing pilots and going again) when the weather calls for up to 300km. This generates plenty of weather / start and turning point / final glide challenges, without taking people too far away from home. I know this may sound a bit "soft": there are indeed occasions when you need to challenge your students, but most of the time there is easily enough difficulty in getting around simple tasks in good weather! Remember the arousal / performance curve and try to keep your group in the optimum place for learning and safe flying.

It is important to manage these events in such a way that everyone has fun. Well, perhaps not everybody - you may well find in a large group that there are people that you just can't please! Try to be inclusive, keep everyone informed as to what is going on and what to expect. Set up some purely social time if you can - group meals, BBQs and so on. This is a bit of a leadership challenge: I've never been much good at this, but I've seen some great people working in the field. Just be aware that it's important.

Safety

You may not be an instructor - but you are still responsible for the safety of your students. There are a few traps for inexperienced pilots that you must be aware of: and so should they.

Balance in the turn
A glider is quite different to a light aircraft. The long wings, low flying speeds and small tail volume create large amounts of adverse yaw when you use the ailerons. This in turn means that pilots become accustomed to using large amounts of rudder when they roll into a turn. It is crucial that they then remove most of that rudder. It is very common for inexperienced pilots to leave the rudder on and to habitually fly turns with some degree of skid. This is a deal breaker: I will not permit anybody to do this at low speed near the ground, as the glider will be poised on the edge of a spin entry. A small gust or slight movement of the controls in the wrong direction can cause departure from the turn. If you are not completely familiar with this problem - you need to be, especially if you will be flying on ridges.

Note: many pilots insist that their glider will not spin. This is almost always utterly wrong. There are very few single seat gliders that will not demonstrate a sharp spin entry from a thermal turn: the kind of maneuver that could put you into the ground when climbing from a ridge. It's true that many gliders will not sustain a continuous spin when they are set up with a forward centre of gravity - but that's not the problem. It's the spin entry and subsequent dive out that kills.

Turns at low altitude
We do our final turns at a reasonable height above the ground because it has proved to be risky to do low turns. There are a several reasons why low turns are tricky. Firstly, the ground speed appears high. Secondly, the horizon is in the wrong place. Thirdly, the perspective of the wingtip moving over the ground is different at low level. At altitude the wing appears to move backward, at low level the tip appears to move forward. These three factors - accompanied by poor piloting due to stress (remember the performance vs arousal curve) - can easily lead to mishandling and spin entries. It is easy to avoid low final turns, but turning close to the ground is an everyday part of ridge and mountain flying. You must learn to point out and solve these problems for the students.

Safe ridge soaring
Remember that we have a simple set of rules for ridge flying.

Maintain a safe speed

Always start a turn away from the hill

Fly a balanced turn

Always have an escape route

Approach spur and pass crossings at a shallow angle, not head on

Climb in figure-eight or S-turns until well clear of the ridge top

If continuing a turn into a circle, make the decision early

Keep looking out and know the ridge soaring rules of the air

You need to be certain that a student will stick to these principles. If you don't know for sure then you must fly with him in the same aircraft to find out - or ask someone else to do it - before you do anything that might put him under pressure on his own. A word of warning: this is a hazardous way to spend your time. The glider will be close to the ground and you won't be able to feel what the air is doing when the student is on the controls. Don't expect or allow the student to fly as close to the hill as you normally would: he's flying and he isn't as good as you are. Start gently, with an emphasis on safety, and gradually work up the skill level. Define your limits and requirements: if you can't climb within those limits (for instance, "I will not fly slower than 55kt") then don't push it by flying slower and closer. Leave the ridge for somewhere easier or land out.

This section on safety may seem rather tedious: I am sure you've heard it all before. The trouble is that your students are very unlikely to know of these particular hazards. They need to be taught to deal with them. This is every bit as important as teaching soaring and cross country techniques: more so, in fact.

Summary

What next?

This document is only an introduction to the world of cross country coaching: it should give you an idea of the nature of the tasks involved. The next step is to attend one of GNZ's "Introduction to coaching" training days, where you'll cover the same material in greater detail. Once you've attended this session then you'll have a better idea of what you might be getting yourself into. After that you'll need to do a bit of flying with one of the senior coaches to makes sure that your own skills are up to the job and perhaps to improve your own cross country prowess.
At the time of writing I'm tasked with setting up a network of coaches and senior coaches to manage this side of the GNZ operation. This will take some time to get right, so don't expect the process to be quick, streamlined and graceful right from the start. We'll all do our best.
If you have any questions or difficulties with the process then you can email me directly:
gdale247@hotmail.com
I'll only be in the country during the summer, but you'll be able to reach me quickly by email all year around.

G Dale
November 2016

Further reading

Helmut Reichmann: Cross Country Soaring

Welch and Irving: New Soaring Pilot

Tom Bradbury: Meteorology and Flight: a Pilot's guide to Weather

G Dale: The Soaring Engine, volumes one and two