ABF Instructor Manual

Version 1 – MAY 2006

CONTENTS

Principles of Instruction

Methods of Instruction

Principles of Instruction

Your objective as a ballooning instructor

To produce skilful, safety-conscious pilots with a high degree of ability, understanding and initiative, so that ballooning continues to develop as a safe, enjoyable, accessible and professional sport.

Two instructor essentials

ABOVE AVERAGE BALLOONING KNOWLEDGE AND SKILL
Be familiar with the latest equipment and procedures,
theory texts and current CASA documents.

AND – THE ABILITY TO INSTRUCT EFFECTIVELY
This is a separate skill that also needs to be kept current!
Understand how people learn, and instruct accordingly.

Some more important qualities

Your personality is individual and there is no precise blueprint for a successful instructor. The following are some typical qualities of good instructors:

Effective communication. This is the basis of effective instruction. Keep explanations and instructions short and to the point. An effective instructor formulates a message to the student, adjusts it to suit the complexity of the learning situation, and checks frequently that the student has understood. (See more in Communication below).

Active listening. Active listeners stop talking, and physically listen by positioning themselves in such a way that they give their full attention to the speaker. They do not assume knowledge. They react appropriately with positive feedback, and check for understanding by asking appropriate questions to prompt or expand on what the student has said.

Effective observing. Your assessment of someone is only as good as your observation. Don't hesitate to make notes – memory may let you down. A useful technique is to give a running commentary while you are handling the balloon controls, and then ask your student to do the same so you know what he is aware of and what his intentions are. Encourage the student to repeat back the instructions just as you have said them. You can then observe the learning process more accurately.

Putting others at ease. Be relaxed yourself. A sense of humour may help your student relax too, but use it with discretion.

Enthusiasm. It rubs off on your students and is a great motivator. Be positive and supportive. Ensure the student experiences success.

Patience. Never lose your patience. If you are tempted to, you should question your own instructing technique, and perhaps recommend a change of instructor. Remember every student learns at his own pace – slow may also be more thorough, and achieve a good result.

Empathy. 'Putting yourself in the student's shoes'. Remember what it was like when you were a student pilot.

Good preparation. 'Preparation and planning prevent poor performance.' Spend time before a flight preparing what you plan to teach. Study appropriate texts, and the student's Training Record. Use visual aids where possible – a picture is worth a thousand words. Always have a focus – state what you are going to teach, then teach it, and afterwards review what you have taught.

Teaching by example. Model and demonstrate what you want others to learn. Never expect a student to do what you are not doing, or cannot do yourself.

Self-awareness. It is essential to be a good pilot yourself and to demonstrate this, but it helps even more to be aware of *how* you are being a good pilot and to communicate this verbally as well. Think about what you consider to be the attributes of a good pilot, and write them down.

Consistency and impartiality. Nothing undermines your reputation and authority more than failing to adhere to these qualities. Be objective and fair always.

Honesty. Don't bluff – **if you don't know, say so**. Offer to help the student find out, then do it promptly and don't forget. For example, if the student does not know the balloon's flight limitations, look at the flight manual together before flying. Your follow-up becomes an effective lesson in where and how to find the information.

How we learn

Understanding human learning and its limitations helps us achieve the maximum effect as instructors.

Learning something new

Our memory is an information processing tool. We appear to process information through a single channel, and this channel has a fairly limited capacity. New information is constantly going into our short term memory, but **continuous attention and rehearsal are necessary** for it to be transferred to the long-term store. Otherwise short term memories are quickly and completely lost. We retain information by linking new information to old, keeping instruction simple, concise and focussed.

Unlearning is HARDER!

What we learn the first time stays with us, and it is **much harder to unlearn than it was to learn**. This is called the 'law of primacy'. Therefore it is **vital to instruct well the first time**. If correct and safe habits are not instilled into the student right at the start, THEY WILL NOT BE ACQUIRED LATER.

The importance of demonstration and repetition

Learning is reinforced through the **instructor demonstrating** an action and then giving the student an opportunity to repeat it soon afterwards. It is also important to repeat instructions and explanations before, during and after a flying lesson. When the student has carried out an exercise successfully for the first time, allow him to **repeat it a few more times** before moving on to something new. Well-reinforced learning will carry over more effectively from one training session to the next.

Learning in 'chunks'

Skills are learned by **isolating one task and then getting the student to learn it**, while allowing other tasks to be ignored or poorly performed. These tasks or 'chunks' are the basic building blocks of learning, and should not be rushed. When performance of a task has progressed to a certain stage, experimentation with the next may start. In flight a balloon pilot does many things – controls the balloon movement, observes weather developments, checks position on the map, changes fuel tanks, uses the radio, etc. We can practise each of these as a separate task. As a task becomes more automatic through practice, it will require less attention, and the student will more easily incorporate it into a sequence. Each of these tasks can also be broken down into a sequence of smaller actions.

Combining the 'chunks'

Tasks can be learned separately, then **integrated in a smooth whole when the student is ready**. Until then, the instructor should be prepared to take responsibility for other aspects of a flight so that the student can give his attention to practising a particular task.

Skill loss over time

Skills can be slow and difficult to acquire, and lost quickly if not practised. Degradation can be subtle and not noticed. **Training is much more efficient if it is fairly regular.** Relearning time is directly related to the amount of original training. It is much more effective to have several training flights over a short period rather than individual flights with long breaks between each. A student who has had a long break from flying will need careful checking and possibly retraining. Do not assume the student has a certain level of knowledge or skill – always check before taking the training further.

Skills well learned are more quickly relearned even after long periods of disuse. Once established in long-term memory, they appear to stay there. However, the

instructor needs always to facilitate retrieval by starting from a point of understanding, and asking key questions which will jog the student's memory.

Priorities and decision making

Although we receive a massive amount of information we have a limited capacity to process it. **To react effectively to one thing, we may need to ignore others.** Under pressure we may ignore some important information. Hence it is **important to establish priorities for both normal and emergency situations.** An example is 'Aviate – Navigate – Communicate' meaning control the balloon first, then look where you are and plan ahead, then tell your crew. Or, 'If in doubt – RIP OUT' when approaching a powerline and uncertain about your ability to overfly it safely.

Flexibility and speed in decision making are vital for balloon pilots. People tend to be conservative, and resist changing a decision. Reaction time to an unexpected situation can be several seconds. If the situation is anticipated and the response is practised regularly, **reaction time can be significantly reduced.**

Feedback

Feedback is essential to effective learning. Feedback means getting **information about the discrepancy between what was intended and what actually resulted**. This enables the student to eliminate ineffective responses or actions, and 'fine tune' effective ones. The instructor should give feedback promptly, and it should be constructive and specific. 'This time you avoided overburning and you remembered to do all the pre-landing checks' is more helpful than simply saying 'that was better'.

EXTERNAL feedback is when the student consciously observes something for himself or is told by the instructor. As learning progresses, INTERNAL feedback develops, which we describe as **getting a 'feel'** for whether the balloon is flying correctly or not. This in turn enables the student to develop **anticipation** of the balloon's reactions. This will not develop effectively if the instructor is reluctant to let the student handle the balloon.

Feedback is also a powerful motivator. The sooner it is received, the more powerful its influence on behaviour and on memory.

We learn by our mistakes

Risk-taking is an important part of learning. It is a more powerful lesson when the student experiences for himself the limits of his ability or the balloon's performance. For example, the instructor may allow the student to overburn or to hit the ground a bit hard when practising landings. Try to avoid over-prompting the student about when to burn, but at the same time be prepared to take over the controls quickly if necessary. Remember that exercises such as fast take-off or flight in mild thermals are optional and should be practised with caution.

Intervention by the instructor

Only intervene with good reason – such as a situation becoming dangerous or beyond prearranged limits, the student is making a serious or repetitive error, progress has ceased, or because you have an opportunity to make an important teaching point.

Before you intervene, give the student enough time to recognise the problem – unless there is a safety hazard. There are 3 ways you could intervene:

- Taking over the controls (the least effective but sometimes unavoidable)
- Talk through – tell the student what to do
- Ask questions to prompt the student to identify the problem and determine the correct solution for himself.

Intervention can have varying results - a competent student may resent it, while a weaker one may welcome it. Frequent intervention can cause concentration problems, interrupt learning and result in you doing more of the exercise than the student. Instead of persisting and having to intervene frequently, consider going back a step or two, explaining the exercise in a different way, or taking a break if there are signs of overload.

Overload

Too much information can lead to overload. Signs to watch for in the student are:

- Ignoring some information
- Errors – processing information incorrectly
- Delayed responses under pressure
- Approximation – less precise response
- Giving up.

If a student shows signs of overload, take a break. It may be wise to stop the session, or a previous exercise may need to be clarified or practised again before proceeding further.

Principles of effective instructing

This is a summary of the main points in the previous section – 'How We Learn'. It is worth reviewing these regularly, to reinforce your own good instructing practices.

- **Be clear about what you are going to teach, have a goal and state it.**

- **Teach a little at a time.**

- **Teach it RIGHT the first time.**

- **Watch for signs of overload – errors, delayed or less precise responses. Always get feedback to ensure the student is on task**

- **A well planned and prepared instruction saves time as it will not need to be retaught**

- **Emphasise priorities – both normal and emergency.**
- **Reinforce learning by modelling and repetition.**
- **Intervene only if necessary – and then in the best way possible.**
- **Break a lesson into convenient 'chunks', and practise them separately.**
- **Combine the 'chunks' when the student is ready.**
- **Aim for regular training – it's more effective for you and the student.**
- **When resuming from a break, never assume knowledge. Question the student to check for any gaps or misunderstandings. Revise on the basis of what you observe, and reinforce key points.**

Transferring responsibility

The process of instructing is not just imparting knowledge and skill. It also involves a **gradual transfer of responsibility** to the student. On the student's first training flight, the instructor is taking 100% responsibility for the flight and occupants. By his first solo flight the 100% responsibility has been assumed by the student.

Let the student do as much as possible himself. We learn by experience. Keep demonstrations brief, and then hand over the controls.

It should always be clear to the student exactly what he is responsible for at any time. While on board, the instructor retains overriding responsibility, so **let the student know that as the instructor you may take full control at any time**.

The instructor should transfer responsibility **at a rate the student can cope with**. No advance should be made until the instructor is quite certain that the student's understanding and ability are both satisfactory up to that point. This particularly applies to a student's first solo.

Standardising balloon instruction

In ballooning there is often more than one way to do a particular task. Some ways may be equally valid. Some may be inherently safer than others or better suited to a particular situation.

There is nothing more frustrating to a student than learning something from one instructor, only to find that the next instructor says it is 'wrong' and wants him to do it a different way. (Remember it's harder to unlearn than to learn!)

The ABF Pilot Training Manual (Part 10 - Flight Exercises) sets out 'the ABF way', and describes the competent standard required in each exercise. All instructors are expected to teach to this standard.

The ABF way is based on safety, and by following it you will avoid a lot of headaches for both yourself and your students. If you do not agree with something in the Pilot Training Manual, you should discuss this with the ABF Operations Manager rather than confuse your student. Your feedback will help improve the training system.

Make sure your student understands WHY we do things a certain way. Later, as a pilot, he may choose to vary what he has learned, provided he has good reason to do so. But while he is training, stick to the ABF way (even if it means changing a few of your own habits!).

Standardisation enhances your skill as an instructor. It gives you confidence and a framework in which to work. And remember – students like standardisation. It simplifies and speeds up the training process.

Teaching safety

Ballooning overall has a good safety record, despite the fact that it contains some obvious risks. Safe ballooning can only be achieved by **active risk management – anticipating problems, and preparing for them**.

Around 80% of accidents are attributable to human error, and many can be avoided. Learn to anticipate risks and act to reduce them. Know what to do in emergency. The instructor plays an important part in developing a defensive flying culture in the student. If the instructor fails in this, the likely result is an 'accident-prone' pilot – which is just shorthand for a pilot who does not practise effective risk management.

Ballooning instruction places **emphasis on pilots who can 'think for themselves'** rather than just fly mechanically, and this is vital for safety.

On the other hand **there are some unbreakable HABITS OF SAFETY** that the student must learn and perform as routine. They should be carried out every time, and **EXACTLY THE SAME WAY EVERY TIME**.
Some examples are:

- Always use checklists before take-off and landing.
- Attach launch rope and deflation line to basket before cold inflation begins.
- Never fly at low level without keeping a constant watch for powerlines.
- Pilot lights off before every landing, including intermediate landings.

Teach the habit of coolness and confidence, to help 'panic-proof' your student. The student should be confident in the balloon and in his own ability to fly it, and clear about standard emergency procedures.

Emphasise the need to plan ahead constantly, and to have backup plans so that quick decisions can be made in response to changing circumstances

Communication

Communication is such an important skill that it's worth saying a bit more about it.

Whenever information transfer is required, as in balloon training, it is normal that communication difficulties will exist. It is essential for the student to feel confident to express any problems, doubts or fears. It may take time to establish a relationship like this with a student. **It is preferable for a student to have at most 2 or 3 instructors, and to form a good relationship with each of them.**

Active listening is a vital part of instructing. Remember you have two ears but only one mouth. Try to listen twice as much as you talk!

Allow quiet periods between communicating, for the student to absorb information. There is a 'lag' between hearing a message and understanding it.

Keep information as brief and to the point as possible. An essential part of the instructor's task is to make sure that the student really has grasped the relatively few important facts he simply must know.

Constructive criticism

This is essential, but keep it brief. Consider the particular person you are talking to - some people are far more sensitive to criticism than others. Criticism should always be justified, relevant and constructive. Do not criticise someone for doing something which is in the Pilot Training Manual and really quite acceptable but not the way you would do it yourself. (Re-read the section of this manual 'Standardising Balloon Instruction').

To have the respect of your student, it is essential to give him respect. Take an interest in him, and understand his needs, concerns and aspirations.

Praise

Can have a very positive effect on a student's motivation and performance. If a student expresses concern about something, give an honest and realistic answer. Avoid the temptation to gloss over problems with an encouraging remark. It is important to check the reason for the concern – again, be a good listener. For example if your student seems concerned about his progress, don't just say *'Oh, you're doing fine'*. Check for more details – if for example you find he is concerned about some misjudged landing approaches, it may be more helpful to say *'Your low level control is quite good for this stage of training. You will learn to time the burns better with practice'*. Focus on the actions, and praise performance, not personal qualities.

It is important to **monitor a student's overall progress** towards the goal of becoming a pilot. Post-flight debriefing is a good time to summarise this. Comments in the student's Training Record should be brief, to the point and truthful. The last thing a student needs is a false impression of progress.

Troubleshooting

If you have a concern about how a student's training is progressing, there are several things you can do;

- Try to identify and discuss the problem with your student, and examine solutions together. Practise your active listening! Often the student will suggest his own best solution.

- If the difficulty is related to the learning process, it often helps to try another way to explain a point, or direct the student to the appropriate section of a textbook or manual.

- If this does not improve things, try discussing the situation with other instructors or appropriate ABF staff members, or asking another student or instructor to assist the student.

- If the problem appears to be related to the student's attitude – such as overconfidence, carelessness, disregard for rules and procedures, or unnecessary risk taking – you should certainly not ignore it. If discussing it with the student does not achieve an acceptable improvement, you are recommended to contact the ABF Operations Manager or Training Officer before training proceeds further.

ARE YOU UP TO DATE?
New information may be added from time to time.
Check on the ABF website that you have the latest version of these study notes

Methods of Instruction

Planning the lesson

Assess your student's progress from his Training Record. Note the flight exercises and instructor comments to date.

Discuss and decide the exercises you will do in this training flight – including previous and new ones. Develop the plan with the student, and make sure he is comfortable with the plan. If the student has not flown for several weeks, or has not flown with you before, the first part of the flight will need to be a review of his skill and knowledge levels, and probably include revision of some exercises.

Flight exercises need not follow a strict sequence. The Pilot Training Manual (Part 10 – Flight Training Exercises) suggests some useful variations. Use your judgement of the student and the flying opportunities. Stay flexible and have alternatives in case changing conditions do not suit your planned exercise. Always put the student's needs first. For example, if he is expecting to do the final landing but the surface wind has increased or thermic conditions are forming, it may be more appropriate to for you to take over and demonstrate a landing than expect him to do it.

Familiarising with the balloon

Do this with the student. Teach him to check the balloon documents for himself.

Read the balloon logbook. Check date of last annual inspection, and any recent airworthiness entries.

Check the flight limitations and load chart in the manufacturer's Flight Manual.

Discuss the balloon's features – size, hours flown, deflation system, rotation vents, burner and fuel tank features. Have you and the student flown this balloon? If not, what do you need to be aware of? Eg, porous fabric – he may need to burn more. Fuel tanks are manifolded – the procedure for changing tanks will be different. No rotation vents – he must learn to fly and land with the basket facing in any direction.

Flight location and conditions

Plan to fly in a suitable training area – fairly free of powerlines, stock and houses, and airspace considerations. Early training flights and solo flights should be free of complications (airspace, terrain, livestock, populous areas) so the student can concentrate on the basic controls. **Opportunities for low level flying are vital for practising landings and approaches.** Light surface winds help to build up confidence. Later training can be in areas or weather conditions that require greater skill or knowledge.

The training session sequence

EVERY flying training exercise should follow this sequence.

Pre-flight briefing

Say what you expect to do in the flight.

Airborne demonstration

Give a clear description and demonstration of the exercise:

- Name the exercise
- Describe the actions, and the effects to be expected.

A sample description:

*'This is how you **VENT** to release hot air.*
You pull the white parachute line down 1 to 2 metres – it takes quite a firm pull.
Hold it at that point for several seconds to allow air to escape.
Count the seconds to yourself so you know how much you have vented.
Don't exceed the Flight Manual limit of (say) 5 seconds.
Then let the line go up again steadily until it stops by itself – don't release it suddenly as it may get snagged.
Over the next 10 to 20 seconds you should notice the balloon start to descend, more quickly than just by natural cooling.'

- Pause – check the student has understood and is ready to continue.
- Check the balloon is in a suitable position to start the exercise.
- Demonstrate the exercise, **giving the description again** as you do.

Remember, description first, then combine it with the demonstration.

Handover/takeover procedure

Be clear who is responsible for what at all times. When teaching individual exercises, you should remain responsible for other aspects of the flight so the student can give his full attention to the new exercise. Eg, *'I want you to practise flying as level as you can for a few minutes. I'll look after everything else.'*

Indicate the fuel situation. Eg, *'I'm flying on this tank which is down to 30%, and the other two tanks are still full.'*

When the student is ready, say 'HANDING OVER' and leave the controls. Make sure the student says 'TAKING OVER' and moves into a comfortable control position. When taking control back, do the same in reverse.

If necessary, take control very quickly to avoid a problem such as a hard landing or infringement of airspace or an SZ. It is acceptable to do this and explain why afterwards. Warn the student this may happen at any time and he must allow you to do it. (See the section 'Intervention by the instructor' in this manual.)

Student practice and feedback

Observe how the student performs the exercise. His success will usually be in direct proportion to the quality of your demonstration and patter. Some students will be more tentative and nervous at the controls, others more aggressive and rough – and you may need to correct this.

Offer comments and feedback according to what you see. But do not interfere with the controls unless absolutely necessary.

Feedback is information about the success or otherwise of the student's attempt to copy your demonstration. If he does not appear to have understood, a further demonstration with slightly changed patter may be necessary. Otherwise he should simply repeat the exercise to try to improve his performance, and you should give feedback after each successive attempt. **Avoid moving to another exercise until he has performed the current one successfully several times.**

Fault analysis and prompting

The student MUST be allowed to make mistakes – provided safety is maintained. It is the observation of these mistakes that provides the feedback necessary to improve performance. At the same time do not hesitate to take control to prevent a hazardous situation developing. Sometimes you may wish to deliberately demonstrate an error, such as a heavy landing or overburning on approach.

Instead of repeating a whole demonstration it may be helpful to prompt the student as he does the exercise, eg say 'now' or tap on his arm to indicate when to burn. Or take the controls briefly to emphasise a point, eg *'notice how short my burns are and how I wait after each one to observe the balloon's response.'* Hand back the controls as soon as assistance is no longer needed.

Post-flight debriefing

Debrief PROMPTLY as soon as possible after packing up (and before too much champagne!)

- Give an accurate analysis of faults without nit-picking.
- Offer praise for specific exercises that the student performed well.
- Look ahead to the next exercise/s and advise the student what to expect and prepare for in his next flight.
- Fill in logbooks and the student's Training Record.

FLY SAFELY and ENJOY TRAINING!

YOUR FEEDBACK PLEASE!
If you have any corrections or suggested improvements to these study notes please advise the ABF Operations Manager.