

# The Gliding Federation of Australia Inc. trading as Gliding Australia



## TRAINING PRINCIPLES & TECHNIQUES MANUAL

Initial Issue  
December 2022

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All references to Gliding Australia in this document means the Gliding Federation of Australia Incorporated

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## REVISION HISTORY

### Amendment Procedures

Amendments will be promulgated by the Accountable Manager in conjunction with the Head of Operations and will be published online as a complete revised document. All nominated key position holders will be advised of approved published revisions. The Gliding Australia website online version will be the approved revision. Printed documents should be checked against the online revision to ensure the approved revision is used.

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	Number:	Date Received:
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<b>Email Address:</b>	<b>Phone:</b>	<b>Membership Number:</b>
<b>What should be changed?</b> (Include Section or Chapter reference if for a document. Attachments if required.)		
<b>Why? Description and Reason for change:</b> (Please include brief description and supporting comments as to why the change is needed, or the new initiative or the opportunity for change. Attachments if required.)		
<b>Sources</b> for supporting data or details that may assist the review: (Attachments if required.)		
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## INTRODUCTION

*Note: Throughout these modules, the term “Trainer” is used generically for instructors and coaches.*

Understanding and practicing Training Principles and Techniques is an essential part of being an effective Trainer. It is not enough that a trainer is competent at the skills and knowledge to be a glider pilot. To be an effective trainer they have to be able to understand how people learn, how to communicate effectively and in the case of gliding, use standardised aviation methods for instruction and modern techniques for sport coaching.

Effective trainers:

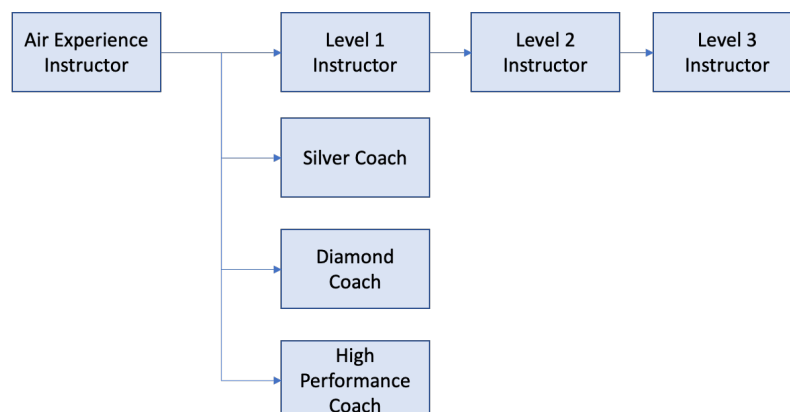
- Have mastery of *what to teach* (i.e. the Content),
- Know *how to teach* (i.e. the Process), and
- Have an understanding of behaviour, emotional Intelligence and the ability to motivate the student.

There are 10 modules to become qualified for Gliding Australia’s recognition of Training Principles and Techniques. The modules are designed for gliding instructors and coaches, but any member may undertake the modules and obtain the recognition.

Module 1 – Principles of Learning  
Module 2 – Characteristics of the Trainer  
Module 3 – Effective Communications  
Module 4 – Standard Instructional Format  
Module 5 – Flight and Risk Management  
Module 6 – Trainer-Trainee Relationships  
Module 7 – Human Factors  
Module 8 – Training Tools and Systems  
Module 9 – Safety Leadership and Just Culture  
Module 10 – Incident Causation

At the successful completion of these modules and assessments, the glider pilot will receive a Certificate of Completion “Gliding Australia Training Principles and Techniques”.

These modules are common prerequisites for all instructor and coach qualification levels.



## The Role of the Trainer

Gliding instructors and coaches at clubs are typically non-professional, so a good knowledge of basic training principles and techniques will improve training outcomes.



Gliding training is a skill-based process, most closely aligned to an apprenticeship. It comprises:

- Presentation of theory components to one or more students
- Demonstration of skills
- Effective questioning
- Gradual hand over of responsibility
- Evaluation of progress
- Remedial approaches to overcome gaps
- Provision of regular constructive feedback
- Evaluation of student competency
- Risk Management
- Safety leadership

The Glider Pilot Certificate (GPC) Syllabus forms the basis of the Gliding Australia Training System and Manual. There are suitable training resources available to the student that are easily used, and the trainer is not required to develop or teach courses to large groups.

The trainer is often required to teach a student who has been trained by another trainer. This means the use of a standardised syllabus and logbook evaluation tools are essential. It also introduces the need to evaluate prior progress quickly and then move forward with the training.

## Regulation and Training

In Australia, all civil aviation activity is Regulated by the Civil Aviation Safety Authority (CASA) through the Civil Aviation Act and supporting Civil Aviation Safety Regulations (CASRs) and approved Manuals.

CASA is supported by the Gliding Federation of Australia as a co-regulator and approved organisation with specialist gliding expertise. The GFA regulatory framework is defined in operational regulations that specify how we comply with the Civil Aviation Safety Regulations and any exemptions or instruments, plus rules in the GFA Manual of Standard Procedures. Some parts of our regulations and procedures are approved by CASA; other guidance material by the GFA Board.

AAFC Cadet and RAAF gliding activity is performed within the GFA operational and airworthiness regulatory framework, in VH-registered gliders, to GFA standards. However, AAFC and RAAF clubs apply additional rules for cadet activity, to meet their duty of care obligations.

The GFA club-based system allows for club committees, CFIs and Training Panels to apply additional local rules to meet their unique risks and circumstances, including duty of care obligations, provided that does not introduce non-compliance or standards below those approved by GFA and CASA. However, overall standardisation is the goal.

CASA approves eligibility for various pilot qualifications and licenses. Just as in General Aviation, CASA approves qualifications and syllabi for gliding charter pilots, instructors, solo and student pilots, and tug pilots.

GFA training is therefore performed within an approved regulatory framework, with competent, qualified pilots operating to approved standards defined in syllabi and competency standards.

GFA Operational Regulations require that glider pilots be trained in accordance with the Glider Pilot Certificate (GPC) Syllabus to Operational Regulations by authorised and qualified instructors and coaches.

Additional requirements for flight in powered sailplanes, and engine-on operation of powered sailplanes cross-country are also listed in Operational Regulations as well as the Powered Sailplane Cross-Country/Touring Syllabus.

Trainers must refer to the Operations Regulations, Manual of Standard Procedures Part 2 – Operations (MOSP2) and Manual of Standard Procedures Part 4 – Soaring Development (MOSP4) for direct references on privileges and limitations.

## References for Qualifications

GFA instructor prerequisites, authorisations and responsibilities, and instructor training syllabi are defined in the GFA Training Manual and MOSP2. Modifications to these may be defined in GFA Operations Directives, pending approval of changes by CASA.

GFA Coaching qualifications, prerequisites, authorisations, responsibilities and training syllabi for post GPC training are not subject to CASA regulation and are set by Gliding Australia.

GFA Instructors must comply with the requirements for:

- GFA membership,
- Medical fitness to fly in accordance with the requirements in MOSP 2,
- The Glider Pilot Certificate (GPC),
- Minimum age requirements, and
- Minimum experience requirements.

Note that the training syllabi applicable to Instructors are themselves competency based, approved by CASA and GFA, and supplemented by minimum requirements for qualifications and experience.

## Beyond the Training

Aside from the specific training role, the trainer, be they an instructor or coach, has a role as a leader. Their conduct and approach will be copied and used to set the standard. They will often be called upon for advice and informal mentoring and will sometimes need to counsel pilots. At all times, the trainer must be seen to maintain excellent standards and behaviour.

## MODULE 1 – PRINCIPLES OF LEARNING

### Learning Objectives of this Module

The learning objectives of this module are for the prospective trainer to be able to understand key concepts of how people learn, understand various models of learning, and apply this information in the way they plan and deliver training in the gliding environment.

This module provides guidance to trainers on a number of learning models and processes which offer insights into successful instructing, training, coaching and mentoring strategies, with key advice on limitations in learning, skill acquisition and reinforcement.

Trainers must be well versed in these concepts in order to develop safe and effective solo and cross-country pilots. No single process or model can fully explain the complexities of human behaviour and learning. Trainers will need to consolidate instructing and coaching skills and experience and recognise the importance of adaptation and flexibility in delivery of training.

### The Learning Process – the acquisition of skill

The training task is twofold:

- Firstly, to provide PILOT EDUCATION (**knowledge**) as a background for making FLEXIBLE responses.
- Secondly, to provide PILOT TRAINING (**skills**) as a background for making CONDITIONED responses.

This leads to four requirements:

1. The **aims and objectives of the training**<sup>1</sup> must be clearly defined, not only as a complete syllabus of training but also at each stage of the syllabus, covering all required competencies.
2. The trainer's **knowledge and ability** in the subject matter of the syllabus (theory and practice) must be of the very highest quality.
3. The trainer's **ability to impart knowledge** is essential.
4. The trainer's **understanding of human learning limitations** and effective training techniques.

A high degree of flying ability and a positive attitude towards safety in the air are known prerequisites to become a trainer. We are concerned here with putting these two prerequisites together with an understanding of human learning limitations. In this way we achieve the maximum effect as trainers.

Modern training is based on teaching students to reflect, think and to reason. This demands more thought and effort than does the exercise of their memory. The ultimate test of our instruction is not how much we have told them, but how much we have exercised their minds and "made them think". Most skills can be thought of as information processing skills.

Knowledge may be further divided into *procedural* knowledge (e.g. SOPs, heuristics) and *causal* knowledge. Causal knowledge is the basis for understanding how the world works and allows people to make flexible decisions based on that understanding.

In practice, these processes are not mutually exclusive and they can support each other. For example, in spin recovery the standard recovery procedure is rote-learned, but deeper causal knowledge of aerodynamics of stalling and lateral damping will help to support its retention. Similarly, extensive practice in the recovery procedure leads to its automatisisation as a skill in 'muscle memory'. The taxonomy informs the training methods appropriate for skill and knowledge acquisition, e.g., perceptual-motor experience, rote-learning, and education.

The following sections present various adult (experiential) learning and information processing models and practices.

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<sup>1</sup> The generic term "training" may be assumed to encompass the provision of both knowledge and skills.

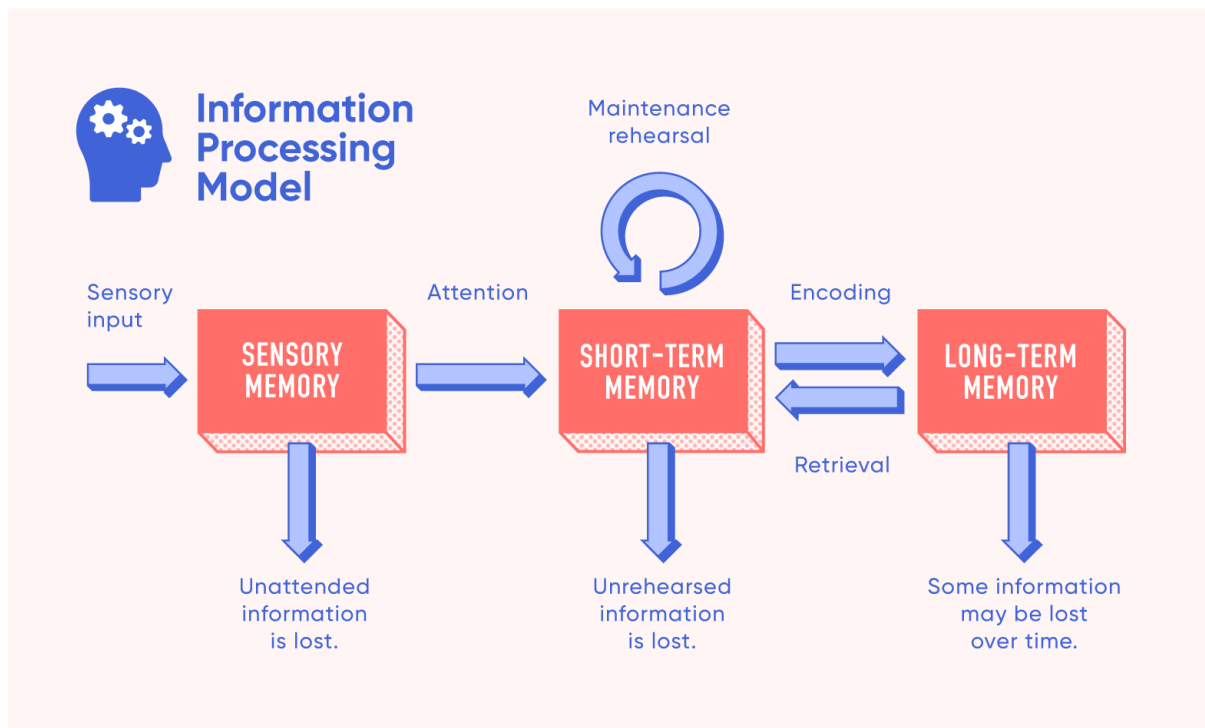
## Information Processing Models

There are a number of variations of models used to describe how the brain processes information. The multistore model of memory (also known as the modal model) is a structural model. It is proposed that memory consists of three stores: a sensory register, short-term memory (STM) and long-term memory (LTM).

Information:

- passes from store to store in a linear way and has been described as an information processing model (like a computer) with an input, process and output.
- is detected by the sensory organs and enters the sensory memory. If attended to this information enters the short-term memory.
- from the short-term memory is transferred to the long-term memory only if that information is rehearsed (i.e. repeated).

If maintenance rehearsal (repetition/practice) does not occur, then information is forgotten, and lost from short term memory through the processes of displacement or decay.



### The Memory Stores

Each store is a unitary structure and has its own characteristics in terms of encoding, capacity and duration.

**Encoding** is the way information is changed so that it can be stored in the memory. There are three main ways in which information can be encoded (changed):

1. Visual (picture),
2. Acoustic (sound),
3. Semantic (meaning).

**Capacity** concerns how much information can be stored.

**Duration** refers to the period of time information can last in the memory stores.

### Sensory Memory

- Duration: ¼ to ½ second
- Capacity: all sensory experience (v. larger capacity)
- Encoding: sense specific (e.g. different stores for each sense)

### Short Term Memory

- Duration: 0-18 seconds
- Capacity: 7 +/- 2 items
- Encoding: mainly auditory

### Long Term Memory

- Duration: unlimited
- Capacity: unlimited
- Encoding: mainly semantic (but can be visual and auditory)

One strength of the multistore model is that it provides us a good understanding of the structure and process of the STM. However, the model is oversimplified, in particular when it suggests that both short-term and long-term memory each operate in a single, uniform fashion. We now know this is not the case.

However, linear models of information processing (input - processing - output) have been largely replaced by an understanding of the brain as a 'prediction machine' (e.g., Clark, 2015, *Surfing Uncertainty: Prediction, Action, and the Embodied Mind*). That is, the mind generates expectations of the world based on experience, which are then tested against reality. Mismatches are then used to refine understanding of the current situation, giving situation awareness. Errors in the matching process include seeing what one expects to see rather than what is there (e.g., the gorilla basketball video), and confirmation bias where expectations override contrary evidence. A good mitigation of confirmation bias is to search for disconfirming evidence of a belief.

**"I hear and I forget"**

**"I see and I remember"**

**"I do and I understand"**

*Confucius*

### Strategies for Information Processing

Emphasis has been placed on the theory that the human has only a limited capacity for processing information, yet their senses are receiving a continuous flow of massive amounts of information. The ability to react effectively to one thing may be incompatible with reacting effectively to something else. Attention can be devoted to only part of the information.

For tasks which have not become "automatic" there is a trade-off between speed and accuracy. A human can perform almost any task at different rates. When emphasis is placed on speed, errors are increased. When emphasis is placed on accuracy, time is increased. When stimuli become uncertain, occur unexpectedly, or are difficult to discriminate, more samples need to be received to reach a given level of confidence that a particular response should be made (i.e. decisions are slow).

Instructions provided (either implicitly or explicitly) will influence the way information is processed. Faced with a situation involving a large amount of information which cannot be processed in available time, a person may use several strategies to avoid undue pressure. One is to discard information merely because it fails to possess some feature. This may explain why pilots, likely under considerable pressure, having got themselves low in the circuit, may land with the undercarriage up *in spite of the warning horn blaring loudly*.

## Decision-making

People are in a continual loop of interacting with their environment - sensing, intervening in the world, and evaluating the consequences of their interventions..

The end purpose of all the information processing is to reach a decision of some kind (where will I land? Which cloud should I take? Am I flying too slow? Etc)

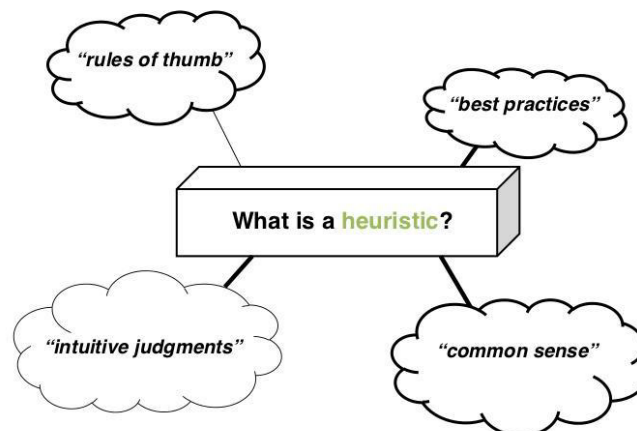
Research has determined that people tend to be conservative in decision-making. A useful analogy here might be the pilot who joins the circuit for a landing, and the wind has changed considerably since he took off. They set off on a circuit to suit the original take-off direction (preliminary "guess") and in spite of noting the wind-change during the downwind leg they are reluctant to change their mind until it is too late. At a VERY late stage, they do change their mind, but it is too late, resulting in an accident.

The most relevant aspect for gliding is the shedding of tasks in a multi-tasking environment.

## Heuristics

A **heuristic** is a mental shortcut (if-then rules) that allows people to solve problems and make judgments quickly and efficiently. These rule-of-thumb strategies shorten decision-making time and allow people to function without constantly stopping to think about their next course of action.

While heuristics can reduce the burden of decision-making and free up limited cognitive resources, they can also be costly when they lead individuals to miss critical information or act on unjust biases - they are brittle and may lead to error on occasion.



## Thinking, Fast and Slow

Daniel Kahneman's research emphasises two modes of decision-making:

- thinking **fast** (automatic, instinctive, easy, rules-based) *versus*
- thinking **slow** (calculating, deliberate, difficult)

These opposing modes affect our capacity to process information and decide, and our propensity to take short-cuts and instinctive decisions, often with great outcomes, but sometimes leading to negative consequences. Kahneman describes the differences between these two thought systems and how they arrive at different results even given the same inputs. This book is recommended reading for all glider pilots but especially trainers. (Ref. 1: Kahneman: Thinking, Fast and Slow, 2011, ISBN 978-0374275631)

## Laws of Learning

There are many models and laws of learning. Here, we discuss some. Current thinking is that there are seven main laws:

- The Law of Readiness – glider pilots want to learn
- The Law of Exercise – practice and learning frequency
- The Law of Effect – when it's fun, learning is easier
- The Law of Primacy – what you learn first is remembered
- The Law of Intensity – more frequent learning enhances retention of information
- The Law of Recency – the last thing you did, you remember best
- The Law of Repetition – repetition helps to make information go into long term memory.

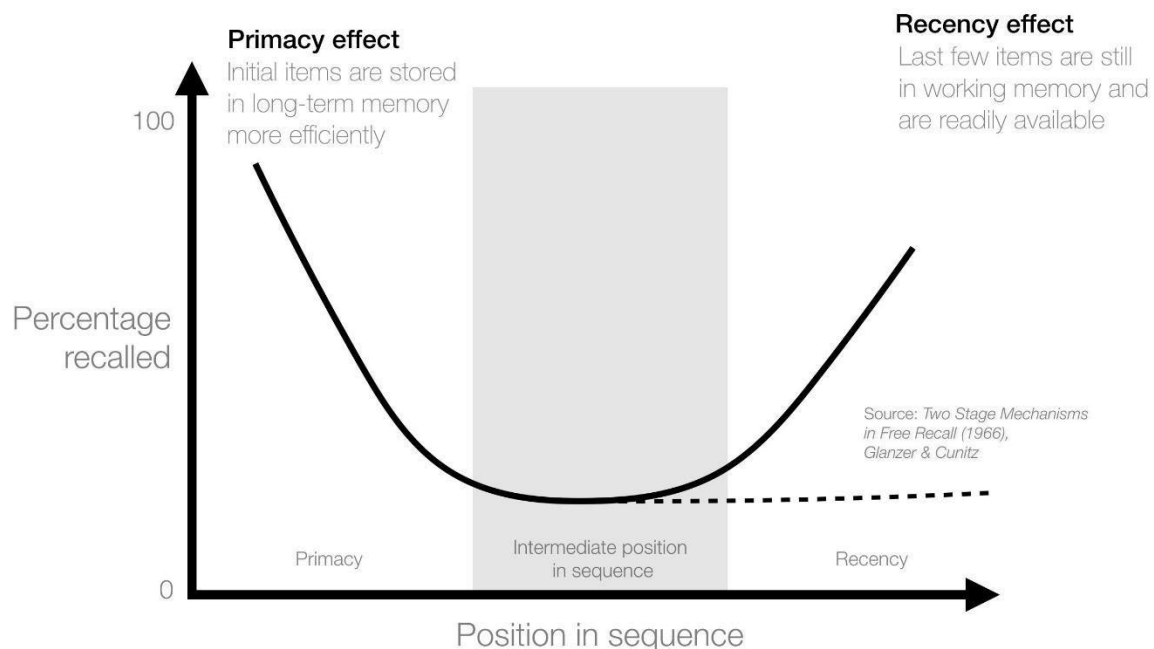
### Primacy and Recency (Serial Position Effect)

The Primacy Effect is the principle that you remember some things at the beginning because it occurred first– this becomes primary. In learning, this means that we remember best what we learn first.

The **Recency Effect** is the finish. You remember the end the best. The middle is often long, it blurs and is not easily remembered. (Ref. 2: [The Recency Effect in Psychology \(verywellmind.com\)](https://www.verywellmind.com/the-recency-effect-in-psychology-2796161))

Serial Position Effect links these two effects - One cannot define and discuss the Recency Effect in learning without understanding the Primacy Effect.

Sometimes we miss the reasoning and facts behind and supporting our learning. We are susceptible to the information we get as a result of the recency effect at the end of the lesson, whether such information is accurate or not.



### Primacy

In terms of gliding instruction and coaching it means that it is very important that whatever is taught to the student must be right the first time. Part of the instructional process is the formation of habits which will be relied on in a person's later flying life. It therefore follows that the habits instilled in the student must be good, safe habits.

From a student's viewpoint, it is much easier to learn something properly and correctly in the first place, rather than have to unlearn it and then re-learn it afresh. The same principle applies to the trainer - train



properly in the first place and it will not be necessary to undo all the work already undertaken in order to do it all over again. This can be an issue of intense frustration for many trainers, who have to work hard to help pilots unlearn and relearn when foundation concepts and habits are not correctly instilled first time.

If correct and SAFE habits are not instilled into a student right at the beginning, THEY WILL NOT BE EASILY ACQUIRED LATER. The most obvious example of this is in training students in proper lookout and scanning techniques, to very high standards - a student cannot be permitted to move the stick and roll into a turn without proper lookout, right from the beginning.

It is essential that all trainers use consistent language and standardised training syllabus so that the first messages in any particular part of the syllabus is correct the first time.

### ***Recency***

The recency effect is dependent upon short-term memory. This type of memory is the ability to hold a relatively small amount of memory in the mind for a brief period of time. This information is held and kept active for use, but it is not manipulated.

Short-term memory is limited in terms of both capacity and duration. Most information in short-term memory only lasts about 20 seconds without active maintenance or rehearsal. Approximately four pieces of information can be held in short-term memory for a brief period.

Perhaps not surprisingly, delaying recall after hearing a list of items has a dramatic impact on the recency effect. A very long delay between learning items and recalling will often completely eliminate this effect.

In other words, the recency effect may occur because you are able to easily remember those items that are still being briefly stored in your short-term memory. However, if you do not rehearse that information, it will quickly be lost and fade from memory.

The trainer can usefully capitalise on items learned recently by using repetition of key points while the information is fresh in a student's mind. Recency effect combined with repetition is a very powerful aid in ensuring that information is successfully transferred from short-term to long-term memory.

Trainers recognise the law of recency when they plan a lesson summary or a conclusion of the lecture.

### ***Primacy and Recency in the Learning Process***

In order for effective learning to take place, it is important to plan learning sessions to take advantage of both the Primacy and the Recency Effects. Use prime-time windows to teach new information and down-time for practice. The primacy time – the beginning of the learning session – and the recency time – the end of the learning session – are the two most effective times for learning. The goal is retention and storage in our long-term memory. Retention varies with length of intervention.

As the lesson time lengthens, the percentage of down-time (when retention is at its lowest) increases faster than for the prime-times. When it comes to the length of the learning session, shorter (in general) is better. Varying the type of activity, the instructional method used for learning, or even the topic between peak periods is beneficial to learning.

Sometimes we use the end of our learning session to relax and wind down. The recency effect means this is an effective time for application to retain what we have learned. So it is unwise to use the end of the session to “waste” time. Students will be less likely to store what they have learned in their long-term memory. Use prime-time wisely.

Ensure the length of the lessons (ground lectures and flights) take account of the effects of primacy and recency – i.e. if the lesson is too long the only things that are remembered are the last things.

Use the recency effect to emphasise a few important points that they will retain. i.e. in the debrief.

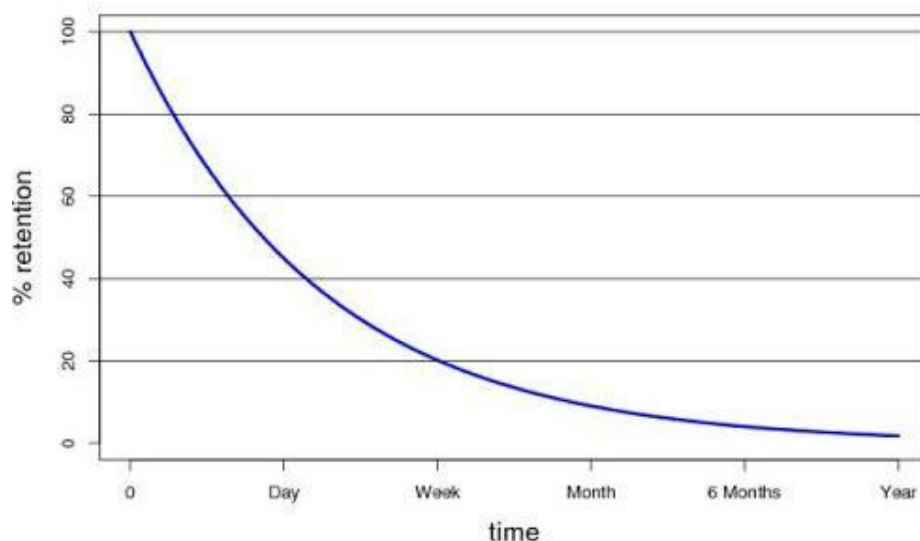


**New Information – first**  
**Practice and Review – middle**  
**Reinforcement of new information – end**

## Remembering

The **forgetting curve** hypothesises the decline of memory retention in time. This curve shows how information is lost over time when there is no attempt to retain it. A related concept is the **strength of memory** that refers to the durability that memory traces in the brain. The stronger the memory, the longer period of time that a person is able to recall it. A typical graph of the forgetting curve purports to show that humans tend to halve their memory of newly learned knowledge in a matter of days or weeks unless they consciously review the learned material.

Memory retention is 100% at the time of learning any particular piece of information. However, it drops rapidly to 40% within the first few days, after which, the declination of memory retention slows down again.



*Figure 1- the Forgetting Curve*

## Learning Styles

We know that people learn in different ways. There are theories on learning styles presented below; however, some researchers have said there is no credible evidence that learning styles exist, but that learners do differ in their abilities, interests, and background knowledge. The information presented enables the trainer to adjust their training method with the knowledge of learning theory, but should also take into account personality, background, confidence, and other characteristics and experiences.

1. The term “learning styles” implies that every student learns differently.
2. Students’ preferred learning styles have significant influence on their behaviour and learning.
3. Students’ preferred learning styles should be matched with appropriate learning strategies.
4. Everyone’s different. It is important for trainers to understand the differences in their students’ learning styles.
5. An individual’s learning style refers to the preferential way in which the student absorbs, processes, comprehends and retains information.

6. Information that is accessed through students' preferred styles results in an increase in their levels of comprehension and motivation.

### Kolb's Experiential Learning Theory

Kolb's learning model considers four processes of adult experiential learning, forming a learning cycle, with implications for the student and the trainer. This model is used in high complexity skills development, high performance sports coaching, and flying training. (Ref. 3: [Kolb's Experiential Learning Theory & Learning Styles - Educational Technology](#))

The different stages of the cycle are associated with distinct learning styles. Individuals differ in their preferred learning styles and recognising this is the first stage in raising students' awareness of the alternative approaches possible.

From the student's perspective, there are four main experiential learning styles:

Style:	Learn by:	
Experience	Doing	Students' preference, actual experience in the operating environment, observing cause and effect, actions and outcomes – hands on.
Reflection	Reflective Observation and Recall	The trainer may prompt reflection, or the student may self-reflect, unprompted by the trainer. Without reflection, students may repeat earlier mistakes.
Concepts (Theory)	Theory and Conceptualisation	Those who like to assimilate information and theories, to analyse and think, may have a bias towards concepts.
Practice and Visualisation	Visualisation, Rehearsal, and Repetition.	Some students, particularly intuitive types, are attracted to practice and visualisation - experimentation.

### Adult Learning

Adults are relevancy-oriented, meaning they need to see a reason for learning something. They are also goal-oriented, needing to see the applicability of the experience in order to also see the value. When training adults remember that a theory will need to be related to practical experiences.

People of all ages come to gliding to learn to glide and continue to develop their flying skills because they have a keen interest in the sport and the challenges. They are already motivated and excited. Whether they are 13 years old or 65 years old, they are all adult learners in the gliding context.

Experiences that produce feelings of defeat, frustration, anger, confusion, or futility are unpleasant for the student. For example, if Bloggs is being taught landings during the first flight, they are unlikely to do well. It is likely to make them feel inferior and become frustrated, which weakens the learning connection.

Adults:

1. Are internally motivated and self-directed.
2. Bring life experiences and knowledge to learning experiences.
3. Are goal oriented.
4. Are relevancy oriented.
5. Like to be respected.
6. Want to enjoy their learning experience and have fun along the way.

So, for each of these principles, we can develop some "so what" lessons for trainers:

### Internal motivation and self-direction

- Adult learners resist learning when they feel others are imposing information, ideas or actions on them.
- Your role is to facilitate a student's movement toward more self-directed and responsible learning as well as to foster the student's internal motivation to learn.
- *Develop rapport* with the student to optimise your approachability and encourage asking of questions and exploration of concepts.
- *Show interest* in the student's thoughts and opinions. Actively and carefully listen to any questions asked.
- *Lead the student toward inquiry* before supplying them with too many facts.
- Provide regular constructive and specific feedback (both positive and negative).
- Review goals and acknowledge goal completion.
- *Encourage use of resources* such as books, journals, internet and other resources.
- Acknowledge the preferred learning style of the student.

### Life experience and knowledge in learning

- Adults like to be given the opportunity to use their existing foundation of knowledge and experience gained from life experience and apply it to their new learning experiences.
- *Find out about your student* – their interests and past experiences (personal, work and study related).
- *Assist them to draw on those experiences* when problem-solving, reflecting and applying clinical reasoning processes.
- *Facilitate reflective learning opportunities* which can also assist the student to examine existing biases or habits based on life experiences and “move them toward a new understanding of information presented”.

### Goal orientation

- Your role is to facilitate a student's readiness for problem-based learning and increase the student's awareness of the need for the knowledge or skill presented.
- Provide meaningful learning experiences and relate these to the overarching goal of flight.
- Provide real examples that are relevant to the student.
- Ask questions that motivate reflection, inquiry and further research.

### Relevancy orientation

- Adult learners want to know the relevance of what they are learning to what they want to achieve.
- Ask the student to reflect on how new syllabus items will help them to meet their learning goals.
- Students really benefit from regular training, tying theory to practice.
- Clearly explain your clinical reasoning when making decisions and choices for each syllabus item.
- Be explicit about how what the student is learning is useful and applicable to the objective. For example, selecting an aiming point on the airfield is good preparation for selecting an aiming point in a paddock.
- Promote active participation by allowing students to try things rather than observe.
- Demonstrate and then give them practice, with ample repetition in order to promote development of skill, confidence and competence.

### Respect

Respect, being heard, being listened to, is a primary social need. Respect can be demonstrated to your student by:

- Taking interest.
- Acknowledging the wealth of experiences that the student brings.
- Regarding them as a colleague who is equal in life experience.
- Encouraging expression of ideas, reasoning and feedback at every opportunity.
- Building a culture of respect is necessary for building motivation.

## Enjoyment

- People respond and learn more effectively if they are enjoying the experience.
- Take the time to make the exercises fun.
- The student needs to remember some part of the flight that was done well, or was fun, or a new skill learnt or mastered. ALWAYS find some aspect of the flight to compliment.

## Enhancements to Learning

Students learn through their own activity; the trainer *helps* people to learn. Through the process of directed activity students learn the skills and knowledge required to become good, safe pilots. Experts caution against making students feel as if “others are imposing their will on them”. The trainer should enable their students to move toward self-directed learning in which they take responsibility for their learning and the path it takes.

Learning is made easier when the following factors are used:

1. **READINESS:** Ensure students are mentally, physically and emotionally ready to learn.
2. **PRIMACY:** Present new knowledge or skills correctly the first time.
3. **RELATIONSHIP:** Present lessons in the logical sequence of known to unknown, simple to complex, easy to difficult and concrete to abstract.
4. **EXERCISE:** Practice and repetition.
5. **INTENSITY:** Use dramatic, realistic or unexpected things, as they are long remembered.
6. **EFFECT:** Ensure students gain a feeling of satisfaction from having taken part in a lesson.
7. **RECENCY:** Summarise and practice the important points at the end of each lesson, as the last things learned and practiced will be remembered the longest.

## Barriers to Learning

### Stress

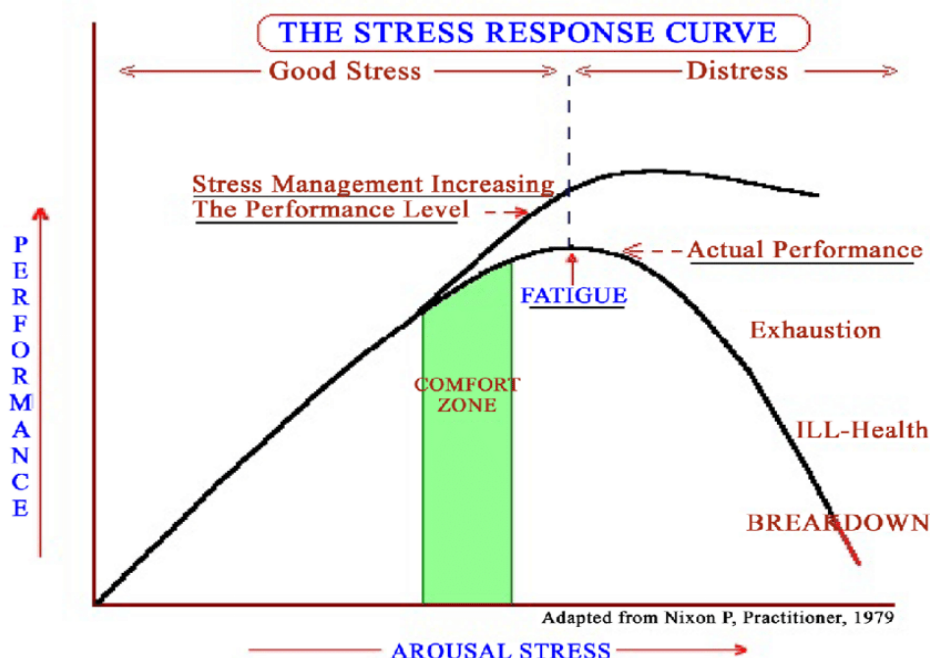


Figure 2 - Stress-Response Curve

Stress is defined as the demand the environment places on an individual. Included within stress are workload, boredom, anxiety, heat, noise, low humidity and other similar factors and conditions.

The diagram above shows that the level of stress facilitates performance level to the point of *eustress* or good stress or healthy tension. The area called the Comfort Zone indicates the range of stress levels that we can absolutely manage and facilitates performance levels. As stress begins to be perceived as excessive, the person reaches a fatigue point wherein the performance levels starts to decline. The ultimate end of excessive level of stress is known as distress. In the gliding context, we need to avoid putting students in the distress zone.

### Overload

Two types of overload are recognised:

- Speed stress - speed stress occurs when the rate at which signals occur is excessive.
- Load stress - results from having a number of different sources of information.

Typical human reactions to overload **include**:

Omission	Ignore some signals (or responsibilities) or information.
Error	Process information incorrectly.
Queuing	Delay responses during peak loads; catch up during lulls.
Filtering	Systematic omission of certain categories of information according to some priority scheme.
Approximation	Make a less precise response.
Escape	Give up.
Tunnel Vision	The brain sheds tasks and only concentrates on one; heart rate rises; sounds can be blanked out. Limited capacity single channel information processing system.

One characteristic of humans is that they tend to degrade gradually. Even when faced with excessively high requirements, the human can keep going. It is important for the trainer to determine early if the student is becoming overloaded.

Information overload is a state in which a decision maker faces a set of information (i.e. amount, complexity, contradiction, inconsistency etc) that put together, inhibit the decision maker's ability to optimally determine the best possible decision due to limited serial processing ability and short-term memory.

While tunnel vision can limit perception, it can also have a debilitating effect on hearing. From the perspective of brain science, this makes sense as there is a tight connection between the audible and visual processors in the brain.

### Underload

The effects of overload are dramatic; those of underload not as immediately apparent. But underload can be as dangerous as overload. Adverse effects like illusions and hallucinations become apparent only after some time. Literally hundreds of studies indicate that performance rapidly degrades on tasks such as monitoring radar displays (in which the appearance of a target cannot be predicted and occurs infrequently). Degraded performance certainly takes place within half an hour, and probably within 10 minutes or so. This is far less common in the gliding training environment.

## Barriers for Older Adults

Learning a new skill is more effective if the training is undertaken frequently. Older adults may suffer from:

- A lack of time.
- Financial barriers.
- Negative mindset or lack of confidence for learning new skills.
- A lack of flexibility.
- Advancing age.
- Learning slowly as age increases.

Age is often associated with a decline in cognitive abilities for learning new skills. However, the evidence is that many forms of motor learning appear to be relatively well preserved with age; however, learning tasks that involve associative binding (a process in which multiple items become bound to one another) tend to be negatively affected with age (e.g. coordination).

Older adults learning to glide or extend their skills to cross country may take longer to learn and consolidate some concepts. Trainers should be aware of this and ensure key concepts are consolidated and adequate before moving to new sequences.

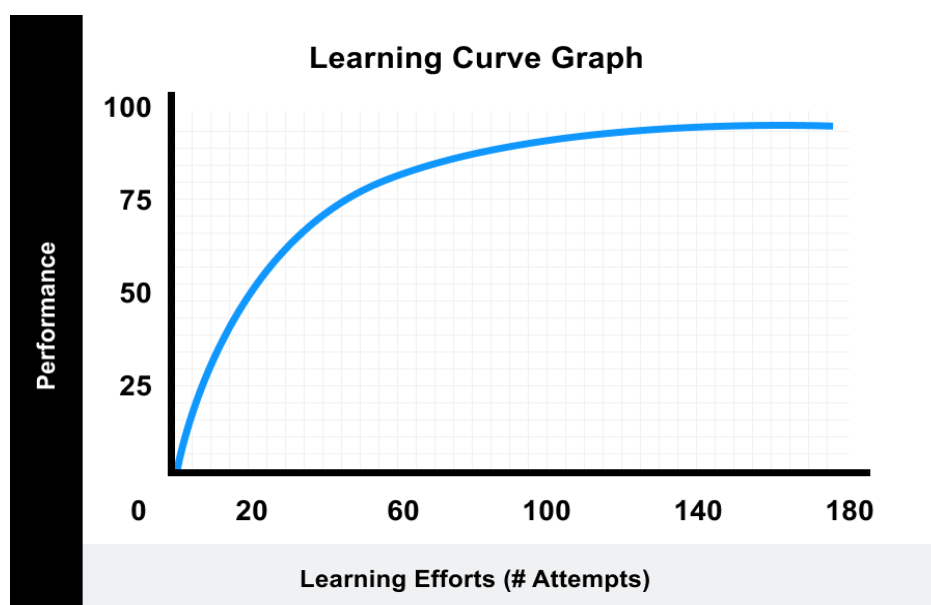
## Student progress

### Rates of Learning

Although it would be convenient if the rate of learning could be consistent and predictable, it is not always so. Students may progress rapidly for a period, and then suddenly progress more slowly or even retrogress for a time. Such variations are to be expected. It is the trainer's responsibility to detect them as soon as possible and to try to eliminate their causes by redirecting your instruction to level them out as much as possible.

### Advances and Plateaus

Learning proceeds rapidly at first when a new task is introduced then slows as a reasonable degree of proficiency is achieved. When plotted on a graph, this decrease in the rate of learning is shown as a levelling of the ascending curve that represents progress. As students achieve the ability to bring together other aspects of training, progress then tends to resume its upward climb at a slower but fairly constant rate.



The relatively level portion of the learning curve is termed a plateau. It may represent a period of training during which the student is perfecting the application of the new skill. The correlation of the new skill with the other learning tasks may not yet be obvious.

The rate of progress in learning is affected by so many outside influences that it is not often predictable. The rate of learning is affected by such things as:

- diversions,
- lagging motivation,
- emotional disturbances,
- upset training schedule,
- weather,
- equipment breakdown, and
- unavoidable absences.

Slumps or plateaus in the rate of learning are more likely to occur as the student advances to more complicated operations. Often the reason is that a student has failed to master one basic element of the operation, and this leads to the appearance of deficiency in the performance of later elements. Improvement usually becomes normal again when this one basic element is mastered. You can accelerate improvement by careful fault analysis and by concentrating instruction on that one phase of the operation concerned.

Without competent instruction, students will probably not understand why they aren't improving and will become discouraged. This discouragement tends to prolong the plateau. During such periods of discouragement, trainers should step in to isolate and correct the situation and to provide special incentives until normal progress is resumed.

Reversals sometimes occur, during which a student's performance becomes worse with continued practice. Generally, such reversals are due to a faulty habit pattern involving one of the basic elements of the syllabus involved. This faulty habit causes your student to practice an erroneous performance repeatedly, until correction becomes very difficult. Never accept such errors and misunderstandings as normal plateaus in the learning process. They must be corrected before progress can resume.

During advanced stages of learning, the rate of progress can be very slow.

## References

1. Kahneman: Thinking, Fast and Slow, 2011, ISBN 978-0374275631
2. [The Recency Effect in Psychology \(verywellmind.com\)](https://www.verywellmind.com/the-recency-effect-in-psychology-2795887)
3. [Kolb's Experiential Learning Theory & Learning Styles - Educational Technology](#)



## MODULE 2 – TRAINER CHARACTERISTICS

### Learning Objective of this Module

The learning objective of this module is that the prospective trainer will have an understanding of the qualities required to become an effective trainer. The prospective trainer should use this module to reflect on their personal qualities, compare them to what is required, and work towards increasing their skills and approach accordingly.

### Background

The quality of overall training is only as effective as each of the trainers providing it. Gliding, being a volunteer sporting organisation, places a lot of trust in the abilities of its trainers. The quality of a trainer can either make or break the effectiveness of a training program.

A great trainer must have in-depth knowledge of the subject matter that they will be training. Without understanding the content, trainers are unable to simplify the content into teachable and relatable chunks of information. The delivery of training is one of the most integral pieces of a training program, and the trainer is responsible for making sure learners understand the training material.

### Flexibility and Creativity

An effective trainer must have the ability to be flexible and think creatively. Lesson plans for training may work perfectly for one learner, but they may be ineffective or disengaging for another learner. A great trainer must be able to “read” their student and adjust their training delivery to meet the needs of the learners.

For example, a student may arrive at the airfield ready for a particular exercise in the syllabus, but the weather is not suitable. The trainer must be flexible in their approach and must think creatively to adjust what exercises can be achieved, and perhaps revert to revision or a new sequence that suits the weather.

Additionally, students may have less or more background or skill than the information presented shows. A trainer may need to adjust their content as they deem necessary. Each training solution is going to have its obstacles, and a trainer must be open to change.

### What example do you set?

**"Example is not the finest way to influence people - it's the only way"**

*Albert Schweitzer*

The tendency of a student to emulate what the trainer does is a very strong instinct - indeed it is an important part of the training process. It follows that **every** aspect of the trainer's work must be of the highest quality - flying skill, airmanship, risk awareness, adherence to airspace restrictions, regard for placarded flight limitations, to name a few.

A pilot flying sloppily will be copied, as will a trainer who adopts a "she'll be right" attitude towards, for example, airspace restrictions or the requirements of the Visual Flight Rules. Perversely, it seems much easier for trainees to adopt bad habits than to adopt good ones - and the trainer must put continual effort into ensuring that the examples set are good ones. This also means there must be *consistency and standardisation* of what is taught.

Influence is exerted by trainers in all manner of ways, by their actions, decisions, body language, words and interactions with others. Trainers in a gliding environment are in leadership roles, and by this nature, influence how students (and other pilots) behave, make decisions, or take action. It is up to you to set the highest example possible. Some examples of where you influence:



- The way you carry out a daily inspection
- Deciding to stop flying activities for an impending storm
- Respecting airspace limitations
- Correct use of radio terminology
- Professional briefings
- Superb airborne demonstrations
- Knowledge of rules, club processes
- Adherence to standards, and
- Even the way you dress!

## Self-Discipline

This is the logical follow-on from the need to set a good example. There is no point expecting people to exercise self-discipline when the trainer is not prepared to do so themselves.

In a self-regulatory sport like ours, everyone should take pride in adhering to the rules which we all play a part in formulating. This is especially true of trainers.

## Integrity

A trainer must show consistency, fairness and impartiality throughout all training. Nothing undermines the reputation and authority of a trainer as much as failing to adhere to these basic qualities. One only has to think back to school days to remember the adverse effect of favouritism towards one pupil on the class as a whole.

Avoid pre-judgements and treat all students equally.

Gliding Australia has a Member Protection Policy which includes Instructors' Code of Conduct. Ensure you find that Policy, read it, and understand it. Non-compliance with the Code will result in disciplinary action.

## Empathy

This can be defined as imagining what might be going through the student's mind during a training sequence. It can be thought of as putting yourself in the other person's shoes and imagining how you would respond under similar circumstances. It is of great benefit to a trainer to have a high degree of empathy and to recall what it was like when you were yourself a student pilot struggling to learn to fly or taking early steps in cross-country flying.

The trainer must at all times respect the student as an individual and must never indulge in tactics such as ridiculing, belittling or unnecessary assertion of authority. Respect, the need to be heard, the need to have one's views taken seriously, is a key characteristic of a positive gliding club culture.

## Knowledge and ability

It is imperative that a trainer maintains a high level of skill and competency in every aspect of training activity. As well as maintaining currency on all the gliders in the club fleet (how can a trainer convert a pilot into a new type if they have not flown it in living memory?), a trainer should ensure they have a very good knowledge of theory subjects and all Gliding Australia operational documents, club rules, regulations and procedures.

The worst thing a trainer can do is try to bluff a student. If a question is asked to which the trainer does not know the answer, there is no shame in admitting this and making every effort to find out the answer. It is vitally important that the required research is in fact carried out and that the trainer takes pains to locate the student and clear the matter up beyond doubt. If this is not done the trainer's credibility is seriously eroded; conversely, working with the student to locate the reference and find the answer helps boost credibility.

## Responsibility

Many of the trainer's duties are clarified when it is realised that the process of gliding instruction consists of a gradual transfer of responsibility from trainer to student.

This is demonstrated by the fact that, on a student's first flight, the trainer is taking 100% responsibility for the glider and its occupants while, at the end of pre-solo training, this 100% responsibility has been assumed by the student. During training, therefore, there has been a complete transfer of responsibility from trainer to student.

Two main rules arise from this:

1. It is the trainer's task to transfer responsibility at a rate with which the student can cope.
2. It should be absolutely clear to the student at all times exactly where their field of responsibility lies e.g. what controls they are responsible for, when they must fly and when the trainer will fly, what decisions are up to them, and so forth.

Early in training there will be a rapid switch of responsibility from trainer to student and back again, as sessions develop from demonstration to practice. There must be no confusion as to who is doing what, and when.

Throughout training, the student learns to exercise the increasing degree of responsibility they are given but has always clear in their mind that the trainer has the overriding responsibility.

The trainer must never hesitate to take back responsibility for any good reason, but when they do, they should take it all. In the earlier stages, particularly, the student will be made bolder and more confident if they know someone is going to say, "I have control", and take over responsibility if trouble comes up.

Having given responsibility, the trainer, within the indicated limits, should let the student exercise this responsibility. If the student feels the trainer is on the controls in their supposed area of responsibility, they will know they are not really being given responsibility and they simply will not be responsible in that area. If the trainer feels they have to stay on the controls, however lightly, they can take this as a clear indication that something is wrong with the previous training. They should go back, teach that part again until the student checks out satisfactorily - because the first rule requires that the student be given responsibility at a rate with which they can cope.

Checking the student's ability to handle what they have been given is a constant process and one of the most important in the whole training field. One thing not properly learned can confuse future work completely.

Therefore, the trainer must advance the student only when they are quite certain of the student's understanding and competence up to that stage of progress. This involves demonstration by the student to the trainer, not only of an ability to perform the exercise in question, but also an understanding of it. This requires really good communication BOTH WAYS – information and questions from the trainer - questions, answers and comments from the student.

This ability to handle the level of responsibility given to them is an important requirement for the student throughout, but at the stage of first solo it is vital. At this stage the trainer is checking for a complete transfer of flying responsibility, and whether the student has the ability to handle it. A useful mental exercise for the trainer might be to ask themselves whether they would be happy to fly bound and gagged with the particular student at their particular stage of ability.

It should be clearly understood that, regardless of responsibility handed over for the purposes of training, the trainer takes the ultimate responsibility for anything that happens on any flight under their supervision.

This process continues throughout a pilot's flying career - through advanced training and checks, through coaching in performance flying and soaring. In the coaching phase, the transfer of responsibility is enhanced by the trainer assisting and guiding pilots to undertake more advanced flying techniques and challenges. The trainer may be an important mentor for the pilot, facilitating opportunities for advanced coaching and also self-improvement under guidance. The pilot is increasingly responsible for their self-development and assisted development, in concert with trainers and gliding peers.

## Communication

Arguably, one of the most important and most obvious characteristics of a good trainer is the ability to communicate effectively.

During the pre-solo phase, the trainer gradually communicates to the student all the knowledge and information they will require when they assume the full responsibility of solo flight. In the coaching phase post solo, clarity of communication is important in providing required focus and motivation.

Where the transfer of data is essential, as it is in gliding training, it follows that the trainer is required to recognise that communication difficulties always exist and that an important part of their task is to reduce these difficulties as far as it is humanly possible.

Certain rules may be applied to this task. The intelligent and thoughtful trainer, accepting the existence of communication difficulties, will work out their own rules from experience.

To be effective, communication has to work both ways. Comments and questions from the student, as well as being invaluable in the assessment of the student's understanding, allow the student to participate in the act of communication, instead of being on the receiving end of one-way communication.

"One- way" communication in general is not only ineffective, but in some cases can lead to resentment, boredom, or confusion, to such a degree that real communication becomes impossible. Such a situation may be termed a "communication block".

Communication block may be a far more common situation than is usually recognised. Social custom and upbringing train us all to disguise lack of interest out of politeness, and this makes it difficult to recognise the existence of a communication block - which is, put simply, a situation where a person who has a look of interest on their face is really making no effort whatever to understand what is being said to them. (Check this against the way you sometimes act yourself.)

Notwithstanding what has been said above about the desirability of two-way communication, it must be appreciated that there are occasions when one-way communication is the only effective way to drive home a point about which the trainer is not inviting discussion or argument at that particular time.

Further advice on use of Questioning techniques is provided in Module 3.

**A common fault is that trainer usually does too much talking, and the student not enough!**

Communication can also be affected adversely when too much information is 'poured' into the student without intervals of quietness in which they can consider what has been said. This is particularly important during flying. It should be recognised that a definite 'lag' exists between the message and the student's understanding of what they have been told. It will be found that this lag will be of seconds or minutes, but in extreme cases it may extend over days or even weeks.

In airborne gliding training, communication of information is not done only by talking; it is achieved most effectively by clear demonstration. In effect, from a good demonstration, students will find out something for themselves. This is the way most people learn best.

Constant assessment of the student's real understanding is therefore of the greatest importance, as calculated repetition is often the only way in which the lack of understanding may be overcome. As this assessment can only come from the student's participation, they should be encouraged to talk, if this is necessary.

In all persons the period of full attention is quite short, and in some cases will be very short. Dealing concisely and clearly with the main points is a critical skill.

All people forget a high percentage of any new information within a very short time of receiving it. Once again assessment by question and comment will show what has been forgotten and fix the areas where repetition is necessary. Consult Section 8 of Module 1 for supporting theory.

Talking a student through a demonstration or exercise is a very real art, which can be perfected by thought and practice, based upon concise key messages. A good demonstration will most often be much more effective than talking.

The trainer's thoughts should be so well organised that only essential information is given, and this information should be exactly synchronised with what the glider is doing. However, on no account should the information distract the student from full attention to what is being demonstrated. If something is going to happen very quickly the trainer may have to give verbal indication or warning just before, and then be silent as it actually happens, but again drawing attention after it has happened.

It is not the trainer's task to:

- tell the student everything the trainer knows in as much detail as possible,
- demonstrate how knowledgeable the trainer is,
- go through a programme of set exercises and standard pattern.

## Skill

The trainer who analyses their own flying and who is aware of the principles they apply by habit to differing situations will be better able to pass on this knowledge to students.

The trainer should maintain their skills and currency to the highest standards. It is essential to have high level skills in order to carry out demonstrations that are accurate and that the trainer can talk to as the demonstration occurs.

Having high level skills and having correct and accurate flying is also essential in being able to troubleshoot a student's problems.

Not only should the trainer be good at analysing the student's performance and problems, but they must be able to accurately describe the sequence or session being taught.

## Discipline

There will be times when a trainer has to raise safety breaches or other matters with pilots, and sometimes make decisions about the flying operation for all. Examples include:

- Talking to a pilot who has done a low dangerous circuit
- Questioning a pilot on an incident or near miss
- Talking with a tug pilot who has not done something correctly

In these cases, the trainer has to balance the seriousness of the event or matter with the context of the person's circumstance or the environment. It is rare for breaches to be deliberate. A good trainer will be able to deliver the necessary messages and involve the person, without major confrontation and not be seen to be adversarial.

## Safety

The trainer must set a high standard of safety in their actions, words, briefings and general conduct on the airfield and in the air.

Early pilots will not necessarily understand or be familiar with what is and what isn't safe and will not know the rules. It is up to the trainers to set the example, to explain the standards and rules, as well as having a zero tolerance to breaches.

It is the trainer's DUTY to instil safe flying practices in the student and those aspects where, under initial guidance, the student should become thoroughly competent to think for themselves as well as adhering to core safe habits and rules. Examples of core safe habits are maintaining 1.5 Vs at any height below

that required to recover from any sharp reduction in airspeed; and the habit of practicing a good lookout.

It is also important that all trainers consistently deliver the same safety messages.

Safety leadership is discussed further in Module 9.

## Summary

Assuming the foregoing characteristics are in place, the trainer must use them in the practical art of improving performance. Having acquired the knowledge, it is important that the trainer's personality is used in a positive way to ensure that the knowledge is successfully transferred to the student. Knowledge can be learned and lost. It can be re-learned and updated. However, our personalities have been developed over many years and will take just as many to change.

There is no single correct blueprint for a successful trainer, but it is known that most of them have some of the characteristics listed in the following table. Go through the list, be as honest with yourself as you can, and check off your own characteristics as you see them. Better still, after completing this list, seek peer feedback on their perceptions of you. If you identify your own weak points, ensure you put time into developing the missing skills or at least recognise them, so you become a more effective trainer. Even after you have become a trainer, you should constantly self-review.

Do the following and you will be considered to have some of the qualities of a good trainer:

1. Inspire your students to set goals that will stand them in good stead in aviation. Your exemplary conduct and high ideals will help in this goal.
2. Be decisive. Weigh all the factors necessary to make decisions and then act with conviction.
3. Be interested in your students and let them know by being familiar with their backgrounds, problems and achievements.
4. Respect their rights and, when correcting mistakes, do so in a straightforward manner, never using sarcasm as a correction method.
5. Acknowledge your own mistakes. The admission that 'You were right and I was wrong' does much to develop morale.
6. If you do not know the answers to relevant questions, say so, find the answers, and tell the students later.
7. Be enthusiastic. Trainer enthusiasm is reflected in student learning.
8. Encourage student initiative, self-reliance, ideas and suggestions. By doing so, you teach your students to reason for themselves instead of driving them to rigid conformity. However, stress that there are certain boundaries that they must not overstep.
9. Be impartial and fair: never show favouritism.
10. Never bluff: much of your subsequent instruction may be distrusted.
11. Use humour. Appropriate humour creates goodwill and can be used to teach difficult subject material—but don't become so humorous that the business at hand becomes secondary.
12. If you doubt a student's progress or motivation, arrange for an independent check. Perhaps some modification to your teaching approach may be needed. In extreme cases a change of trainers may be in order.
13. Teach your students to have mastery over the glider, to fly with verve and spirit to the limit of the glider's flight envelope, and to know what they can and cannot do, but draw a very definite distinction between intelligent confidence and foolhardiness.

14. Plan all solo lessons. Give your students thorough pre-flight and post-flight briefings, and make sure that they clearly understand the requirements and aims of the exercises. Thorough debriefings allow you to find out about difficulties that you may not hear about otherwise. To your student, failure to debrief may appear to imply a lack of importance of the exercise or a lack of interest on your part.
15. Be present when your students are being debriefed after check rides or tests. You may find out points that you may have missed while flying with your student, and you will certainly get details in a verbal debriefing that will not be included in a written report.
16. Maintain a professional image.

## MODULE 3 – EFFECTIVE COMMUNICATIONS

Module 1 highlighted experiential learning styles and the importance of using questions to facilitate Reflection on prior Experience, learning of Concepts, plus Practice and Visualisation.

Module 2 examined important characteristics of trainers.

The focus of this module discusses how to use effective communication techniques in gliding training and it is vital to understand some fundamentals of questioning and active listening and the two-way communication process.

Being an effective communicator is at the heart of being a good trainer. It is important to consider the way you communicate with students and to ensure you use the right techniques in the right circumstances, and to continue to self-evaluate your effectiveness as a communicator.

### Statements versus Questions

#### Statements

Many of us have a predisposition to use statements when interacting with students due to the nature of the relationship between an inexperienced student and a much more experienced trainer. The trainer can sometimes be compelled to 'deliver' their experience.

#### *Advantages of Statements*

- Emphasising urgency, safety, or specific instructions,
- Reinforcing key nuggets of information, and/or
- Summarising key messages.

#### *Disadvantages of Statements*

- Establishing a one-way communications dynamic
- When over-used, overloading a student with information
- When over-used, demotivating or annoying a student
- Eroding the potential for meaningful two-way information flow and feedback.

#### Questions

#### *The Power of Questions*

- Questions require a response
- Responses usually have more information
- Responses may enhance motivation and respect
- Responses are more likely to highlight gaps in understanding
- Reflection and visualisation are usually enhanced
- The student will usually have more buy-in into the exchange
- Better outcomes may be achieved in a shorter time.

#### *Negative Effects of Questions*

- Poorly framed, vague questions can lead to frustration
- Poorly delivered questions can unintentionally signal disrespect or condescension
- Too many questions can be interpreted as labouring the point, lead to impatience
- Failure to listen to responses can undo the benefits of questions.

### Question Types

There are many different types and subtypes of questions, yet they can be condensed to four major types applicable to high effectiveness in training and competency development. These are:

- Closed Question (CQ)

- Open Question (OQ)
- Reflective Question (RQ)
- Hypothetical Question (HQ).

### Closed Question

**A closed question is one that simply requires a Yes or No answer**

Australians love using closed questions! People who are problem-solvers, action-oriented and goal-oriented will often default to these types of questions:

- Do you want to... ?
- How about we... ?
- Shouldn't you go and... ?
- Will you... ?

Some people are impatient and will cascade a series of questions together, finishing on a closed question seeking agreement to a predetermined solution. They will often leave no time to respond to earlier questions.

That said, **closed questions can be useful in seeking affirmation that something urgent is being dealt with.** For example, "Can you see the towplane approaching from behind the hill?", or "Are you going to land before the rain squall hits?".

### Open Questions

**An open question is one that begins with one of these words:**

What....?    Where...?    Why..."  
When...?    Which...?    Who...?    How...?

In each case, the response requires much more than a simple Yes or No. These questions are particularly important for trainers and students, for eliciting more information and also the reasoning behind particular actions or decisions. They can also be used in a suggestive context, to spur actions, without resort to directions and statements.

Consider the value of these questions, used in succession, on a high wind day:

1. *What is safe speed near the ground in these conditions?*
2. *What is your current airspeed?*
3. *How long will it take to fly downwind leg with this tailwind?*
4. *When will you do your pre-landing checks?*
5. *What is happening to the angle down to the aiming point?*

These open questions have particular utility in pre-flight and post-flight briefings, for example:

1. *What did you see happen when we hit sink on downwind leg?*
2. *How much correction was needed?*
3. *Why?*

In reinforcing two-way communications and understanding, a briefing or debriefing might include a final open question:



- *What further questions do you have for me?*

### Reflective Questions

**A reflective question is a type of closed question that seeks affirmation of understanding by the student, usually by repeating, summarising or paraphrasing key words or phrases used in response to earlier questions.**

The purpose of this type of question is for the student to affirm that they have heard and correctly understood the trainer correctly. Reflective questions can be used in combination with open questions to ensure key concepts are grasped during reflection.

For example:

Trainer	Student
What did you see and feel when we flew slower? (OQ)	When we flew slower, the nose attitude was higher and the controls felt looser, sloppy.
So, you are saying that sloppy controls are a sign of flying very slowly? (RQ – paraphrased)	Yes, sloppy, and less effective!
How did the controls feel when flying faster? (OQ)	The controls felt stiffer, and the glider responded quicker.
So you felt stiffer and more responsive controls at higher airspeeds, with a low nose attitude? (RQ – paraphrased)	Yes, lower nose, faster, the glider felt much better!

Other forms of Reflective Questions might include:

- *So are you saying that... ?*
- *So am I right in hearing you, that... ?*
- *Am I understanding you correctly, that... ?*
- *So, in summary, do you believe that... ?*

Rather than “parroting” the student, we use these reflective questions to help form the building blocks of understanding, using their words where possible.

### Hypothetical Questions

**A hypothetical question is one that has the form - If (A) then (B)?**

Hypothetical questions are of immense value to trainers, in testing understanding and framing student responses to various scenarios, risks and opportunities. They are *conditional* questions, requiring care in defining the conditions up front; they are therefore best delivered slowly.

Examples include:

- ***What if the tug loses power and you have insufficient runway to land ahead, then what must you do, in priority order?***
- ***If the glide angle back to the airfield is getting shallower, then what should you do?***
- ***So, if you are flying with a high MacCready setting, high airspeed on final glide, then what options do you have?***
- ***If you encounter very strong sink on downwind, then should you make a slight heading correction or a bolder correction?***

In pre-solo training and post-solo coaching and performance flying, high value can be derived from posing a series of scenarios to allow the student to visualise and pre-plan their responses. Ideally, we want the advanced student to develop the ability to frame their own hypothetical questions and mentally practice various options.

## The Power of the Pause – Silence

In general, Australians are very quick to answer questions, in comparison with many other cultures. We tend to be snappy in our responses, with very short pauses, and sometimes start to answer before the question has been asked fully.

The downsides responding too quickly to questions include:

- Higher risk of an incorrect answer
- Less “brain-space” and time to develop a considered reply
- Some risk of signalling impatience or disrespect.

Asking questions slower, lowering the pitch of the voice, and encouraging longer pauses and even periods of silence can often lead to more meaningful exchanges, with:

- More thinking time
- More precise and considered answers
- Less interruption or overtalking
- Conveying greater respect and active listening.

Using the power of the pause, with carefully framed questions, may assist in achieving greater understanding, better flight preparation and planning, much less talking inflight with focus on key points, better post-flight debriefs, and higher motivation of the student.

## Active Listening

**Active listening requires listening to the other party, with care to ensure that the *received* and *understood* message is the same as the *intended* message.**

Trainers must develop skills for active listening. It goes beyond hearing the words spoken; it extends to interpreting and verifying the intended meaning of those words.

Active listening also involves reading and interpreting other cues:

- The speed, tonality and pitch of what is said
- The choice of words and language, which might include emotional or accusatory terms
- Observing the gestures and body language used in conjunction with the spoken words
- Understanding that state of mind being displayed
- Reading signs of frustration with self, fear of failure, thus reducing motivation
- Being attuned to any signs of lack of rapport or respect.

Now consider what is definitely not conducive to active listening. Do not:

- Talk over or interrupt the student, suppressing their responses
- Give long, one-way statements and diatribes
- Be pedantic and nit-pick
- Raise your voice
- Give emotionally-laden exchanges
- Infer or attribute blame

With practice, most trainers can develop good questioning skills and it is an important skill to keep practicing and improving.

## **Know your student**

Students come from all walks of life, all age groups and diverse backgrounds. You may need to modify your communication style to suit the student you are dealing with. For example, when dealing with people with English as a second language you will need to consider using smaller sentences, speaking slower, and using lots of open questions to determine if they have understood your messages.

Not respecting cultural differences may offend the student, and in turn, they may become less receptive to the teaching and messages.

Be considerate about how you deliver feedback – it must be supportive and constructive.

## **Non-Verbal Communication and Body Language**

Non-verbal communication cues—the way you listen, look, move, and react—tell the person you're communicating with whether or not you care, if you're being truthful, and how well you're listening. When your non-verbal signals match up with the words you're saying, they increase trust, clarity, and rapport. When they don't, they can generate tension, mistrust, and confusion.

If you want to become a better communicator, it is important to become more sensitive not only to the body language and nonverbal cues of others, but also to your own.

The many different types of nonverbal communication or body language include:

### **Facial expressions**

The human face is extremely expressive, able to convey countless emotions without saying a word. And unlike some forms of nonverbal communication, facial expressions are universal. The facial expressions for happiness, sadness, anger, surprise, fear, and disgust are the same across cultures.

### **Body movement and posture**

Consider how your perceptions of people are affected by the way they sit, walk, stand, or hold their head. The way you move and carry yourself communicates a wealth of information to the world. This type of nonverbal communication includes your posture, bearing, stance, and the subtle movements you make.

### **Gestures**

Gestures are woven into the fabric of our daily lives. You may wave, point, beckon, or use your hands when arguing or speaking animatedly, often expressing yourself with gestures without thinking. However, the meaning of some gestures can be very different across cultures.

### **Eye contact**

Since the visual sense is dominant for most people, eye contact is an especially important type of nonverbal communication. The way you look at someone can communicate many things. Eye contact is also important in maintaining the flow of conversation and for gauging the other person's interest and response.

## Touch

We communicate a great deal through touch. Think about the very different messages given by a weak handshake, a warm bear hug, a patronizing pat on the head, or a controlling grip on the arm, for example. Also, be very wary of what may be interpreted as inappropriate touch and remember that the person receiving the contact is the one who will make the decision if it is inappropriate to them. When in doubt, don't.

## Space

Have you ever felt uncomfortable during a conversation because the other person was standing too close and invading your space? All people have a need for physical space, although that need differs depending on the culture, the situation, and the closeness of the relationship. You can use physical space to communicate many different nonverbal messages, including signals of intimacy and affection, aggression or dominance.

## Voice

It's not just what you say, it's *how* you say it. When you speak, other people "read" your voice in addition to listening to your words. Things they pay attention to include your timing and pace, how loud you speak, your tone and inflection, and sounds that convey understanding, such as "ahh" and "uh-huh." Think about how your tone of voice can indicate sarcasm, anger, affection, or confidence.

### KEY POINTS

- **Statements should be used for safety issues and key messages**
- **Closed questions focus on safety, urgency, key yes/no decision issues**
- **Open questions – elicit information, establish rapport, aid reflection**
- **Reflective and Hypothetical questions – cement understanding and visualization of scenarios**
- **Use silence, the power of the pause**
- **Listen, provide brain-space, do not inundate**
- **Listening builds respect and understanding**
- **Adjust your communication for your student differences**
- **Become aware of non-verbal communication and body language**

## MODULE 4 – STANDARD INSTRUCTIONAL FORMAT

The focus of this module discusses Briefings, Demonstration, Student Practice, Monitoring performance, and Debriefing.

- Before the flight:
  - Flight planning
  - Pre-flight briefing
- In the air:
  - Handover/Takeover
  - The inflight training and coaching process (DDM)
    - Demonstrate
    - Direct
    - Monitor
- After the Flight:
  - Post-flight debriefing and two-way feedback

### Pre-flight briefing

This is a vital part of gliding training, that must NEVER be omitted. A successful pre-flight briefing consists of careful analysis of the task to be performed, along the following lines:

- What stage has the student reached?
- What is the next stage to be attempted?
- How do I demonstrate and direct it?
- How do I link it with the previous stage?
- What standards need to be met for monitoring completion and signoff as competent?

**The pre-flight briefing should be kept short and to the point. It is not a lecture or an endurance event.** Diagrams should be used where necessary, and it should not be forgotten that the glider itself is a perfect "tool" for illustrating things like the effect of control movement on the camber of main surfaces, etc. Other gliders inflight can also illustrate training points.

It is a mistake to get too technical at the pre-flight briefing stage. If technical detail needs to be entered into, it is better done after the flight than before. Use of open questions will elicit the student's level of understanding and may save time in the pre-flight briefing.

The prime objectives of the pre-flight briefing are to

- DEFINE the objective of the flight,
- DESCRIBE briefly what the objective consists of, and
- ALLOCATE RESPONSIBILITY for who does what.
- Safety considerations

Be attuned to your student's learning style. Some will want detail; others will want diagrams; others will want to just try it out in the air without much briefing.

It is important to only undertake one sequence of the syllabus wherever possible.

### Hand-over/take-over – Exchange of Controls

**The handover/takeover procedure must be introduced from the first training flight.**

It is vital to develop a clear, unmistakable hand-over/take-over procedure to eliminate confusion. Not doing this can lead to one or both pilots being unsure who has control of the glider, and in the worst case, no pilot is controlling the glider.

The standard expression used in gliding in Australia is "Your aircraft", to which the reply must be "My aircraft" when the student assumes control. [An alternate is "You have control" with reply "I have control". Whatever expression is used, it must be clear and unambiguous, and must receive a response.]

The exception to the above is when a trainer needs to assume control without any delay, to prevent a hazardous situation developing. An obvious example of this is failure to flare during the landing approach. Loss of energy or control may also require an immediate takeover from the pilot. Such a situation is ample reason to take control without comment and catch up with the formalities later.

Although it is hazardous to be unsure if anyone is actually in control of the glider, it can be very confusing and unsettling for a student if the trainer says he or she is handing over control but does not in fact take their hands and feet off. After the very first demonstrations where it might be acceptable to use the technique of "follow me gently" or "come on the controls with me" as a confidence builder, the trainer must ensure that on all occasions where they say "your aircraft" they do in fact relinquish control to the student. Students definitely know when a trainer is riding the controls.

There are few occasions, other than the introductory one already mentioned, where it is acceptable for a trainer to be on the controls at the same time as the student, e.g. some training sequences may require the student to follow the trainer on controls prior to transfer of full control of student. In such circumstances the trainer should say "My Aircraft / Taking Over – Follow Me Through"

**Note that "your aircraft" includes primary responsibility for effective lookout and collision avoidance.**

If in doubt, always affirm *who is in control*. If unhappy about decisions or current risks, *ask or intervene and take control*.

#### HANDOVER / TAKEOVER

- **Never do physical 'helps' – i.e. pushes or pulls, or control corrections, etc.**
- **The student should follow through the Trainer's demonstrations**
- **Trainers DO NOT follow through when student is flying**
- **'Partial' Handover only for pre-briefed selected controls - e.g. stalling**
- **Take over when airborne re-briefing or de-briefing is required**
- **Take over in time. Don't let the aircraft go beyond what you can recover!! If you scare the student, they may lose confidence.**

### Demonstrate, Direct and Monitor (DDM)

This three-step process comprises:

Demonstrate	<ul style="list-style-type: none"> <li>• Clear and effective <i>demonstration</i> by the trainer to the student, with concise synchronised patter</li> </ul>
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Direct	<ul style="list-style-type: none"> <li>Student repeating key points and manoeuvres, under specific <i>direction</i> from the trainer (with interventions, repeat demonstrations and feedback as required)</li> </ul>
Monitor	<ul style="list-style-type: none"> <li>Trainer <i>monitoring</i> student performance until competent, with no interventions required.</li> </ul>

### Demonstrate – Clear airborne demonstrations and patter

The importance of this part of instruction should not be underestimated. Trainers must be able to give clear demonstrations of any exercise in the training syllabus for which they are qualified. Some of these will demand deliberate mishandling of the glider; for example, aileron drag and spinning. A trainer must be skilled at analysing all the exercises in the syllabus in order to break them down for presentation. This needs constant practice.

A trainer must develop synchronisation of key words with the demonstrations. A brief but accurate description of exactly what is happening, synchronised with the glider actually doing what the trainer said it would, is extremely effective. Once again it needs practice and is well worth the effort. Avoid simply repeating the pre-flight briefing during the airborne demonstration. The briefing and the "patter during demonstration" are two entirely different things.

The general pattern of demonstrations will be as follows-

- Name the exercise and describe the effect(s) to be observed.
- Pause.
- Ensure the glider is established as a stable platform, with appropriate attitude.
- Demonstrate clearly the nominated exercise, synchronising the demonstration with the patter.

*Note: this process may not be applicable to coaching experienced pilots.*

As little extraneous activity as possible should be included in the demonstration if students are to clearly understand that the trainer is accurately performing the actions previously explained. If due to some unanticipated circumstances, the demonstrations does not closely conform to the explanation, the deviation should be immediately acknowledged and explained.

#### KEY POINTS

- **Brief Description**
- **Start with the stable platform**
- **Accuracy of demonstration**
- **Synchronisation of patter with the demonstration** Trainers **DO NOT** follow through when student is flying

### Direct - Student practice and feedback

When control of the glider has been handed over to the student, the trainer directs the student pilot for that sequence or manoeuvre. This may be a repeat of the demonstration, or parts of the manoeuvre.

The main feedback for a trainer is the success or otherwise of the student's emulation of a demonstration, or correct response to a situation. It may be that another demonstration, perhaps with changed patter to suit the student's style, will provide the answer to a student who does not seem to have understood what the trainer is trying to convey.

Let the student make mistakes and give them opportunity to self-correct.

The trainer observes the results of their own briefing, demonstration and patter. Usually the success of the student's understanding of the exercise is in direct proportion to the quality of the trainer's performance. Students vary in their approach to taking over control; some are tentative and nervous, others aggressive and rough. The trainer must be ready to offer comments appropriate to the results they see. The controls should not be interfered with by the trainer unless absolutely necessary.

**Do not allow a situation to get out of hand - there should be no hesitation in taking control to prevent a hazardous situation developing. It is important to always be close to, but not on the controls, when the student is flying.**

#### KEY POINTS

- **Start with the stable platform**
- **Student has the controls; trainer is off the controls**
- **Avoid talking – let the student practice**
- **If student cannot do the manoeuvre or lesson, take back controls and re-demonstrate**

#### Monitor – Watch, listen and assess competence

As the student gains confidence and competence, trainers should switch to an observation mode, monitoring their performance without prompting, listening for student feedback about their ability to anticipate and manage the situation, or respond to related scenarios. The trainer needs to have a clear understanding of what standards need to be met for the student to be assessed as competent and provide opportunities for the student to demonstrate achievement. This can be done both in-flight and in post-flight reflection and analysis.

#### Fault analysis and prompting

Faults in a student's flying may be in the areas of skill, judgement or airmanship. Trainers should remember that students must be allowed to make mistakes. Observation of these mistakes provides feedback necessary to positive instruction.

It may be that the student has the basic idea right but is having trouble with the exact amount of control to use. A good example of this is co-ordination of the rudder with ailerons - most students do not use enough rudder and their progress into turns, where trying to fly straight and level is erratic and discouraging to them. It may be quite in order for the trainer to come on the controls momentarily, saying "let me demonstrate, I have control, come on the controls with me" with the student on controls to emphasise a point. For example, "*you are not using quite enough rudder with the ailerons - feel how much rudder I'm using*". This drives the message home, but it is imperative to get off the controls again as soon as the assistance is no longer needed, with a clear "Your Aircraft" handover.

Fault analysis is necessary at all levels of flight training. The ability to debrief effectively does more to separate the successful instructor from the poor one than above-average flying ability. The sole purpose of fault analysis is to improve future student performance. A valid critique contains three essential elements:

- Strengths,
- Weaknesses, and
- Specific suggestions for improvement.

Without each of these elements, fault analysis is ineffective, as it does not accomplish its sole purpose.



## Strengths

Strengths are analysed to give a feeling of satisfaction and to show that you recognise what students can do well. If you are unable to identify strengths, it will be difficult for students to believe that your identification of weaknesses is accurate. Positive reinforcement of a student's strengths will frequently do more for the student than any number of remedial suggestions on your part.

## Weaknesses

The necessity of analysing weaknesses is readily apparent. This leads into the third element: specific suggestions for improvement.

Whenever you are critiquing a student, consider the following: if you are unable to suggest a remedy for overcoming the weakness, your student does not have that weakness. Positive suggestions are mandatory for improving future performance; however, you should limit your critique to the identification of a **maximum of three weaknesses** with suggested remedies. Attempting to correct all the weaknesses that a student may have at one time could result in your student not being able to correct any weaknesses. During actual flight instruction you should attempt to pinpoint a single major weakness before considering the next.

NOTE: One way to think of a major weakness is: 'What item, if corrected now, would result in the correction of the greatest number of other faults?'. As student performance improves, the weaknesses that originally were considered minor ones now become the only weaknesses. All weaknesses will be dealt with, but in order: the most important ones first.

## Suggestions for Improvement

Improvement in a student's performance takes time - an expert will not appear overnight. More will be learned if a definite improvement in performance is experienced each time the student takes part in a lesson.

## Characteristics of Effective Fault Analysis

Effective fault analysis always strives for maximum objectivity. You should never allow personal bias to affect the grading or analysis of any particular flight. Objectivity should be considered in both student personality and flying techniques. At times, personality conflicts occur, but as a professional instructor you will hold these to a minimum. In the area of flight technique, you may become dogmatic and accept only one way to accomplish a manoeuvre. Always keep in mind that there are many techniques that accomplish the same manoeuvre correctly.

You must be consistent in your analysis. Always attach the same importance to an error, provided the circumstances remain the same. Without a consistent set of rules, you will be considered arbitrary or accused of playing favourites.

Honesty is the best policy for critiquing. The situation where you may attempt to motivate a weak student by giving better grades than deserved jeopardises the effectiveness of your instruction. Students must know exactly where they stand and be given specific suggestions for their improvement. This is the sole purpose of fault analysis, and emphasis must be placed on this function.

## Post-flight debriefing

The debriefing should cover what the student did well and what the student needs to improve on – the "did well" and the "do differently" points. It is the opportunity to allow the student to give feedback and for the trainer to see what the student has learnt from their perspective.

The debrief should consist of an accurate analysis of faults, with reinforcement and praise for the parts of the flight which were well handled. It is essential that the debriefing looks forward to the next exercises in the sequence and the student should be advised what to expect on the next flight. Be sure to allow input from the student.

## **Any matter that was safety-critical should be emphasised.**

Remember “Recency Effect” - the student will remember most the most recent parts of the flight, e.g. the approach and landing. If there are other parts of the flight which need comment from the trainer, and there usually will be, the student may need help in recalling those items in order to absorb a debriefing.

The trainer is not immune from recency effect either. Carry a small notebook in the shirt pocket or in the glider so brief memory jogs can be jotted down in the air for recall later on the ground. Do not rely on the frailties of human memory.

A good debriefing may include suggestions for the student to visualise scenarios and perform mental practice between training flights, building upon what they have done well, and focusing on applying “do differently” lessons.

If there are many areas where the student could improve, to facilitate the student’s learning process, prioritise the top 2 or 3 learning points to be focused on for the next flight and once these points are remedied, you can work down the priority list. Students may lose concentration during a lengthy debrief and may be overwhelmed with too many items to work on. Summarise the debriefing by agreeing with the student what points they need to work on their next flight.

A poor debriefing is one where the student’s shutters come down and learning stops. It follows that debriefings should not be aggressive, one-sided rants, which dwell only on errors and demotivate the student. Disrespectful attitude and language will only compound the damage done. Your obligation is to help the student understand and see how “doing differently” can achieve better safety and performance improvement. The student must be motivated to seek out that improvement next time.

The debriefing will normally be augmented by suitable endorsement of the training record.

## **Summary**

To summarise, keep the following key points in mind.

1. Keep briefings **brief and to the point**
2. Relate each exercise to the syllabus as a whole; beware of training any given exercise in isolation.
3. When demonstrating, start from and return to the stable platform. Ensure that the student does the same.
4. Do not fall into the trap of believing that once an exercise has been taught it will necessarily be remembered for all time. Remember the frailties of human learning capacity and keep in mind that constant practice and reinforcement are necessary to adequately develop pilot skills during, and after, initial training.
5. The training syllabus breaks the process of pilot training down into simple and clearly identifiable steps. It is a mistake to try and jump any of these steps and to push a student faster than they are able to cope with. Each step is a building block for the next one, and any attempt to disrupt the sequence risks a major misunderstanding which will at best hinder progress and at worst put a pilot at risk at a later stage.
6. Let the student make mistakes. There is no substitute for learning by reflection from actual experience.
7. When you hand over to the student, **STAY OFF THE CONTROLS.**
8. Carry a notebook and **USE IT.**
9. Motivate the student to build upon their aggregate skills and competencies, and to apply the lessons from practice and training flights to achieve improvement.
10. **NEVER** use one-sided, error-focussed, disrespectful debriefings as they will destroy student motivation and learning from that flight. When student learning stops, the trainer has failed.

11. Encourage visualisation and mental rehearsal.
12. Use flexible approaches to communications, reflection and reinforcement, to more effectively align with students learning styles.

## MODULE 5 – FLIGHT AND RISK MANAGEMENT

### Flight Planning

Unlike power flying, where the pilot can easily determine the duration of a flight, when conducting training in gliders, the trainer has to make the best use of the resources and conditions at their disposal. The following factors therefore must be taken into account when planning and executing an instructional or coaching flight.

- The expectations and exact needs of the student on the particular flight
- The performance and configuration of the glider
- The weather conditions
- The launch method
- Any support required from other parties

The more advanced the pilot, the higher the expectations will be for them to actually conduct the planning (with appropriate guidance and review). That said, the trainer will need to have their own planning perspective, particularly risk management or Threat and Error Management (TEM) aspects.

The essentials of flight planning include:

- Ensuring the expectations of the student pilot are realistic,
- Ensuring the goals of the flight are mutually understood,
- Ensuring the conditions need to be conducive to safety and achieving the learning objectives,
- Gathering all required information,
- Ensuring the glider is adequately prepared and configured,
- Verifying airspace, radio and Search And Rescue (SAR) requirements, and
- Ensuring others are briefed as required.

It is the duty of the trainer to ensure these essentials are in place before undertaking training activities with the student. These requirements apply whether the flight is a pre-solo, post solo or advanced coaching.

### Student Requirements

The trainer must ensure that the needs of the student are being properly met and the management of the flight must take this into account. Although some would argue that the opportunity to soar must never be ignored, if the student really needs take-off and landing practice at that particular time, the amount of soaring on that flight should not be overdone. Otherwise, the student may get only one flight that day, when the requirement was for two or three. There will be a useful compromise to be reached on all flights of this kind. It is up to the trainer to find that compromise.

It will be obvious that a trainer must be something of an opportunist, to grasp soaring chances and turn them into useful training time. That's fine, as long as the quality of management that goes into each flight ensures that the person who benefits is the student. If the trainer wants to indulge themselves in soaring for their own benefit, let them take one of the single-seaters and soar to their heart's content. In fact, it would be a good idea if more trainers did exactly that.

Another serious challenge is dealing with overconfident pilot with unrealistic expectations for that flight. This should be dealt with in the planning and pre-flight briefing stage. Occasionally we may discover a serious gap between aspirations and airmanship or ability in-flight, in which case the trainer must address remedial training whilst recalibrating plans and expectations. For example, many coaches discover poor lookout and scanning techniques in pilots with zero or limited experience thermalling with other gliders, which may require deliberate remedial scanning training in gaggles near home instead of soaring away into the distance.

### Glider Performance

Training gliders range from vintage and low-performance machines with still-air sink rates in excess of 2 knots and glide-angles of 20 or less (e.g. Kookaburra, K-13 and Falke) to higher performance gliders with better sink rates and glide-angles in the mid-30s (e.g. ASK21 and Puchacz) or higher (Duo Discus,

DG1000, Arcus). A trainer may be called upon to work in a glider at either of these extremes or somewhere in between. Pre-flight preparations to configure a powered sailplane or high-performance glider may be extensive.

The performance of the glider in use has a marked effect on the management of each flight. For example, nothing cures a trainer who is a compulsive talker like a 1,000 ft winch launch in a short-wing Kookaburra or K-13 or PW-6. If the flight is not properly organised and managed, the trainer could still be talking about launch and release procedures as the glider begins its final turn onto approach. This is admittedly an extreme example, but it serves to illustrate the point that the trainer must know the performance of the glider and plan realistically to take it into account. Wastage of airborne time is an enemy of effective training.

In advanced soaring sequences, glider performance will be a driving issue for average climb rate, cross-country speed, penetration into wind, and safety in pushing towards alternate landing areas.

### **Weather Conditions**

Weather has an important bearing on the probable duration of each flight and will affect the management task considerably. The trainer must be flexible enough to make intelligent use of good soaring conditions to control flight duration, without using those conditions to prolong the flight unnecessarily or for their own, rather than the student's, benefit.

Wind velocity is an important factor in flight management. Gliders drift easily downwind and most trainers take a long time to penetrate back into wind. Much time can be wasted by an unthinking trainer who allows the glider to drift downwind, necessitating a long battle into wind in order to get back to the field. In a low-performance glider, there can also be a great increase in the trainer's anxiety when a long way downwind of the field. Anxiety is another enemy of effective gliding instruction. There is no point in having two anxious people in the glider at the same time.

As a general rule, work on the upwind side of the field as much as possible when instructing and only accept a downwind drift if the rate of climb in a thermal justifies it. To keep your eye on this requires careful management of the flight.

In the more advanced sequences, the weather plays a big part in coaching. The trainer needs to ensure that the best training is gained from the flight. If the soaring conditions are difficult, evaluate whether the student will be able to do a sufficient amount of the flying to get value for the stage of their training. i.e. there is little value in taking an early pilot on a cross-country where they cannot practice thermalling without the trainer continually having to take over or do a lot of the flying to stay airborne.

### **Launch method**

Clearly an aerotow or a motor-glider gives the trainer more ability to control flight duration than a winch launch. Winch launch pilots have to take what they can get in terms of launch height and in calm, non-soaring conditions, flight duration is doomed to be short, especially in low performance gliders.

The likely duration of a flight affects the pre-flight briefing, which can always be modified or added to in flight if unexpected soaring conditions crop up. This means that a trainer must adopt a flexible approach to flight management, changing with the conditions and circumstances if necessary.

### **Risk Management**

Gliding is basically an inherently dangerous recreational activity, which can be made a safer activity. There are many risks attached to our sport, which have to be managed in such a way that they do not become a factor in our operations.

Risk management in aviation terms is the "identification, analysis and elimination and/or mitigation (to an acceptable or tolerable level) of hazards, as well as the subsequent risks, that threaten the viability of an organisation."<sup>2</sup>

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<sup>2</sup> (ICAO Doc 9859) <https://elibrary.icao.int/home/product-details/229751>

1. The first step in risk management is **hazard identification**. It is carried out in order to identify the hazards in the organisational systems and operational environment, and to determine their effects.
2. The second step is **risk assessment** – where the probability of occurrence (AKA likelihood) and the severity (AKA consequence) of the hazard effects are analysed and assessed, the magnitude of the risk and its acceptability are determined.
3. **Risk mitigation** is the third step in the risk management process and is the steps taken to control or prevent a hazard from causing harm and to reduce risk to a tolerable or acceptable level or even remove it from the system.<sup>3</sup>

When a risk has been found to be unacceptable, control measures need to be introduced. The level of risk can be lowered by:

- Reducing the severity of potential consequences
- Reducing the probability of occurrence harmful effects
- Reducing the exposure to that risk

in Australia, we practice Risk Management in almost all of our gliding activities. We have standards, procedures, manuals, qualifications, extensive training in airworthiness and operations, glider standards, etc. Many of these aspects have been established over time in response to the identification of risks in the sport. It is still, however, incumbent on all participants to identify hazards, assess their magnitude and significance, and prevent harm by mitigating risks.

Part of a trainer's job is risk management.

### Example

A winch launch has several obvious and potential hazards. The cable can break, the winch engine can run out of fuel, the glider could pick up a "dead" cable, etc. A number of people play a part in managing these risks and threats down to acceptable proportions by using equipment, training, procedures, checklists, and communication etc.

## Threat and Error Management (TEM)

Unit 25 of the Training Manual is Threat and Error Management. Having an understanding of TEM limits the potential to lead to undesired aircraft states (UAS) and unsafe outcomes, enables us to avoid unsafe outcomes and maintain safety margins.

The Trainer's role in TEM is significant. They generally have a higher level of experience than the person they are training and are therefore more likely to identify threats and see errors, not seen by their student.

### Threats

Threats are events or external errors that occur outside our direct influence. They are also driven by limitations and characteristics, environment and externalities that we cannot change.

### Errors

Errors are actions or inactions by the pilot that lead to undesired states, or deviations from expectations and intentions. They may be driven by pilot performance issues, omissions, fatigue, health, dehydration, inattention, biases, thinking patterns, airmanship shortcomings or errors in settings or control inputs.

One common false assumption is that errors and violations are limited to incidents and accidents. This is incorrect - errors and violations are quite common in gliding operations, and many are identified and corrected by the pilot (e.g. through the use of check lists). Errors might be due to mistakes, which must be acknowledged and learned from – or (rarely) from violations, which are wilful deviations or non-

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<sup>3</sup> <https://bit.ly/casa-avn-risk-mgmt>

compliances. The latter will require remediation and perhaps disciplinary action.

**Throughout the training, the Trainers should be vigilant for threats and errors, and ensure they impart this awareness and knowledge to their students.**

#### **PRINCIPLES OF THE TEM MODEL**

- **Managing threats are a core part of a pilot's work**
- **Errors happen and managing errors are a core part of the pilot's work**
- **Threats can be expected (anticipated) or unexpected (unanticipated). This will be dependent on knowledge and experience of pilot**

**A pilot should**

- **Employ knowledge, experience and non-tech skills to manage threats**
- **Employ non-tech skills to manage error**

Now - undertake the CASA Threat and Error Management Module

[HF in Sport, recreation and general aviation - Module 5](#)

This module introduces the concepts underpinning threat and error management (TEM) and provides you with practical strategies or countermeasures to more effectively manage threats and errors (and their consequences).

### **Thresholds Of Intervention**

Trainers cannot let students and pilots go unfettered into high-risk situations. We want students and pilots to be aware of risks, threats and potential errors, to see how they should affect decision-making, but not to be exposed to adverse consequences.

Put another way, we want students to see and comprehend the risks, yet not be bitten by them.

A vitally important tool for trainers is to develop and maintain skills in applying various Thresholds of Intervention, along with disciplined and clear Handover-Takeover, to manage risk exposure during a flight.

Interventions can take several forms:

- **Verbal Interventions**
  - A question designed to direct a student's attention towards something that might require a decision or action; "Is the angle to the runway getting steeper or shallower?"
  - A suggestion to consider a course of action. "You might need to consider correcting for drift from this wind."
  - A key word or phrase, a reminder to act. "Elevator - attitude - airspeed"
  - A direction or command to take action. "More speed!"
  - A full takeover "MY aircraft"
- **Physical Interventions**

- Defensive posture, hands around stick in readiness to limit travel
- Tap the stick
- Defensive posture used to stop further stick movement in a given direction
- Use of secondary controls e.g. trim, airbrakes, flaps
- A full takeover of all controls

It is self-evident that combinations of interventions can be applied; e.g. a loud verbal command “MY aircraft” and “let go of the stick NOW!” accompanied by a stick shake and closing airbrakes plus forward pressure on elevator control, to prevent a low level stall on a mishandled approach.

Sadly, experience shows us that it is not enough to just rely on instantaneous reactions and superior flying skills. It is critical that the Trainer apply some forethought about the actual thresholds that might be used in applying Interventions for a given Unit or phase of flight.

**Example:** Wind is 18kts gusting 25kts, with strong wind gradient. You might have a verbal command intervention if airspeed drops below 70kts on approach, physically take over at 65kts.

**Example:** Aerotow in mild turbulence. You might rely on suggestions as verbal interventions only for minor excursions, commands for bank angles mismatched by over 10-15 degrees, but a physical takeover if any bow in the rope develops, or if the glider goes above the slipstream, or pulls the tail of the towplane sideways.

**Example:** Pre-Solo, Recovery from Unusual Circuit Position and Attitude. No intervention if the trainee turns left towards Runway XX, verbal intervention if the trainee wants to turn right towards Runway YY. Physical takeover if trainee tries to land low over power lines on Runway ZZ, or if the trainee freezes on the controls, or no decision after 5 seconds.

In setting these Thresholds of Intervention, safety is vital, convenience secondary - but it is important that the trainee be allowed to make some mistakes, or judgement errors, which lead to learning. A pilot who has never seen a safe, modified circuit, and never had to modify base leg off a late turn from downwind to base, is incompletely trained! So the trainer has to consider their escalating interventions - suggestion, command, then takeover.



## MODULE 6 – TRAINER AND TRAINEE RELATIONSHIPS

### Introduction

One perceived disadvantage of the glider pilot training system is that a student often has to fly with a wide variety of trainers before going solo. It can also be argued that exposure to a wide variety of instructional style results in a better and more flexible pilot. There is no evidence to support this contention, but there is plenty of evidence that adherence to such practices prolongs training unnecessarily, sometimes forces incompatible people to fly together, and still risks missing something major out of the syllabus on the way to becoming a solo or GPC-qualified pilot.

Student pilots will often prefer to self-select a small team of trainers they feel comfortable with. Flight booking systems and online roster info enable this practice.

The best relationship between trainer and student is established when the student mostly flies with two or three trainers in a club (this assumes a largish club with a Training Panel of between 10 and 20). The individuals get to know each other and establish a rapport which means that progress is made quite rapidly. It should be remembered that students often have doubts and even fears about the sport they have got themselves into. Expression of these doubts and fears comes more easily to a person they have come to know, rather than be confronted with a succession of complete strangers exhibiting teaching styles and personalities.

Keeping in mind the individual differences between trainers, students should expect to receive the best possible standard of training within the self-imposed limitations of gliding's club-based system and all trainers should make every effort to help achieves that end.

There are some specific points in trainer/student relationships which are important enough to isolate.

Everyone is different. Sometimes people click; other times they may clash. When problems occur, it is important to differentiate between issues driven by training content versus those driven by the dynamics of interpersonal behaviour, ie process. For the trainer, the recommended approach is:

1. Ask questions
2. Diagnose
3. Solve
4. Repeated as necessary

### Respect

Social behavioural and motivational studies have repeatedly highlighted the primacy of mutual respect in driving better outcomes and relationships. (Hugh MacKay, Motivation: What Makes Us Tick, et al). Respect is a necessary condition for positive engagement, influence and progress. (Respect usually outplays Reward, Risk, Reputation, Recognition and Revenge!).

A trainer must have the respect of the student if any progress is to be made beyond an initial encounter. This means that the trainer must in turn respect the student as a person and endeavour to understand as much as possible about that person's needs, aspirations and concerns, learning style, communications preferences, background and experience.

### Criticism vs Feedback

Although criticism is an essential part of any kind of training and coaching, trainers must be mindful that excessive criticism may be destructive and demotivating. To some kinds of personalities, it is enough to cause them to drift away from gliding. This is not to say that a trainer must not criticise - far from it - but do make sure that is relevant, justified and constructive.

The biggest failing of a trainer is to criticise someone for doing something that was actually quite acceptable but doesn't happen to be the way you would choose to do it yourself. This is sometimes quite

a difficult course to steer, but a trainer must keep it constantly in mind.

Students are fallible and must learn from mistakes. Feedback should include advice on what they have done well, and then in the context, *what they should do differently next time!* The natural tendency is to criticise “errors”, yet much better progress can be made by using reflection and visualisation to discuss ways they can avoid the mistake or limit its consequences. Students will respond well if they receive dispassionate, clear, constructive feedback.

## Praise

This is a positive side of training which has the capacity to improve a student's performance considerably if applied carefully and judiciously.

Beware of false praise or any tendency to try and use praise to lift a student's game when the problem lies further beneath the surface than you are able to see. If a student has worries or fears and the trainer brushes them off with a flippant remark designed to build confidence, this may have the opposite effect when the student eventually realises that the trainer has not put the amount of thought or effort that he should have into analysis of the student's problem. In short, the student has been “conned” - once again the result can be an unnecessary loss to gliding.

Some people hold the view that praise has a detrimental effect, because it causes the recipient of the praise to become swollen-headed. Once again, there is no evidence to support this as a general principle, although it may have occurred in a couple of isolated instances. Generally speaking, the effect of well-judged praise is entirely positive.

Authenticity is therefore essential. Students have well-tuned bovine effluent detectors that will be triggered by false praise or flimsy feedback.

## Explain Progress

Students need to know the trainer's opinions on the progress being made. The trainer must therefore be conscientious about completion of the student's logbook or training record at each stage of the syllabus. Comments written in these documents are for the benefit of both the student and the next trainer. They must therefore be brief, to the point and above all truthful. The last thing a student needs is a false impression of progress.

## Standardisation

This is a particular problem when a student has a number of trainers. Each individual has personal foibles that can confuse the student and cause frustration. It is absolutely essential that trainers adhere closely to the syllabus, the Training Manual and standardised training techniques and communication.

## Underconfidence

Many students face under-confidence at some time during their training, which may stem from multiple connected reasons, such as:

- poor feedback,
- harsh criticism,
- self esteem
- over-progression,
- fear,
- a scary incident,
- frustration with poor progress,
- peer competition,
- personality clashes,
- poor communications,
- wrong communications style,
- lack of standardisation in training content,
- airsickness,

- poor behaviour,
- disrespect, etc

Honesty in feedback and progress is critical. It may help to ask the student who they would like to discuss their issues with, to refer them to a trusted person.

Helpful tactics may include:

- careful use of questions for reflection and fact-finding,
- acknowledgement of personal differences and style preferences,
- solid and objective feedback on “did wells”,
- realigning expectations
- reducing competitive pressures,
- discussing the syndrome of “Trying Too Hard Disease (TTHD)”,
- praise
- accentuating achievements and progress

## Overconfidence

Overconfidence may be much more difficult to counter. It often arises from unrealistic expectations and/or a gap between aspiration and ability. Such overconfidence may be a spillover from their general character and achievement focus. It may also arise from “unconscious incompetence” where they may be deluded as to their actual skill, knowledge, judgement and achievements. Sometimes they must face the truth; the truth can hurt.

Helpful tactics may include:

- Consistency in training panel feedback to the student, regarding gaps and concerns
- Diligence in honest logbook entries
- Careful use of questions for reflection and fact-finding
- Solid and objective feedback on errors and “do differently next time” issues
- Realigning expectations
- Insisting on higher standards being consistently demonstrated
- Using more demanding sequences and standards to allow errors, mistakes and highlight need for improvement
- Insisting on the student being in “listening mode”, not transmit, for post-flight debrief summaries
- Use the wisdom of the Panel, with detailed feedback and analysis
- Use a friendly trusted agent to convey key concerns through a quiet word

## Poor Airmanship and Situational Awareness

Poor airmanship and situational awareness will require some close assessment and diagnostics, post-flight Q&A, to ascertain why the student is making poor judgements or lacking situational awareness of key inflight hazards and information. Issues that may contribute to the poor airmanship or situational awareness include:

- Errors in foundation training, primacy effects
- Poor eyesight
- Poor hearing
- Poor workload management
- Trying Too Hard Disease (TTHD) coupled with single input focus
- Over-progression<sup>4</sup>
- Failure to understand key underpinning concepts and theory
- Overconfidence
- Stress or fatigue or illness
- Beyond their capacity, etc.

Again, the abovementioned useful tactics may assist in diagnosis and solving. With diligence, respect

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<sup>4</sup> being progressed too rapidly through the training syllabus

and careful retraining, some pilots may be able to overcome these deficiencies.

Sometimes the CFI and Training Panel may have to give feedback to a small proportion of student pilots that they are unlikely to progress to solo, GPC or independent XC operations. This must be backed up by Panel notes, evidence of recurrent problems, patterns of regression after training, and impacts of pilot limitations.

In all these cases, a respectful dialogue, backed up by objective evidence against clearly defined standards must be maintained.

## **The Coach and Coachee**

When training pre-solo pilots, there is a definite relationship whereby the trainer takes responsibility for the flight. As training progresses, the student gradually takes more responsibility for decisions. When coaching, the “student” is most often post-solo, and may well hold a Glider Pilot Certificate (GPC), depending on the type of coaching being carried out.

It is very important to recognise the coachee’s skill and experience level and to ensure that they make decisions - there is little point in telling the coachee what to do for the flight. They should be given as much of the flying and decision-making as possible, without putting the flight outcomes in jeopardy.

## **Declining Faculties**

Dealing with declining faculties is a difficult issue for CFIs, Training Panels, and pilots’ peers. Ageing pilots’ senses and faculties, strength and stamina, mobility and dexterity may decline to a level where a safety pilot is required, or transition to non-flying roles may occur. This goes to the core of respect and communications. A pilot facing these concerns may go through shock, denial, anger, resignation and acceptance, as in life situations causing grief. They will need constructive help from others over a long period.

The pilot may need to be reminded through peers that it is better to make a voluntary decision than one imposed by others. Denial behaviour may require patience and dialogue with friends to resolve. They may need reminding that it is not just an issue of the individual pilot’s safety, but that of all his gliding colleagues. Dual flights with friends in a higher performance glider can help a transition to a safety pilot regime. Emphasising their personal worth and value, and opportunities to contribute in non-flying roles, can assist.

## MODULE 7 – HUMAN FACTORS

### Introduction

Human Factors is the science of people at work. It is primarily concerned with understanding human capabilities, and then applying this knowledge to the design of equipment, tools, systems, and processes of work. Human factors can use input from many disciplines (e.g. designers, engineers, psychologists, managers) and is considered a mix of engineering and psychology. The field of human factors can be seen to have four main goals: enhancing safety; reducing error; enhancing comfort; and increasing productivity<sup>5</sup>.

In an Australian gliding context, we are not concerned with design as such, but with operational performance. Succinctly, human factors are the social and personal skills, such as communication and decision making which complement our technical skills. These are important for safe and efficient aviation.

The study of human factors involves applying scientific knowledge about the human body and mind to help understand human capabilities and limitations. Human factors knowledge can be used to reduce the likelihood of errors and build more error-tolerant and more resilient systems.

Gliding Australia has a comprehensive treatment of human factors relating to gliding in THE Human Factors manual (Reference 1).

### CASA's Human Factors in Sport Aviation Online Course

The following CASA modules aim to help you understand the role of human behaviour in flying safely (Reference 2):

The main influences are:

- People
- Aircraft or Equipment
- Environment

#### Introduction to human factors in sport, recreation, and general aviation

[HF in Sport, recreation and general aviation - Module 1](#)

This module introduces you to human factors in the context of sport, recreation and general aviation and how they may contribute to incidents and accidents.

#### Information processing and the human factor

[HF in Sport, recreation and general aviation - Module 2](#)

This module aims to help you understand how your brain, senses and body influence your ability to make sense of the world, and how these things can affect your aviation performance.

#### Are you fit to fly? Age, stress, fatigue and drugs

[HF in Sport, recreation and general aviation - Module 3](#)

This module aims to identify how age, fatigue, stress and the use of alcohol and other drugs can influence your performance when undertaking aviation-related activities.

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<sup>5</sup> <https://www.arpana.gov.au/regulation-and-licensing/safety-security-transport/holistic-safety/human-factors>

## What's really going on? Situational awareness and decision making

### [HF in Sport, recreation and general aviation - Module 4](#)

This module aims to help you understand how being aware of what's going on around you will help you to make better decisions and enhance your performance.

## Optimism Bias

Human brains have a built-in optimism bias. The phenomenon is also often referred to as "the illusion of invulnerability" or "unrealistic optimism".

This bias leads us to believe that we are less likely to suffer from misfortune and more likely to attain success than reality would suggest. We believe that we will live longer than the average, that our children will be smarter than the average, and that we will be more successful in life than the average. But by definition, we can't all be above average.

It can also lead to poor decision-making, which can sometimes have disastrous results. It is a common issue in aviation, as pilots have seen so many bad situations turn out "okay" that the sense of urgency and risk can be reduced when such reduction is not warranted.

In aviation, what is surprising is the effect of experience on ability biases. One would think that as experience increases, a person would gain a more realistic appraisal of their abilities. Instead, it appears that flight experience may lead to over-estimates of one's flying ability.

There are a number of common ways that our brains can "trick" us into a misconception of the reality or truth of a situation. These biases serve as filters, hindering our ability to make accurate decisions. While some of these biases may not have a large effect on the final outcome of our decision choices in most situations, in certain high-risk decision making, the outcome of a decision that is improperly filtered by cognitive bias can be fatal.

## Other Bias

Refer to this article for a detailed look at [The Role of Cognitive Bias in Aircraft Accidents](#), including references to major aviation accidents where cognitive bias has been a major factor.

## References

1. ['Human Factors for Gliding'](#), Issue 2, Oct 2020. Gliding Australia
2. <https://www.casa.gov.au/education/elearning-catalogue>

## MODULE 8 – TRAINING TOOLS AND SYSTEMS

### GPC Pathway

The Glider Pilot Certificate (GPC) pathway comprises a set of training and coaching units (or elements) that are intended to produce safe and cross-country capable pilots. The GPC includes units designed to enable safe solo flight, then soaring flight, then cross-country. Having attained their GPC, pilots may go on to longer and faster flights and undergo further training.

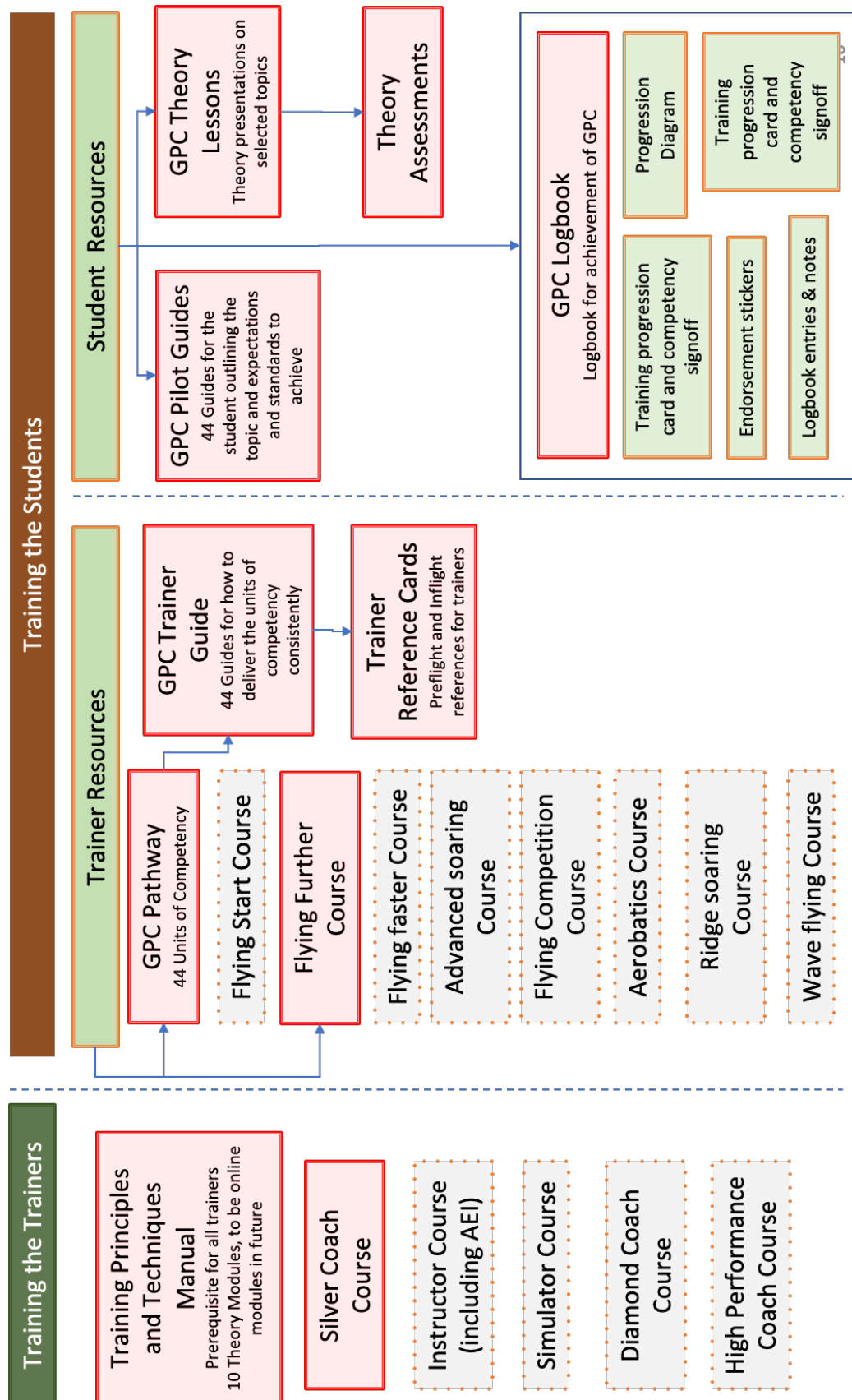
The GPC pathway also includes units designed to meet mandated CASA regulations and GFA operational regulations, including rules of the air, flight radio operator's license, airspace and navigation, so that pilots can safely and legally operate in mixed operational requirements and enjoy freedom to fly independently.

Each GPC unit is supported by defined competencies and sub-competencies, to enable instructors and coaches to assess pilot performance, knowledge and skill to defined standards or assessment criteria.

The Training Manual provides the detail of the GPC units in the approved syllabus, supporting competencies and sub-competencies, assessment criteria, training and coaching methods and lesson planning guidance, key points for reinforcement and lesson planning, plus notes and cautions as required.

An overview of the overall training system is shown on the following page.

## Overview of the Gliding Australia Training System





## Competency Standards

Gliding Australia's Glider Pilot Certificate training is made up of 44 Units of Competency which have been established along recognised training competency guidelines.

The GPC Pathway units of Competency are shown below.

#	UNIT OF COMPETENCY	#	UNIT OF COMPETENCY
1	Lookout awareness	23	Rules of the air
2	Ground handling, signals	24	Human Factors and Pilot Limitations
3	Pre-flight preparation	25	Threat and Error Management
4	Orientation, sailplane stability	26	Assessment of competence for First Solo
5	Primary effects of controls	27	Advanced aerotowing
6	Aileron drag, rudder co-ordination	28	Side slipping
7	Straight flight, various speeds, trim	29	Steep turns
8	Sustained turns, all controls	30	Thermal centring techniques
9	Lookout scan procedures	31	Thermal entry
10	Use of ancillary controls	32	Soaring with other gliders
11	Introduction to Soaring	33	Thermal sources and structure
12	Slow flight, stalling	34	Outlanding planning, demonstration and execution
13	Launch and release	35	Flight preparation, glider, trailer and pilot
14	Take-off	36	Navigation and airspace
15	Break-off and Circuit Planning	37	Passenger carrying
16	Circuit joining and execution	38	Meteorology and flight planning
17	Stabilised approach and landing	39	Advanced soaring instruments and flight computers
18	Spin/Spiral Dive avoidance and recovery	40	Cruising, speed to fly, height bands and thermal selection
19	Crosswind take-off and landing	41	Demonstrated cross country capability
20	Launch emergencies	42	Daily Inspections, Pilot Maintenance limits, DI Certificate
21	Radio use and endorsement	43	Independent operator responsibilities
22	Use of Situational Awareness Aids (FLARM/ADS-B/Radio)	44	Glider Pilot Certificate (application authorised)

The assessment criteria in GPC units uses specific language to define what the student pilot must do to demonstrate competence. These terms include:

- Describe
- Demonstrate
- Discuss
- Explain
- Identify
- Perform
- Maintain
- Understand
- Plan
- Correct

These terms can be used in combination, e.g. describe and demonstrate.

The terms *demonstrate*, *perform* and *maintain* refer to the pilot's **ability to do something**, to take action to achieve a result. The term *correct* requires the pilot to take action to remedy an undesirable state or error.

The terms *describe*, *discuss*, *explain*, *identify* and *understand* refer to the pilot's **cognitive ability and demonstrable knowledge**. Some of these can be done verbally, others in written form, or through use of diagrams or models or actual equipment.

The term *plan* requires the pilot to **anticipate requirements** to execute an action safely and correctly.

Note also that some terms require higher standards. For example, *describe* requires the pilot to show their understanding of an item or effect, whilst *discuss* requires a high-level ability to engage with the trainer in the further effects or interactions of several items or effects, or to engage in a higher-level dialogue.

Another example is that a student may have to *demonstrate* use of elevator to change pitch attitude, or a higher-level requirement to *maintain* attitude with elevator at various airspeeds and bank angles, or *correct* attitude in gusts and turbulence.

The order of GPC units is not fixed in numerical sequence but there is guidance provided on recommended flow of units. There are some prerequisite units which must be completed before moving to more advanced units.

**Note:** Students **MUST BE COMPETENT** at all units 1 to 9 before moving to the next units. It is important that the student has consolidated the building block units before moving on to more advanced units.

Flexibility in the order of units may be due to:

- Launch method
- Weather conditions
- Type and performance of glider
- Average flight duration
- Prior aviation experience
- Aptitude and knowledge
- Opportunity and exposure to favourable or unfavourable conditions
- Level of learning from mistakes and errors
- Level of learning from practice and visualisation
- Trainer skills and knowledge applied to pilot benefit

Pilots may, at any given time, be trained in several units at the same time, yet care must be taken to avoid overload, over-progression, or attempting sequences where prerequisite competencies have not been met.

The progression charts shown on the following pages demonstrate the progress steps a student should follow.

## Competency

### Competency assessment for each unit

Competency for each unit is when the student reliably and consistently:

- demonstrates competence under a broad range of conditions and
- can amend actions and decisions to cater for a range of threats and errors
- can clearly explain options and decisions and
- can cater for a range of eventualities.

On the Training Card, a competency level of 4 or 5 means that new lessons can be introduced. Some aspects of the syllabus will not achieve a full level of competence till later in the training, even though

concepts will have been introduced early.

### **Competency for Awarding of a GPC**

A pilot who achieves their Glider Pilot Certificate (GPC) will have demonstrated that they are competent at all 44 units of competency, having demonstrated the required Skills and Knowledge.

This means that they:

- can fly and soar the glider safely at the required standard,
- are aware of the Threats and Errors that may arise and have the ability to manage them, and
- have the skills to soar the glider and to competently and safely fly outside gliding range of their takeoff airfield, navigating to a selected site and complying with all aviation regulations within the limits of their authorisations.

They can fly independently subject to maintaining their competency.

### **Pilot Guides**

Pilot Guides are unit-specific documents for the student to be able to pre-read, understand the objectives of the lessons, to identify pre-requisite units and theory. The information is tailored to the student's learning.

### **Trainer Guides**

Trainer guides are unit-specific documents for the Trainer to be able to present standardized lessons and information. The information is mirrored in the Pilot Guides. Trainers must use the guides so that Students are consistently presented with the same information between different Trainers.

Trainers should not add their own 'flavour' or 'ideas', or stray from the standard approach. This adversely affects the students' confidence, progress and overall learning experience.

### **THEORY LESSONS**

Currently, there are 12 Theory Lessons which are PowerPoint Presentations, to be delivered by the Trainers. Students should be encouraged to plan ahead and undertake theory lessons before commencing the practical lessons they relate to.

### **Progression Chart**

All the pathway units are linked, with prerequisites in many cases. The progression of units is shown on the next two pages.

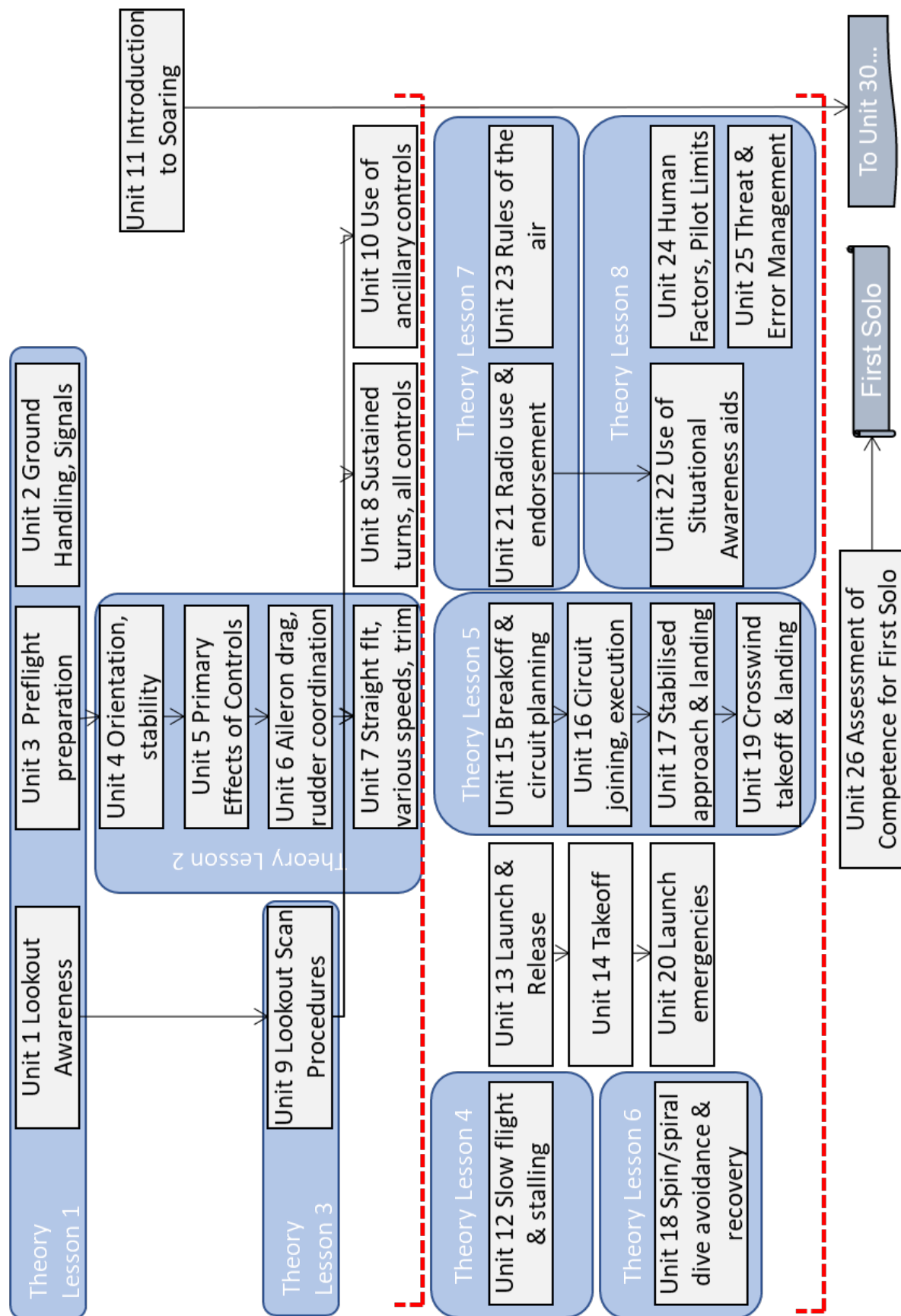


Figure 1 - Progression Chart page 1

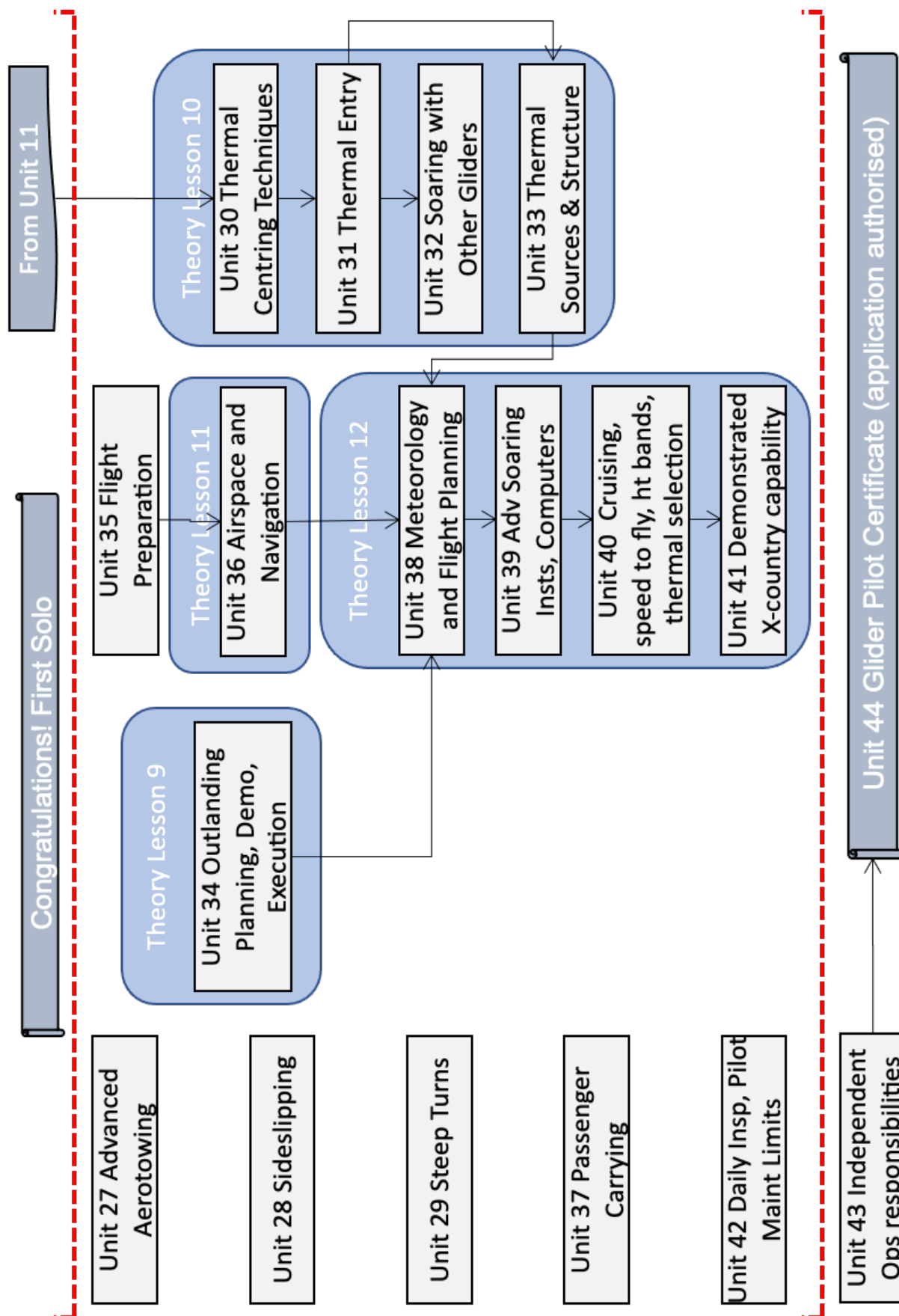


Figure 2 - Progression Chart page 2

## GPC Logbook

The GPC Logbook is the students' first logbook and used throughout their gliding training to achieve their GPC. Once they have completed their GPC, they then move to a formal standard logbook.

The GPC logbook is the pilot's first logbook. The Introduction explains the use of Trainer's guide and Pilot's Guide, sign-off process, and flowchart. It contains:

- A list of the 44 GPC units, and Theory Lessons
- The Training progress card
- GPC sign off by trainers
- Trainer Notes – provides feedback on student progress and skills acquisition
- Logbook pages
- Logbook Endorsements (Radio, A cert, B cert, C cert, Private Passenger endorsement, Daily Inspection rating).
- Checklists

## Trainer Reference Cards

Trainer Reference Cards are an aide-memoire for Trainers to use on the airfield, mainly for the airborne exercises and on-field briefings and de-briefings. New Trainers should use these to ensure they are delivering the key points and are standardizing their instruction. The app for the Reference Cards is the easiest form to use.

## Training Card

The Training Card is used by both students and trainers to track training progress (shown on the following page). At the end of each flying day the card is filled out by the trainer to indicate the number of flights that day, the date of the training, the sequences covered and the progress achieved at the end of that day's training. There are a number of phases before a student becomes competent at a skill or unit of competency. The scores are to be added to the training card, not as a measure of quality of skill (e.g. 1 bad, 5 good), but a measure of progress towards being competent as follows:

1. Exercise briefed and demonstrated by the Trainer
2. Exercise practised by the student
3. Student is flying the exercise with frequent prompting
4. Student is flying the exercise with occasional prompting
5. Competent at that exercise

When the student can demonstrate that they are competent at all aspects of the Unit, the Trainer signs off the unit as competent, with a co-sign by the student.

The training card is a part of the GPC Training Logbook.

EXERCISE	Session Number	DATE	1	2	3	4	5	6	7	8	9	10	11	12	Unit level competent		
															Signatures		
															Trainer	Student	Date
<b>Theory Lesson 1</b>		Number of Flights															
	Vision, ground handling, instruments, Airworthiness																
<b>1. Lookout Awareness</b>	Priority of Lookout																
	Application of lookout																
	Collision Avoidance																
<b>2. Ground Handling, Signals</b>	Control and move the Glider on the ground																
	Use the standard ground Signals																
	Correctly perform wing tip runner and hook-on duties																
<b>3. Preflight Preparation</b>	Access required information before flight																
	Use the aircrafts documentation																
	Inspect the Aircraft																
	Identify and Operate basic instruments																
	Cockpit Safety																
	Conduct Pre-Take off Checks																
	Prepare and fit the Parachute (when required)																
<b>4. Orientation, Sailplane Stability</b>	Orientation in the Local Area																
	Sailplane Stability																
	Basic Glider Aerodynamics and components																
	Principles of flight																
<b>Theory Lesson 2</b>																	
	Effects of Controls – General																
	Effect of Controls - Elevator																
	Effect of Controls – Aileron																
<b>5. Primary Effects of Controls</b>	Effect of Controls – Rudder																
	Aerodynamics and Control Surfaces																
	Ability to conduct coordinated flight																
<b>6. Aileron Drag, Rudder Coordination</b>	Straight flight is conducted at various speeds																
	Trim Aircraft																
	Maintain Straight Flight to nominated track																
<b>7. Straight Flight, Various Speeds, Trim</b>																	

## MODULE 9 – SAFETY LEADERSHIP AND JUST CULTURE

### Introduction

Instructors and coaches have leadership roles in gliding. They have significant influence on the safety culture of the club (or event or course etc). It is therefore important for trainers to demonstrate safe habits, professional approaches to problem solving, and an appreciation of risk management and incident causation. But most of all, they must demonstrate an open and honest approach to encouraging and instilling safety in themselves and others.

The Training Panel can be seen as the dominant influence in the club so the actions of this panel of experienced pilots is integral to the club's overall approach to safety. The Panel must also be seen to act fairly and consistently.

References 1 and 2 are both by Professor Sidney Dekker, for a time Gliding Australia's National Safety Manager.

### Safety Leadership

Safety Leadership means engaging in and maintaining behaviours that help others achieve safety goals and/or a safe flying environment.

Here are some ways that you can start to improve your own safety leadership skills right away.

#### Recognise what people are doing right

Bad leaders will tell you what you're doing wrong. There are no interpersonal management skills needed to point out people's flaws. But, to focus on what's being done right takes someone interested in building a good performance. Every championship sports team has a coach that believes in his players. The players believe in their coach. A good coach knows each players' strengths. The coach is not focused on their player's shortcomings. The job of the gliding trainer is to lead the safety discussions and build a safe culture. Conversely, it takes just one person to undo good work and to erode culture.

#### Encourage discussion and participation

The aim is to improve safety. By opening up discussion and encouraging input, the result will be better than imposing blanket rules without others' input and participation. If you dominate the discussion, and don't let everyone feel they can say something then information can be stifled and often, very important information is not communicated.

When dealing with an incident or unsafe act etc, address the conversation with an open mind, allow discussion and lead the pilot to understand the consequences and issues, without being overbearing.

#### Remove the negative reinforcement

Trying to scare people into being safe doesn't last. A list of what not to do is not helpful. No one goes grocery shopping with a list of things not to buy. Being shown photos of homeless people doesn't motivate you to invest in your retirement. Photos of fat people don't sell gym memberships. Find good reasons and benefits of being safe. Most people who come gliding have a healthy respect for the risks of the sport (some more than others) but may not always understand or have the experience to know what is unsafe, especially a new pilot. Put down the rule book and have a conversation instead.

People tolerate and generally respect the rules. But just because they tolerate rules, doesn't mean they buy-in to safety. They may not understand why the rules are made. A one-on-one conversation is often much more productive than a lecture to a briefing of pilots or telling a pilot to read a list of rules.

Make sure safety decisions have a reason and explain it.



## Just Culture

An essential part of successful implementation of safety is to attain a “just culture” environment.

A “*just culture*” creates an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information.

An effective reporting culture depends on how those organisations handle blame and sanctions. Only a very small proportion of human actions that are unsafe are deliberate, and designing a policy around only this small proportion makes no sense. Also, both MOSP and OPS-REGS offer the basis for dealing with these behaviours.

Just Culture models from the 1990s typically show a decision tree that walks you through stages of supposed culpability. These have not proven useful, since they require a large number of judgments along the way, and there is no evidence they contribute to reporting or learning. They focus on the individual and their acts, not on the broader systemic conditions that underlie human behaviour.

Today, Just Culture is increasingly organised around these three questions:

- Who has been impacted by the incident?
- What do they need?
- Whose obligation or role is it to meet those needs?

An account, in such a just culture, is not something you get a member to pay or settle, but a story you empower them, and others, to tell. You'll find that the incident impacted more people than just them.

Accountability for an incident is not *backward-looking* (i.e. who is to blame and who needs to be sanctioned), but *forward-looking*: what do we need to do now; who is going to do it; by when; and how will we know it's done? This can even include a public apology ('accounting') by the member involved.

When dealing with incidents and accidents on the field, adopt this restorative just culture approach. In training panel meetings, also adopt the restorative just culture approach, e.g. Bloggs has a bad ground loop incident

Old Approach	Just Culture Approach
The old approach may have been that Bloggs is a hopeless pilot, and always has been so the duty instructor grounds him till the Training Panel discusses it.	<p>The just culture approach is for the duty instructor to talk with Bloggs and to inspect the aircraft. Ask Bloggs what happened.</p> <p>Bloggs says the grass was long and he didn't really know what happened. He says he's never been told what to do in a ground loop situation.</p> <p>There was a strong crosswind.</p>
The Training panel discusses Bloggs and says he's been trouble since he started flying 6 months ago and it's the third incident he's had so we should ground him for 3 months and tell him to take up golf.	<p>The training panel discusses that the grass was indeed too long for ops and the grass should have been mowed last week.</p> <p>Bloggs training was seen to have missed the bit about ground loop actions and was unsure about landing in a crosswind.</p> <p>The crosswind and the long grass should have prompted the duty instructor to evaluate it and either discuss more at briefing, or in the worst case, got the grass mowed and swapped ops to the cross strip.</p> <p>Bloggs will be asked to do some refresher training on how to land in crosswinds as he's not done much</p>

	<p>because the club always uses an into-wind strip.</p> <p>The panel discusses whether they have been putting enough emphasis on crosswind training generally.</p>
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## References

1. [A Restorative Just Culture \(glidingaustralia.org\)](http://glidingaustralia.org)
2. [Films - Sidney Dekker](#)

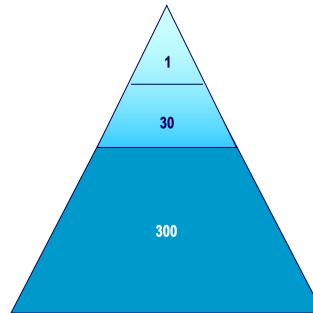
## MODULE 10 – INCIDENT CAUSATION

### Heinrich's Law

In 1931, Herbert W Heinrich put forward the following concept that became known as Heinrich's Law:

“for every accident that causes a major injury, there are 29 accidents that cause minor injuries and 300 accidents that cause no injuries”

This is commonly depicted as a pyramid (in this case with the number of minor incidents shown as 30 for simplicity). Under that there are numerous incorrect acts and events that do not result in an accident.



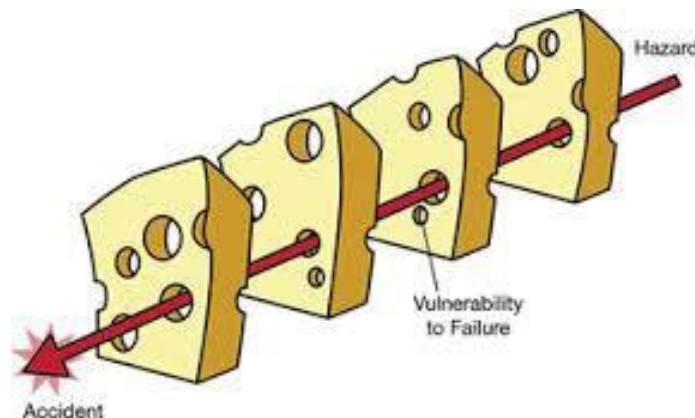
Heinrich's law is based on probability and assumes that the number of accidents is inversely proportional to the severity of those accidents. It leads to the conclusion that minimising the number of minor incidents will lead to a reduction in major accidents, which is not necessarily the case. However, by reporting all minor occurrences, events and adverse actions, it may lead to corrective actions being implemented and reducing accidents.

### Swiss Cheese Model

Professor James Reason hypothesizes that most accidents can be traced to one or more of four levels of failure:

- Organisational influences,
- Unsafe supervision,
- Preconditions for unsafe acts, and
- The unsafe acts themselves.

In the Swiss Cheese model, an organisation's defences against failure are modelled as a series of barriers, represented as slices of the cheese. The holes in the cheese slices represent individual weaknesses in individual parts of the system and are continually varying in size and position in all slices. The system produces failures when holes in all of the slices momentarily align, permitting "a trajectory of accident opportunity", so that a hazard passes through holes in all of the defences, leading to an accident.



## Incident Reporting

**“You can’t improve what you don’t measure”**

Reporting of incidents is important to be able to:

- Learn from the incident
- Prevent further incidents
- Communicate hazards
- Establish or amend procedures

One key to the successful implementation of incident reporting is to attain a “just culture” reporting environment

This effective reporting culture depends on how those organisations handle blame and punishment. Only a very small proportion of human actions that are unsafe are deliberate (e.g. criminal activity, substance abuse, use of controlled substances, reckless non-compliance, sabotage, etc.) and as such deserve sanctions of appropriate severity. A blanket amnesty on all unsafe acts would lack credibility in the eyes of pilots and could be seen to oppose natural justice. A “no-blame” culture per se is therefore neither feasible nor desirable.

What is needed is a “*just culture*”, an atmosphere of trust in which people are encouraged, even rewarded, for providing essential safety-related information – but in which they are also clear about where the line must be drawn between acceptable and unacceptable behaviour.

The reporting system should have the following qualities:

Trusted	Information will not be used against them
Non-punitive	Protected against legal, administrative or disciplinary sanctions, except in case of gross negligence, wilful violation, criminal activity or intent
Inclusive	Targeted at all aspects of aircraft operation, such as flight operation, aircraft maintenance, aerodrome operation, etc.
Confidential	Confidentiality should be an option
Independent	The collection and analysis are independent of the operation where the incident occurred
Simple	System is easily used and administered
Acknowledged	The reporter of the incident is kept informed and their report acknowledged
Promoted	Outcomes of reports and investigations are healthily promoted in reports and newsletters etc

Disciplinary policies must give support to system safety efforts:

- It is more worthwhile to reduce accidents by learning from incidents (from incidents being reported openly and communicated back to the reporter)
- Punishing people who makes a mistake is a disincentive for everyone in reporting mistakes or incidents.
- The threat of disciplinary measures decreases awareness of risks, or at least the interest in assessing the risks.

- Providing safety information and knowledge makes people more interested in assessing the risks. This heightened awareness outweighs the learning through punishment.
- The systems must be careful on how it treats human error. The system should make members aware of their mistakes and allow them to come forward if they make a mistake without fear of undue reprisal, so that all can learn from the event.

**Trainers must set the example of reporting incidents and following Just Culture practices and process. They must encourage reporting and provide feedback on lessons learnt.**

## Incident Investigation

Incident Investigation is carried out by those trained in techniques and authorised. However, it is useful to have an overview of the investigation process as it relates to the causation.

Various techniques can be used to investigate incidents, but the principles are the same. Whilst instructors generally do not become deeply involved in investigations, some knowledge can add to the general safety aspects of the club's operations.

A simple description of incident investigation is:

- Step 1: Gather information
- Step 2: Search for and establish facts and immediate causes
- Step 3: Establish essential contributing factors
- Step 4: Find root causes
- Step 5: Determine corrective actions
- Step 6: Implement corrective actions

Root Cause Analysis is a range of techniques used to uncover the true or root causes of incidents. It is unlikely that saying "The pilot should have been more careful" would be a satisfactory reason why an incident occurred. Example root causes could include system deficiencies, unsafe acts, poor supervision, lack of training, etc.

A root cause is a fundamental, underlying, system-related reason why an incident occurred that identifies one or more correctable system failures. Correcting only an immediate cause may eliminate a symptom of a problem, but not the problem itself.

So then, how do we identify the "root or true" cause of accidents? One common approach is called "5-Why". This technique begins with a problem statement and then starts asking the question "Why?" Why questions are repeated a number of times (generally around 5 times, thus the name of this technique), until the root causes become more apparent.

Whilst an instructor on the day of an incident may not be involved in the full investigation, they should collect all relevant and unbiased information as is possible to do so.

## Learning from Incidents

A Just Culture supports learning from unsafe acts. Any safety related event, especially human or organisational errors, must first be considered as a valuable opportunity to improve the sport through experience, feedback and lessons learnt.

Failures and 'incidents' are considered by organisations with good safety cultures as lessons that can be used to avoid more serious events. There is thus a strong drive to ensure that all events that have the potential to be instructive are reported and investigated to discover the root causes. Timely feedback is given on the findings and remedial actions, both to the people involved and to others who might experience the same problem. This 'horizontal' communication is particularly important.

In order that organisations learn from incidents, it is necessary to recognise first that human error will never be totally eliminated, only moderated. In order to combat human errors we need to change the conditions under which humans work (*Reason, 1997*).

The benefit of learnings from incidents includes:

- assessment of the safety implications of each incident including previous similar incidents and timely corrective actions to prevent recurrence of the incident.
- ensuring that knowledge of incidents is disseminated so that others may benefit from them.
- help prevent future accidents,
- help identify and eliminate hazards
- expose deficiencies in processes or equipment

When reporting is good and there is a lot of data collected, improvements in systems can be identified and rectified. Sometimes a one-off incident report can identify an issue that needs addressing immediately. There are many benefits to the gliding community for incident reporting.

A very good example is that in 2015, the British Gliding Association analysed their safety reports over a number of years and found that winching incidents were significant and common. The BGA Safety Committee did a thorough analysis of their winching operations and practices and developed a programme to improve winch operations that included videos, simulations, posters, safety summary leaflet, and a winching manual. Winch accident rates decreased after the implementation of this programme.

## Mandatory Reporting Requirements

MOSP2, CASA and ATSB document mandatory reporting requirements under aviation law.

### Mandatory reporting – immediately reportable matters (IRM)

IRMs are accidents and serious incidents that affect the safety of aircraft. These include matters involving death, serious injury or destruction or damage to the aircraft or to other property caused by the aircraft. IRMs must be reported to a nominated official by a responsible person as soon as reasonably practical. Immediate reporting of IRMs is required under the TSI Act so that investigators can act quickly to preserve valuable evidence in order to determine the critical factors underlying serious occurrences.

An example of an IRM may include:

- a death or serious injury to a person caused by contact with an aircraft, aircraft component or jet blast
- an aircraft is believed missing
- an aircraft is suffering damage, or reasonable grounds exist for believing so
- a breakdown of separation standards (vertical, lateral or longitudinal) in CTA.

IRMs require immediate (as soon as practical) reporting by telephone and then a follow-up written report within 72 hours, preferably using the air safety incident report (ASIR) format.

### Mandatory reporting – routinely reportable matters (RRM)

RRMs do not require immediate reporting. RRM are occurrences that have, or could have, affected safety, but the outcome was not serious. RRM would involve non-serious injuries, minor aircraft damage or structural failure that does not significantly affect structural integrity, performance or flight characteristics and does not require major repair or replacement of affected components. Under the TSI Act, responsible person must report RRM within 72 hours of becoming aware of them.

An example of a RRM may include (AIP ENR 1.14):

- an injury, other than a serious injury, to a person on board the aircraft
- a flight crew member becoming incapacitated while operating the aircraft
- an airprox

- an occurrence that results in difficulty controlling the aircraft, including any of the following:
  - an aircraft system failure
  - a weather phenomenon
  - operation outside the aircraft's approved flight envelope
- fuel exhaustion
- the aircraft's supply of useable fuel becoming so low (whether or not as a result of fuel starvation) that the safety of the aircraft is compromised
- a collision with an animal, or a bird, on a certified aerodrome.

RRMs only require a written report to be submitted within 72 hours.

## References

[Establishment of 'just culture' principles in ATM safety data reporting and assessment](#)

[Gliding Related Accident Procedures \(glidingaustralia.org\)](#)

[MOSP 2, Operations \(OPS 0002\) \(glidingaustralia.org\)](#)