

<h2>PATTER NOTES</h2>

Introduction

These notes are aimed at helping new instructors get to grips with flying instruction, and provide a general understanding of the structure of the BGA patter notes. However before attempting to practice the patter it is important that the trainee instructor be able to “fly” all of the exercises well and be able to make clear demonstrations. These notes therefore include instructor “work-up” training that can be practiced while flying solo.

Work-up training

You should be competent with these exercises before attempting to use the patter simultaneously.

Elevator

Have you noticed how little you need to move the stick in order to create an attitude that will give a 5 knot change in speed? Try this in the air---but do keep a good look out---once established in the normal attitude, move the stick forward 5mm and hold it there. You will find you have achieved a significant speed change for a relatively small stick movement.

As an instructor this can make it difficult to demonstrate this effect clearly to your pupil. Can you imagine how much difficulty your pupil will have if you are wiggling the stick from side to side and inadvertently checking back a little with the stick because the initial movement was greater than you needed for your demonstration.

Exercise 1---Elevator

The key objective of this instructor demonstration is to show the effect of the elevator, and how we are able to select a pitch attitude for any desired speed. The pupil will also learn how small the required movements are.

In normal flight, make a small but obvious forward movement with the stick and allow the aircraft to settle into a new attitude. Hold the stick firmly and allow no other movements. Count to four and move the stick back a smaller but equally clear amount. You may notice the nose rise above the horizon---realise if you check forward to correct the pupil may become confused.

The stick is moved back a smaller amount because the elevator is now more effective.

Try the same exercise, starting from a lower airspeed, notice how much easier the demonstration becomes!

Personal challenge Do you always select a pitch attitude and wait for the aircraft to accelerate or decelerate to the new value---or are you using the ASI more than you should?

Competence required You should be able to move the stick forward a discernable amount (without introducing any other movement of the controls) and then move the stick back again a discernable amount and then move the stick further to achieve a gentle nose drop stall.

You should be able to do this so the demonstration is absolutely clear to a pupil following through on the controls.

Aileron

The key objective of this demonstration is to show the aircraft rolls with the aileron deflected and does not if the ailerons are centralised. If the aircraft is banked it will turn. The pupil will also learn that the aileron is less sensate than the elevator. He will also learn the importance of lookout before initiating a turn.

It is important to understand that the amount of aileron we use determines how quickly the glider rolls, not how far it will roll. On the other hand a large bank angle will give a greater rate of turn than a small bank angle.

In normal flight we will use small aileron movements to for small bank changes because it gives us time to take in the changes. We will use larger control movements if we need to roll quickly or need large angular changes.

Exercise 2

Starting from level flight, lookout and then move the stick to the left (or right) a modest amount, say 25mm. The amount you move the stick will determine how quickly the aircraft rolls. Select and learn how much aileron you must use to roll the glider to about 30 degrees of bank in no less than 3 seconds. This time delay permits the pupil to observe the demonstration, and understand it.

At the required bank angle stop the bank increasing with aileron. After a few moments move the stick a similar amount to the right and wait for the wings to come level in a few seconds. Centralise the stick.

Practice making small heading changes between to points about 20 to 30 degrees apart. Roll the glider to achieve a sensible angle of bank, maintain the bank angle and wait for the heading to change and then roll the wings level. Then turn back again to the original heading---using the three distinct parts of the turn (rolling in, staying in, rolling out).

Personal challenge—Do you always do three stage turns or have you developed the habit of two stage turns (rolling in and rolling out)?

Competence Required---You should be able to make a single smooth and discernable stick movement to roll the glider a single smooth stick movement to stop the bank increasing further. On the same basis you should be able to raise the wing with a single discernable stick movement illustrating the delay while the aircraft rolls level before centralising the stick.

Construction of the Patter notes

The patter notes provide an introduction to the recommended presentation style. Patter notes are not used for every flight training exercise; the instructor is expected to devise his own wording and style for the later exercises.

These notes are designed to help you understand and remember the patter.

You will notice each exercise starts with an expression “Now I will show you.....”, has a middle section “ if I do the following...the outcome is....” And has a summary “the point of this is....”.

This type of construction can be reduced to:-

1. I first tell you what I am going to tell you
2. Then I tell you.
3. And finally I tell you what I told you.

This is a very effective style, and is used to improve the learning process. In practice you will find the same pupil may have the demonstration many times before he fully understands the underlying principles, so you shouldn't be surprised if he doesn't get it first time.

Many pilots go for years misunderstanding the basic principles of aircraft handling; experienced pilots often develop poor habits (like chasing the ASI or chasing the yaw string with the rudder pedals). It is the instructor's prime responsibility to ensure the trainee not only understands the motor skills required but also understands the underlying principles.

The patter allows and expects the instructor to demonstrate each exercise, and then allows the pupil to practice. It is unrealistic to expect the student to get it right first time; although the pupil typically believes he should (see stages of learning). The more the pupil practices the more skilled he will become; the instructor must learn when to shut up and let his pupil practice with minimal interruptions.

The red underlined text in the attached patter notes is a non standard addition to maintain this structure.

EVERY TIME THE DEMONSTRATION INVOLVES USING THE AILERONS WE MUST REMIND THE STUDENT TO LOOKOUT.

When reciting the existing patten or devising a new patten, remember the following points:-

1. Tell the student what you plan to show him.
2. Consider airmanship issues (Lookout, HASSLL etc)
3. Make sure the student is on the appropriate controls and is looking in the right place (over the nose for many exercises)
4. Give a clear demonstration; keep the words with the actions.
5. Summarise
6. Let the student try for himself (sometimes this is not appropriate)

Primacy

Primacy, the state of being first, often creates a strong, almost unshakable, impression.

For the instructor, this means that what is taught must be right the first time.

For the student, it means that learning must be right.

Un-teaching is more difficult than teaching. If, for example, a maintenance student learns a faulty riveting technique, the instructor will have a difficult task correcting bad habits and re-teaching correct ones.

Every student should be started right. The first experience should be positive, functional, and lay the foundation for all that is to follow.

(Source.)

Copied from "Aviation Instructor's Handbook" FAA-H-8083-9, 1999.

U.S. Department of Transportation, Federal Aviation Administration, Flight Standards Service.

The instructor influences the pupil in 2 ways, indirectly (by watching behaviour) and directly (by the words and demonstrations).

The patten notes take care to ensure the "correct" procedures and behaviours are introduced from the start.

The instructor should not underestimate the power of indirect learning and its long term impact on the students' future behaviour. For example if we are slapdash with our pre take off procedures then the student will presume they are unimportant.

SAFETY PRACTICES AND ACCIDENT PREVENTION

The safety practices emphasized by instructors have a long lasting effect on students. Generally students consider the instructor to be a model of perfection whose habits they attempt to imitate, whether consciously or unconsciously. The instructor's advocacy and description of safety practices means little to a student if the instructor does not demonstrate them consistently.

For this reason, instructors must meticulously observe the safety practices being taught to students. A good example is the proper use of checks before take off, or the use of correct launch procedures, no amount of instruction will convince the student to follow procedures if he sees his instructor does not.

To maintain a professional image, a flight instructor must carefully observe all regulations and safety practices during all flight and ground operations. An instructor who is observed to fly with apparent disregard for loading limitations or weather minimums creates an air of irresponsibility that many hours of scrupulous flight instruction can never correct. Habitual observance of regulations, safety precautions, and the precepts of courtesy will enhance the instructor's image of professionalism. Moreover, such habits make the instructor more effective by encouraging students to develop similar habits.

The flight instructor must go beyond the requirements of developing technically proficient students who are knowledgeable in the areas of their equipment, flight procedures and maneuvers. The flight instructor must not only teach his students to know their own and their equipment's limitations, but must also teach them to be guided by those limitations. The flight instructor must make strenuous effort to develop good judgment on the part of his students.

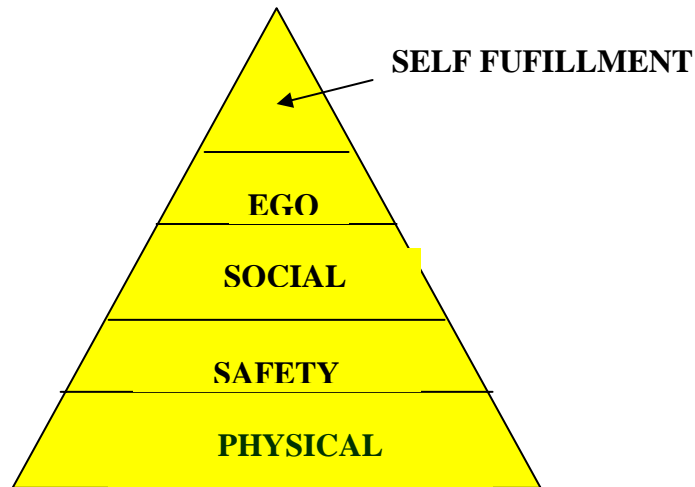
Motivation

The state of mind of the pupil affects the rate of learning. A skilled coach will not only notice the mental condition of the pupil, but can also influence it. Appropriate handling can make the process fun and memorable for the student.

Being in a rush to achieve results can be a serious mistake. If the pupil is frightened of certain exercises the instructor may need to slow down and allow the student to come to terms with his personal gremlins.

We can use the ideas of Maslow, a management theorist, to help understand what motivates people to go through the learning process.

Maslow describes a hierarchy of needs, the lower order needs must be satisfied before the higher order needs can be approached.



Physical---Each person is first concerned with the need for food, rest and protection. Until these needs are met the person cannot fully concentrate on learning.

Safety---each person needs to feel protected from danger. Student behaviour is influenced by the feeling of being at risk. This is particularly relevant in flight training.

Social---Each person needs to feel part of a group. The instructor should ensure that his pupil feels a part of the group. This is particularly true for new entrants.

Ego---Each person needs to feel valued and respected by the group. Instructors can play an important role here by using well placed (and appropriate) praise, and ensuring achievement goes recognised.

Self Fulfilment---When all the other needs have been satisfied, the instructor can now help engender an environment that encourages inquisitiveness or curiosity. This is the ultimate goal in creating a good learning environment.

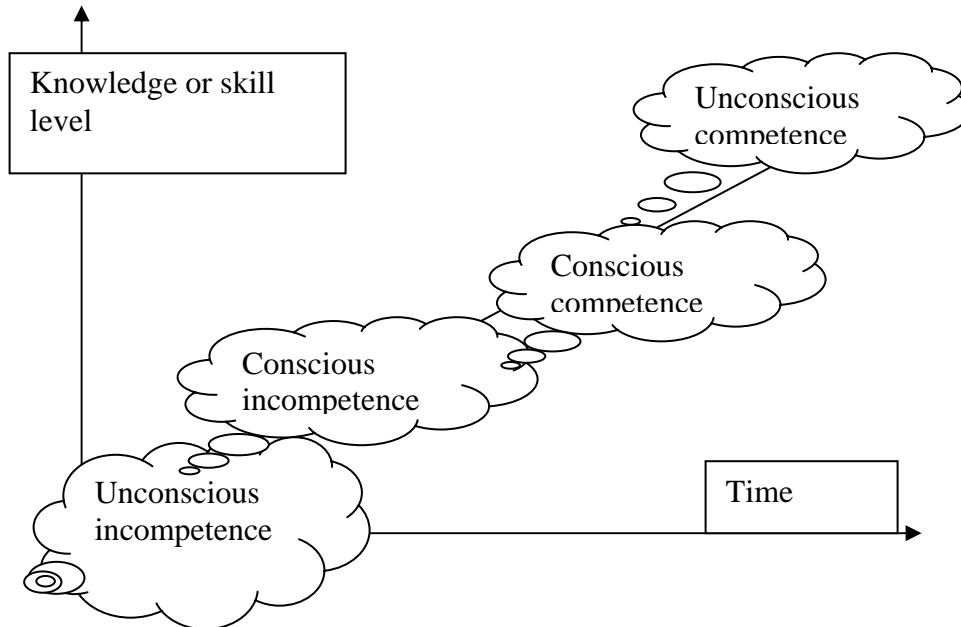
Stages of learning

This useful model helps describe the typical misunderstandings that occur between instructor and student.

There are 4 stages

1. Unconscious incompetence (Hasn't realised there is something to learn)
2. Conscious incompetence (becomes aware of the requirement to learn)
3. Conscious competence (Acutely aware of the newfound skill or knowledge)

4. unconscious competence.(Forgets he knows as the skills become internalised)



We might consider how we change gears in a car. An experienced driver will probably have to consider long and hard before he can teach someone else. At the same time the “would be” driver has not quite realised how difficult it is. The instructor/pupil relationship can become frustrated because the instructor considers the skill to be obvious and natural, and the student has not yet realised it is more difficult than he imagined.

This principle works in flight training. The instructor must be aware of his own internalised skills, and accept the stages the student will go through. Students sometimes describe their progress as 2 steps forward and one back, this normally happens as the student realises there is yet another skill to be acquired on his training road.

The table below attempts to identify the various stages. Remember the instructor is only effective when he is consciously competent and his pupil is consciously incompetent. The use of the word competent is not derogatory; it merely identifies the state of knowledge acquisition.

Unconscious incompetence	Conscious incompetence	Conscious competence	Unconscious competence
We don't know what we don't know	We know we don't know	We know we know	We forget we know
We see our pals learning to fly, and want to join them.(social needs)	We realise there is more to it (aileron and rudder co-ordination), and become frustrated and concerned that our pals will assume we are not capable.(ego needs)	We have just acquired our new skill knowledge, and are able to explain in fine detail. (assists socialising, reinforcement and meets ego needs)	The skill or knowledge becomes 2 nd nature. We no longer need to think about it. It is too easy to imagine we have some natural talent (Ego threat)
The instructor raises awareness by introducing the new subject area.	The instructor is needed for moral support. You can do it, look what you have achieved already, everyone goes through this stage.	The instructor will do well to stand back and allow (under gentle guidance) the pupil to explain to the rest of the group.	The instructor MUST look closely at how he achieves various tasks, and FORCE HIMSELF to become consciously competent.
Student not ready to learn.	Student ready to learn	Student ready to teach, instructor ready to teach	Instructor not ready to teach.

The patter notes help the new instructor identify the important knowledge and skills that need to be passed on to his pupil. Later exercises he must begin to work out for himself.

Colour coding

The attached patter notes are colour coded to highlight the structure.

1. **Blue**, is the introduction of the exercise and the summary.
2. **Black** is the demonstration itself
3. **Orange** is the airmanship reminder
4. **Red underscored** is an unofficial addition to maintain the shape of the lesson.
5. **Green** is the instruction to the student

LOOKOUT

While flying, we must always maintain a good lookout. Help me with this. Scan the field of view, pausing from time to time, looking both above and below the horizon as well as on it. Whenever you see another aircraft or glider, tell me. I'll do the same...

ELEVATOR

Now I will show you how the controls work. First, the elevator. Follow through on the stick. Look ahead over the nose and see the relationship between the nose and the horizon, or the amount of ground in view. It remains constant. This is the normal gliding attitude. When I move the stick forward a small amount...the nose of the glider goes down. More ground comes into view, the glider takes up a new attitude and the speed increases. When I move the stick back again, the nose rises, there is less ground in view, and we begin to slow down. We are in another attitude. If I move the stick back more the nose rises, but then goes down again by itself. I must move the stick forward to regain speed. Now I'll return the glider to its normal attitude. In fact that was a stall! The elevator is used to control the pitch attitude and therefore our speed. The attitude is constant and the speed is steady. I'd like you to try that. You have control.

AILERONS

Now I'll show you the effect of the ailerons and how we roll the glider. Look ahead and see that the cockpit edge is symmetrical with the horizon. The wings are level. If the wings were not level then the view ahead would look like this. Follow through on the stick. Look right first. Make sure it is clear to the left. Look as far round to the left as you can. Remember to tell me if you see any other aircraft. Now look back over the nose. If I move the stick to the left, the left wing goes down. It continues going down until I centralise the stick. The glider is banked and therefore turning. To maintain the attitude I need to apply a slight backward pressure to the stick. To raise the wing I move the stick to the right and centralise it when the wings are level. As the wings come level I relax the backward pressure to maintain the correct attitude. The ailerons are used to control our bank angle and therefore our rate of turn. Now you try. You have control.

THE RUDDER IS NOT FOR TURNING THE GLIDER

Now I will show you that the rudder does not turn the glider. Follow through, feet on the rudder pedals. Notice that we are flying along this road. If we press the left pedal the nose of the glider yaws to the left, but as long as I keep the wings level,, the glider continues to travel in the same direction. When I centralise the rudder the nose swings back to point in the original direction. The rudder only yaws the glider and does not turn it.

ADVERSE YAW

Now I will show you another effect of the ailerons, and why we need to use the rudder. Follow through on the stick and the rudder. Because the glider will turn in this demonstration we will lookout to the (left/right) and then over the nose again. Watch what happens when I move the stick to the (left/right) without moving the rudder. Which way did the nose swing? This is adverse yaw. It is the result of aileron drag. To counteract this effect we need to use the rudder in conjunction with the aileron. If we use (left/right) aileron and rudder together the nose no longer yaws to the (left/right). We always use aileron and rudder together, so it is stick and rudder to the left and stick and rudder to the right. Now you try that. You have control.

AIRSPPEED INDICATOR & AIRSPPEED MONITORING

Now I will show you how we manage our airspeed. You have control. Fly the glider in the normal attitude and note the ASI reading...what is it?. Lower the nose to an attitude you think will give you a speed of 55kts. Glance at the ASI, while maintaining attitude, until the speed is steady. Notice it takes some time to increase to the new value. If you haven't got the speed you want make a further attitude correction. Wait, then check the ASI again. We always select an attitude first, wait and then confirm the speed using the ASI

CHASING THE ASI

Now I will show you what happens if we try to select a new speed by watching the ASI alone.I have control. If I lower the nose until I get (say)50kt..like this...the speed eventually goes beyond that figure. If I now raise the nose until 50kt is indicated, then the speed will fall below that figure. The only way to control the glider is by setting the attitude, waiting for the speed to settle and if it is not right, adjusting the attitude again.

TRIMMING

Now I will show you how we use the trimmer. I have control. See that if I take my hand off the stick that the glider continues to fly itself. The glider is stable. Now you take control and continue to fly in this attitude. I will alter the trim. You have to apply a force to the stick. Tell me the direction. Now you adjust the trim to reduce the stick load to zero. When you have done that release the stick. Good the attitude hasn't changed...orNo that's not quite right. Put your hand back on the stick and reselect the original attitude. Check the airspeed. Yes ---43kts will do fine...Sense the load on the stick. Adjust the trim again. Check by releasing the stick. Good that's fine. Now increase the speed to 50kts. Trim for that speed. From now on always fly the glider in trim. To trim, always select the attitude first, pause and confirm the speed and then remove the stick loads with the trim lever.

THE STRAIGHT GLIDE`

Now I'm going to show you the straight glide, and how to recognise and achieve it. Follow through on the controls. This is the normal gliding attitude. Look ahead over the nose and see the relationship between the nose and the horizon, or the amount of ground in view. Also notice the wings are level. If the picture over the nose is wrong...we roll the wings level using aileron and rudder together, centralising the controls when the wings are level and select the correct pitch attitude with elevator. I will now put the glider into a different attitude, and I want you to return it to the normal wings level gliding attitude. You have control.

THE SCAN CYCLE

I will now show you how to maintain the straight glide and carry out the scan cycle. The sequence of events is Lookout, Attitude and then Instruments. Begin by looking directly ahead. Focus on the horizon looking above and below it. Move your head to approximately the two o'clock position. Focus on the horizon and then look above and below it. Move your head to the three o'clock position. Focus on the horizon and then look above and below it. Now look as far back as possible, and then upwards above the glider. Look forwards again, check the attitude. If it is not correct, level the wings with coordinated aileron and rudder and use the elevator to return the glider to the normal attitude. Check the trim and adjust if necessary. Instruments Check that the yaw string is central, Variometer, check the gliders rate of ascent/descent, Altimeter, do we have enough height to maintain this course or should we return to the airfield? And now back to lookout, this time to the left. The sequence of events is Lookout, Attitude, Instruments

Now you try that, you have control.

TURNING AND LOOKOUT

Now I will show you how to turn the glider using all three controls together. We've been maintaining a good lookout. But before turning left, we look round and behind the right wing, then scan ahead of the aircraft, above and below the horizon, then to the left and as far back as possible. Look ahead over the nose. Roll the glider using aileron and rudder together. At the desired angle, use aileron to stop the angle of bank increasing, and reduce the amount of rudder. As the angle of bank increases, keep the attitude constant with a slight backward pressure on the stick. The glider is now established in the turn.---- Now look out again. Notice how the nose steadily moves around the horizon. Continue the scan cycle and keep a good lookout especially in the direction of the turn. Keep the angle of bank constant, making any necessary corrections with aileron and rudder together .----To come out of the turn we must first lookout. See that it is clear to straighten up, especially behind and below the upper wing. Other gliders may have joined you. Roll the wings level with aileron and rudder together, relaxing the backward pressure as you do so, and centralising the controls when the wings are level. There are three stages to the turn. Going in, staying in and coming out. You try that, you have control