

INSTRUCTIONAL TECHNIQUES
FOR
GLIDING INSTRUCTORS

by

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1. INTRODUCTION

This paper presents a summary of the Principles of Instruction developed by the Gliding Federation of Australia. (G.F.A.) The principles are outlined in Part 1 of the G.F.A.'s Gliding Instructor's Handbook. This paper also includes details of the flying training structure of the G.F.A.

The G.F.A. established a National Gliding School (N.G.S.) in 1958, to examine gliding instructional procedures, train gliding instructors and produce an Instructors' Handbook. The first edition of the Handbook was published in 1965; it consisted of two parts: Part 1 dealing with gliding instructor training and Part 2 with the training of glider pilots (Ref. 1).

We believe that the information contained in Part 1 of the Handbook, especially the Principles of Instruction, could be of considerable benefit to organizations and individuals who have a responsibility for training of glider pilots (Ref. 1).

We have noted that the British Gliding Association has incorporated our Principles of Instruction in the Sixth Edition of their Manual 'Flying Training in Gliders'.

2. THE PRINCIPLES OF INSTRUCTION

The main principles may be listed under five main headings:

Responsibility
Communication
Orientation
Skill
Safety

2.1 Responsibility

The process of gliding instruction involves a gradual transfer of responsibility from the instructor to the student. It is the task of the instructor to transfer responsibility to the student at the rate that the student can handle the responsibility.

At any stage of training a student should know what degree of responsibility he has been given; the instructor having given responsibility to the student, within stated limits, should let the student exercise responsibility within these limits.

If a student feels that he is not being given enough responsibility he will become

resentful and will lose interest in the exercise. If on the other hand he is given too much responsibility for his stage of training, he will become overloaded and suffer from a loss of confidence.

At the stage of first solo, the instructor should have transferred 100% responsibility to the student for the safe conduct of the flight. A useful mental exercise for the instructor to carry out, to assess whether a student is ready for his first solo flight, might be to ask himself whether he would be happy to fly, blindfolded and handcuffed, with the particular student.

2.2 Communication

During training, the instructor is faced with the problem of communicating to the student all the knowledge and information he will require when he assumes the full responsibility of solo flight.

Where any concept, fact or technique has to be transferred from the instructor to the student there is always a communication problem of a greater or lesser degree. Communication has to work both ways for the instructor to assess the students' understanding. One-way communication, in general, is ineffective; it can lead to resentment, boredom or confusion to such a degree that real communication becomes impossible.

Communication can also be adversely affected when too much information is poured into the trainee. This is particularly important during the flying exercises, since in all persons the period of full attention is quite short. Furthermore, people do forget a fairly fixed percentage of any new information within a very short time of receiving it.

The instructors real task is seen as that of making certain that the student really knows the relatively few important facts he simply has to know at any particular stage of training.

Finally, to put it simply, instructors usually do too much talking and students not enough.

2.3 Orientation

In dealing with a student who has never flown before, the instructor should bear in

mind that until now all the student's experience has been in two dimensions. When the pupil is being introduced to the third dimension (height), he will have no known reference points. Unless the instructor directs his attention to the horizon and other features outside of the glider, the student will tend to come back to a two dimensional reference, the inside of the cockpit of the glider.

2.4 Skill

The learning and use of skills is a complex matter. The instructor will be helped by an understanding of the simpler principles which affect the learning of skills.

Most activities which require skill are carried out by means of a rapid sequence of mental and physical acts which are repeated to produce a flow of activity more or less continuous in appearance. This sequence consists of three main stages:

Scanning (gathering information)

Processing (converting information into decisions)

Controlling (converting decisions into effective action)

Scanning

The instructor can be of great assistance to the student by stressing the significant cues which should be followed in a particular training exercise. The amount of information competing for the student's attention is usually considerably more than is needed to guide performance; unless guided, the student tends to be overloaded by irrelevant information.

Processing

Processing is affected by reaction time, i.e. the lag which occurs before processing can start. Reaction time increases with the number of alternatives presented by the situation and if the demand for decisions goes beyond a certain point an overload condition is reached. In the overload condition the output of decisions falls sharply.

The complexity of the training situation governs the processing speed and

the number of decisions made. It is the instructor's task to reduce the complexity by all means available to him.

Controlling

To enable a student to develop controlling skills as quickly as possible the instructor should be prepared to carry out some of the scanning and processing required for an exercise. As the student becomes more experienced he can be given more responsibility for scanning and processing.

Monitoring is an important part of controlling. The results of the initial action must be observed, corrected as necessary and sometimes even the corrections corrected. In the early stages of learning a new task the need for monitoring may absorb most of the time the student would otherwise have for scanning and processing.

The time taken for controlling will be reduced with practice for as greater skill is acquired the amount of control applied by the student in his initial action will be more nearly the correct amount, thus the need for monitoring will be reduced.

2.5 Safety

The main intention of the principles expounded so far is that they should be used to train pilots who will not fly 'mechanically'. The principle now to be discussed suggests that a number of unbreakable habits of safety should be formed by the student.

For example, by solo stage, the student should have developed the habit of maintaining a safe speed near the ground of from 1.3 to 1.5 times the stalling speed, and he should feel uncomfortable if for any reason his speed falls below a safe margin. This one habit is the best safety insurance the instructor can provide for the student.

The experienced instructor will become aware of the aspects of gliding which should be covered by fixed habits of safety (which it is the instructor's duty to instill in the

student) and those aspects where under initial guidance the trainee should become thoroughly competent to think for himself.

Some other fixed habits of safety are:

maintaining an adequate look-out;
carrying out a thorough cockpit check;
flying within placarded limitation;
breaking off a flight with enough height to carry out an adequate circuit.

3. TRAINING OF INSTRUCTORS

The aim of the G.F.A. training courses is to produce gliding instructors who are capable of training pilots to become safe and efficient at cross country flying.

This requires an appreciation by the instructor of the various components that are involved in producing such a pilot. The G.F.A. has identified eight component parts as shown in Figure 1. These component parts consist of both a basic and technique, where the basics are the fundamentals from which stem all techniques. Techniques are the procedures used to achieve well defined objectives.

Figure 1 shows the division of Basics and Techniques between actual gliding and the art of Instructing.

The recommended training syllabus to be used during G.F.A. instructor training courses together with G.F.A. training organizations are described in the Appendix.

Acknowledgements:

It is wished to acknowledge the efforts of the many Gliding Instructors who contributed to the process of argument, observation and experiment, by which the principles and techniques were produced and the Department of Transport - Air Transport Group for the continued interest and practical support to the National Gliding School.

REFERENCES

1. *Gliding Instructors Handbook*, The Gliding Federation of Australia, 2nd Revised Edition. May, 1971.

2. *Manual of Standard Procedures*,
The Gliding Federation of Australia,
Amendment 12. October, 1972.

APPENDIX

1. G.F.A. Instructor Training Course

To ensure that all G.F.A. gliding instructors possess a minimum level of knowledge and ability a recommended syllabus for instructor training courses has been prepared as shown in Figure 2.

The syllabus is presented in more detail in the Instructors Handbook (Ref. 1) and the Manual of Standard Procedures (Ref. 2).

THEORY

1. INTRODUCTION TO INSTRUCTION
2. INSTRUCTOR'S PERSPECTIVE CHART
3. PRINCIPLES OF INSTRUCTION
4. METHODS OF INSTRUCTION
5. TRAINING SEQUENCES
6. REVISION OF STANDARD PROCEDURES

PRACTICAL

1. INTRODUCTION
DEMONSTRATION BY INSTRUCTOR AND PRACTICE BY STUDENT INSTRUCTOR OF THE PRINCIPLES AND METHODS OF INSTRUCTION - THESE DEMONSTRATIONS SHOULD BE APPLIED TO SIMPLE SEQUENCES, e.g. STABILITY, CONTROL.
2. CONSOLIDATION
DEMONSTRATION BY INSTRUCTOR AND PRACTICE BY STUDENT INSTRUCTOR OF THE PRINCIPLES AND METHODS OF INSTRUCTION AS APPLIED TO ALL TRAINING SEQUENCES.
3. FAULT CORRECTION TECHNIQUE.
4. PUPIL ASSESSMENT.

LECTURES

- G.F.A. OPERATIONAL PROCEDURES
- FLIGHT LOADS
- REVISION - THEORY OF FLIGHT
- CROSS COUNTRY AND SOARING TECHNIQUES
- LECTURING TECHNIQUE
- LECTURES BY STUDENT INSTRUCTORS

TRAINING OBJECTIVE - SAFE & EFFICIENT X-COUNTRY GLIDING

COMPONENTS

1. PRE-FLIGHT PREPARATION
2. LAUNCH & LAUNCH FAILURE
3. HANDLING (STABILITY & ALL ASPECTS OF CONTROL)
4. SOARING (METEOROLOGY)
5. EN-ROUTE FLYING (NAVIGATION)
6. X-COUNTRY TECHNIQUES
7. CIRCUIT - APPROACH & LANDING
8. POST-FLIGHT ACTIONS

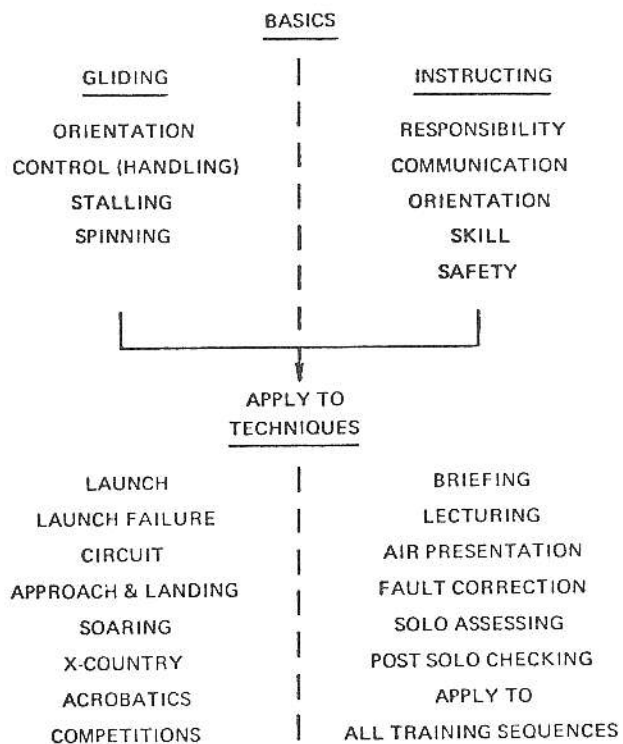


Figure 1. Instructor's perspective chart.

Figure 2. Instructor training course.

2. G.F.A. Training Organizations

The training of Instructors in Australia is accomplished in a number of ways at three levels; Clubs, State Association and Federal as shown in Figure 3.

In most cases a trainee instructor will be selected from suitable pilots and receive initial training within a club. During this training there will be further checking of general and advanced flying ability which will correct any minor faults.

Instructor training courses are held at least once per year in each of five states. The cost of these courses is subsidised from G.F.A. and Government grants, and an amount of \$7000 Aust. was budgeted for the 1975/76 year period.

About 60 new instructors are being trained each year; however, since the membership is growing at a steady 10 per cent per annum there is already a need to increase this number.

The National Gliding School did train instructors for the first ten years but now confines this activity to when a need is created to either revise some instructional technique or develop new techniques. For example, the learning of basic cross country flying was largely left to the initiative of individual pilots, however instructors are now taught how to teach the basic elements in such flying.

Every year there is a N.G.S. seminar attended by the full G.F.A. Technical Committee for Operations which comprises the Chief Technical Officer - Operations (CTO/O), the Regional Technical Officers from each State (RTO/O) together with their assistants (ARTO/O), the G.F. A. Secretary, the Technical Liaison Officer (T.L.O.) and the Advisory Technical Officer (A.T.O.). The purpose of the seminar is to review and discuss:- the standards of instruction, any changes to the pilot training syllabus, including techniques, and the accidents that have occurred during the past year. An amount of \$5000 Aust. is budgeted each year to cover N.G.S. activities.

The responsibility for the operational aspects of the Federation is shared between the various G.F.A. officers who are still (1976) all honorary with the exception of the Advisory Technical Officer. Some of their responsibilities are given in Figure 4 and are described fully in the Manual of Standard Procedures (Ref. 2).

The various categories of gliding instructors have now stabilised at those shown in Figure 5, however the requirements are reviewed by the N.G.S. seminar and are still being upgraded.

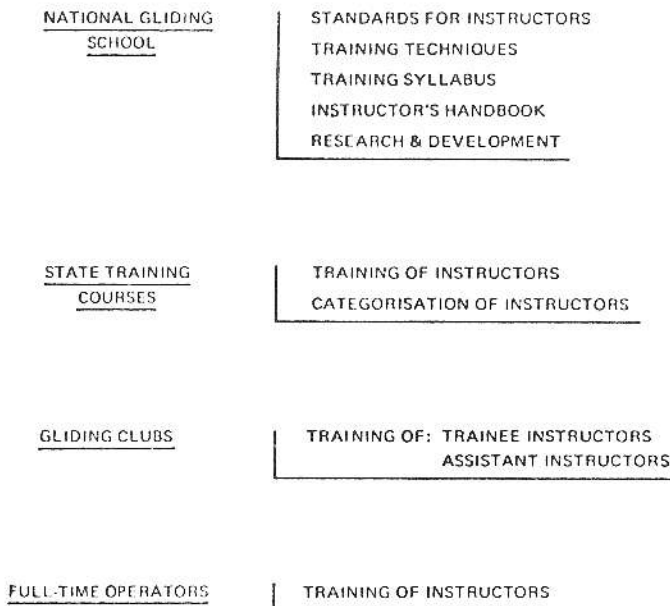


Figure 3. G.F.A. gliding instructor training organizations.

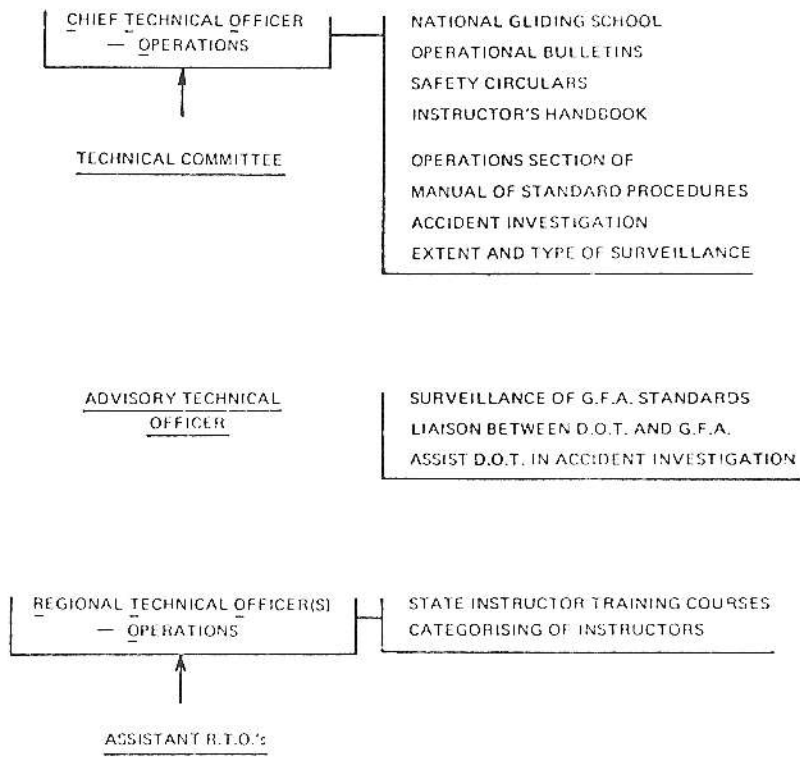


Figure 4. G.F.A. Operations Officers and responsibilities.

CATEGORISING INSTRUCTOR	- CATEGORISE ALL OTHER TYPES OF INSTRUCTORS
SENIOR (GLIDING) INSTRUCTOR	- TRAIN PILOTS AND INSTRUCTORS
GLIDING INSTRUCTOR	- TRAIN PILOTS
ASSISTANT (GLIDING) INSTRUCTOR	- TRAIN PILOTS UNDER SUPERVISION OF GLIDING INSTRUCTOR
TRAINEE INSTRUCTOR	- FLY WITH TRAINING PILOTS UNDER DIRECT SUPERVISION OF GLIDING INSTRUCTOR

Figure 5. G.F.A. gliding instructor categories.