

Improving Pilot Training

How to do it

Better flight training has not only been talked about over the entire century of flight, it has been achieved both here and in the US. A study performed in the US in the 1930s achieved more rapid progress through the training course. Similarly sensational results were obtained at the Civil Aviation Training Academy (CATA) at Cessnock, NSW in the 1970s and 80s. As in the US trial, students were going solo in half the usual time, meeting training objectives after fewer hours (than counterparts elsewhere) and graduating with critical competencies more deeply embedded.

Key catalysts in the success recipes involved were use of part-task training and a carefully planned learning gradient. These factors are expanded on and explained in more detail at <http://www.linklearn.com.au/redflag/How%20You%20Learn.pdf>

*Curiously, experiments that have proven-beyond-doubt recipes for increased efficiency and effectiveness have not been blessed with perpetuation. Perhaps a renewal of the proof will have more success, especially if it is presented to the potential **trainee** as an **easier way to achieve tough learning objectives**. How You Learn describes recent scientific insights into training taking place in the “neural circuits”. This understanding possesses the potential to inject such vitality into training methods as to transcend past gains.*

*These key ingredients deliver **High Effect** from training. We all have recall of events stored more vividly and ready-to-hand than most memories. “**I’ll never forget what I was doing when I heard ... that JFK had died ... the bomb go off ...**” and so on. Dramatic impact is not confined to events. Every pilot knows, or knows of, a great instructor. They’re the ones who got the message across best and whose influence could be measured in results: such as quick and easy learning of daunting stick-and-rudder and cognitive competencies.*

*The glittering goal on the horizon is a flight training system characterised by peak impact delivery and its consequences, more deeply embedded flight competencies – and that the **High Effect** factor is both deliberate and sustained throughout; not just occasionally and by chance; and engendered by both the system itself as well as every instructor.*

Improving Pilot Training Focus on the Pilots Course

Background

Few activities have been as thoroughly examined. Reasons include cost of training – and safety. When flight training has been reviewed, comparisons are often drawn between military and civilian experiences. In military flight training, high failure rates (45-50%) are the norm. In civilian schools, 90+% graduate.

The military pilots course can be seen as a deliberately rigorous series of tests to ensure that only those with the most robust piloting competencies gain wings. That’s because military pilots proceed directly to operational type conversion and then to an operational squadron. Civilian pilots professional careers often follow several years spent accumulating hours.

Employers of civilian pilots prefer recruits with experience, and (often) more is better. This is tacit recognition – emphasised by comparison with the military – that pilot training in the civil system does not engender the full range of competencies to desired levels of resilience. Gaining experience is seen to compensate for shortcomings in earlier training.

Most aspects of these arguments are fallacious – see Fit to Fly for in depth analysis – but that’s beside the point for now. If you can make the pilot training continuum more effective – by activating **High Effect** catalysts and techniques – the need for experience to compensate for training deficiencies is diminished, perhaps eliminated. (Equally, if military courses were to embrace High Effect recipes their failure rate would be significantly lower.)

High Effect in training delivery will occasion savings to both system and participants. It also holds forth the promise of stronger and more durable graduation standards. That is, there is a *safety dividend*. And, insofar as all elements are outcomes-based, results can be measured.

As intimated above, the aim is to render the pilot training course more effective. Review of the “pilot life cycle” sets the baseline from which to advance.

The “Pilot Life Cycle” and Training Quality Improvement

There are eight phases in the development and maintenance of piloting competencies.

1	2	3	4	5	6	7	8
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1. Unenlightened childhood.
2. Getting interested
3. Gaining entry to a training course.
4. Training to points of issue of basic qualifications and licences.
5. Acquiring sufficient experience to be regarded as candidate for professional pilot employment.
6. First conversion course.
7. Career – mature service as pilot.
8. Back to same competency status as #1.

It’s obviously, not to scale. Nonetheless, you can identify one focus of interest. ***The training.***

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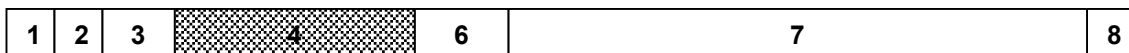
3. Gaining entry to a training course.
4. **Training to points of issue of basic qualifications and licences.**
5. Acquiring sufficient experience to be regarded as candidate for professional pilot employment.

Noted earlier are doubts as to graduation standards of newly minted pilots, and consequences such as needing more experience to qualify for a professional flying career. – 5 –



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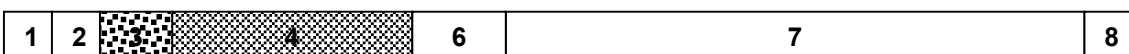
Pilot training – 4 – is the prime candidate for improvement. The “lite” version needs to be made more robust. And that need not mean more difficult. Indeed, the “heavy” version will offer easier acquisition of skills and competencies.



If **High Effect** pilot training is implemented – *and the higher quality practice is fair dinkum* – then the quality of pilot at graduation is such that he or she can start conversion right away – **6** – and thus enter the career continuum much earlier. (There are more advantages involved than merely starting earlier, and they are dealt with under *How You Learn*.)

As intimated earlier, there is a vast resource of experience pointing to viable *improvement catalysts*. Examples include use of Part-Task Trainers (PTT) and earlier start to instrument flying (merged with visual sequences). These are *proven improvers*. Their not being more widely used is a defining characteristic of pilot training operations. That aside, while better training is able to improve output quality, it is unlikely to reduce *time taken to graduate*. Roughly speaking, the same number of sequences of the same length are needed, whether in a plane, simulator or engaged in PTT exercises.

The **High Effect** training model is close to the military scheme in graduating straight to first operational conversion. A feature of the military system that is different from current civilian practice – broadly speaking – is the emphasis on **selection** to the training course. Gaining a seat in a military trainer is highly competitive. Thousands apply each year; around a hundred are chosen. *However, it’s more about personal aptitude than reducing the numbers*. Are you the right type for the training ahead? Will it fit your personality and style (or vice versa)?



1. Unenlightened childhood.
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The goal of military pilot selection process – **3** – is to recruit *only those who are suited to be pilots*. Certain attributes are held to be important, and tests have been invented to measure the “fitness” state of those qualities. The high failure rate is *selection’s* success indicator.

High failure rates on military pilot courses do not necessarily suggest poor performance in the **selection** processes. Other factors such as training quality and the subjective nature of assessment functions may be significant contributors. However, as noted earlier, if military courses were to adopt **High Effect** practice, their results from training course would improve. In other words, the current failure rate is not a fixed entity resistant to change.

See: <http://www.linklearn.com.au/redflag/How%20To%20Do%20It.pdf>

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A significant difference between **High Effect** courses and the current very efficient military training scheme is in the use selection test results. – **3** – Similar tests are employed by some schools, but their role is not discriminatory – *only so many can pass this point* – as entry to a civilian flight school is open to anyone who can pay the bills.

Ideally, “selection” tests would be used in a *diagnostic* role. That is, results are interpreted for suitability to become a pilot; but are also “read” in terms of what they reveal about that individual’s optimum learning styles. That is, test results are factored into personal training strategies and plans. (And, yes, if the military did that, too, their results would be better.)

The training theory and doctrine behind design of **High Effect** training routines is set out in *How You Learn*. An important conclusion of the arguments in that document is the rule of training known as the *Law of Primacy* – *the things you learn first are forgotten last*. Turn that theorem around and it reads as: ***If it’s important, teach it first.***

Stories abound about champion sportsmen and woman who started their training at a very young age. Equally, the middle-aged person who takes up golf, for example, will find the learning process extremely difficult. The early start is especially important in complex activities such as flying (& golf), where so many competencies are truly vital and must be so well-learned that they can be performed under intense stress. *Begin early for best results!*

While pilot courses in Kindy may have limitations, the earliest commencement to training in the critical competencies is most desirable. High schools are increasingly offering aviation subjects, and thus opportunities are arising for an early start to the pilot training.

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Those opportunities, if taken up, will deliver benefits. The big dividend is safety. However, genuine **High Effect** training will flow through to performance in post-graduate conversion courses – **6** –. Again, time-savings are unlikely, but, better overall performance improves system efficiency and graduate standards.

Another benefit is a longer service career – **7** – (again, not to scale). It may be tiny, but that is not the *main* gain. More deeply held competencies translate into operational efficiencies and safety. Critical competencies such as maintaining ***Situation Awareness under stress*** are much stronger – a factor proven by the RAAF’s safety improvement over the past decade and a half. How these factors contribute to High Effect training is set out in *How To Do It*.

Conclusions

The RAAF achieved its result through recruitment/selection processes, an option not as fully used by civilian flight schools. However, if the training is potent enough, any fit candidate

with the necessary eye-hand and cognitive skills can learn to fly. (The experience of failures from military courses succeeding later as civilian pilots highlights *time-taken-to-learn* complex competencies as a significant influence on assessment on military courses.)

A key factor in achieving **High Effect** is *focussed training* – ie, design sequences to closely aligned with that trainee's learning styles. From that perspective, in place of the military selection process, similar forms of appraisal are employed as diagnostic tools to produce personal training plans. Precisely-targetted training delivery is *systemically* more effective – skills more readily acquired are better retained – and the student is more receptive.

Indeed, the prepared student is a key stimulant of **High Effect** in training. There is plenty of evidence to hand to assure that implementation of more potent training strategies within the time frame of a pilot's course is both feasible and beneficial. Less obvious – perhaps as it has been less studied – is that earlier preparation also contributes to greater success in courses.

From that perspective, early start to preparation is ideal. That principle has been recognised in those States where aviation subjects can be studied in years 11/12. Greater emphasis on the early start will add power to the catalytic factors brought to bear in **High Effect** courses.

Intimated throughout this paper is that much is already known about factors capable of delivering stronger training effects. Also known from experience is that the catalytic effects take effect without change to the syllabus itself. There is no need to amend the basic pilot training references. Timing of sequences will be affected, but not the curriculum basics. As well, the improvement effects will, in many ways, simply enforce adherence to competency-based methods of instruction.

And Finally – Generation Y

Flight training has been much studied and reported on; but perhaps less so than the so-called Generation Y phenomena. Never has a cohort been so closely observed and commented on. Some observations should be alarming for aviation employers. Examples are undisciplined attention management and a predilection for intuitive (vs reasoned) decision-making. These habits would, if transferred into a Gen Y pilot career, be grounds for safety concern.

Such observations are rarely scientifically derived or validated. An essential feature of the High Effect training framework is proper adherence to training principles such as prior assessment (Phase – 3 – above). Pre-course diagnosis will reveal any counter-safety gremlin resulting from prior learning. The *tailored* course provides opportunities to manage any problem, for example, problems with Situation Awareness scan. Next, the higher impact of the training ensures that any rogue attribute is thoroughly subordinated to professional, disciplined, controls. Finally, the training cycle in aviation features embedded, continuous, post-graduate checking, a form of surveillance that will deal with re-emergence of any bug.