

Aviation Education and Research Symposium 28-29 July 2010, Palmerston North, New Zealand

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Aviation Psychology

A pilot test of the effect of mild-hypoxia on unrealistically optimistic risk judgements (GILBEY et al).

Although hypoxia is believed to occur above altitudes of 10,000 ft, some have suggested that effects may occur at lower altitudes. This pilot study explored risk judgments under conditions of mild hypoxia (simulated altitude of 8,000 ft). Some evidence of an increased optimism was found at this level, suggesting the need for a larger scale study with more experimental power.

Increased risk of multi-crew operations: examining the effect of group polarisation on perceived invulnerability in general aviation pilots (LEE et al).

Pilots are often overly optimistic about the likelihood of avoiding negative events and this may predict the taking of unnecessary risks whilst flying (e.g., press-on-itis). There is also evidence that group decisions tend to polarise the views of individuals. This led to the hypothesis that multi-crew decisions are more optimistic than those of single pilots. Reassuringly, the current study found no evidence that multi-pilot crews make more optimistic risk judgements than do single pilots.

Airline passengers' rights to information and the strange case of the right to be informed about destinations (PEREZGONZALEZ et al).

This research explored whether airline passengers wanted more rights to know about the safety and economic conditions of their flights, as well as the right to be reimbursed if they decided not to flight because of perceived risks. Overall, passengers agreed somehow on having more safety rights, but not so regarding financial rights. Surprisingly, they also wanted to have the right to be informed about their destinations (hotels, attractions, etc), something that is foreign to the purpose and duties of air transport.

The effect of propaganda about climate change on people's desire to fly (GILBEY et al).

Organisations and individuals that suggest aviation harms the environment often try to convince people to fly less. However, consistent with prediction based upon the theory of psychological reactance, this research found that exposure to information about the effect of aviation on the environment makes flying appear significantly more desirable.

Aviation Education

The importance of including aviation history in an aviation-education program (LEWIS).

This paper discusses an introductory aviation course that adopts an historical approach to content. In order to illustrate this historical approach, the paper describes two examples of aviation-technology content. The examples are then discussed with regard to the manner by which they may promote student attainment of the graduate attributes of a deep learner along with an understanding and a social responsibility that is associated with the aviation discipline.

Teaching an aviation course via video conference – comments and observations on the attainment of graduate attributes and learning outcomes (LEWIS).

This paper describes the method of teaching via video conference as well as some of the perceived shortcomings and pitfalls of being a ‘talking head’. The paper also describes some of the techniques developed in order to ameliorate some of the perceived difficulties of teaching using this method. The results of a student questionnaire and overall learning outcomes are discussed with reference to University of New South Wales graduate attributes.

Commercial aspects of Aviation

On the importance of fifth, sixth and seventh freedoms for New Zealand airlift (DUVAL).

This paper discusses the relative importance of the fifth, sixth and seventh "Freedoms of the Air" for inbound and outbound airlift involving New Zealand. Using specific examples, the intent of the paper is to highlight comparative public policy options as regional and international airlift emerges from the global recession with different business models, new approaches to network management and new technological/operational innovations.

Palmerston North residents' attitudes and behaviour as explanatory variables for airport leakage (LEONG et al).

This research explored some psychological preconditions for airport leakage at a local level, specifically from Palmerston North airport towards Wellington airport. The final results will be ready for presentation at the time of the conference.

Net profitability of airline alliances, an empirical study (LIN et al).

Airlines enter alliances with a hope of increasing overall proficiency, among other goals. This research explored whether joining an alliance brought about greater net results to their member airlines. The results obtained suggest that airlines have either not benefited or have suffered a net loss after joining an alliance than before doing so.

“It’s a long wait for Doha”: some current geopolitical initiatives to advance traffic rights in international air services (WILLIAMS).

This paper focuses on a number of strategic attempts by major reformist interests aimed at offsetting the limitations imposed on air traffic by bilateral regulations dating back to the Chicago Convention of 1944. As a second theme, it also considers the question of air traffic system modernisation from an Asia-Pacific perspective.

Aviation Technology***Reliability analysis of assisted-GPS technologies for post-flight analysis (PEREZGONZALEZ).***

This research analysed the reliability of an assisted-GPS mobile phone in tracking several flight parameters during a typical flight. The reliability was assessed against that of a GPS-based remote tracking device of common use in aviation. The results suggest that the reliability of both devices is similar, which may prove advantageous to those pilots with lesser resources or less interested in a dedicated tracking device.

New technologies in general aviation (PEREZGONZALEZ et al).

This research explored the technological needs of GA pilots at international levels. Overall, single pilot operators tend to value costs as the most important feature of any technology, followed by technology that helps with pre-flight tasks as well as during flight. Remote monitoring, post-flight analysis and 3-D displays are technological features of lesser importance.

Pilots’ cognition of airport movement area guidance signs (LEWIS).

Movement Area Guidance Signs (MAGS) are designed to assist pilots when they manoeuvre or taxi an aircraft on the airport prior to take-off and after landing. Nevertheless, accident and incident surveys indicate the continuing prevalence of runway incursions and incorrect taxi procedures. The current explored pilot perception and comprehension of airport movement signs. Results indicate that MAGS are effective as a navigation aid for ground-based aircraft operations.

The development of a PC-based aviation training device (PCATD) for helicopter currency training in a NZ aviation organisation (REWETI et al).

This paper describes the development of a BK117 helicopter procedural simulator. This PCATD is providing ongoing training for seven operational pilots who regularly fly on rescue missions across the region. The trailer-mounted simulator has also become an important promotional and marketing tool. The next stage is to gain Civil Aviation Authority certification, which would provide opportunities for commercial development of the PCATD.

Training for new technology – the man-machine interface

A Quantum Leap in RNZAF Helicopter Training (CLARK).

The pending arrival of the A109LUH and NH90 signal a quantum leap in helicopter operations for the RNZAF. The increase in capability and technology associated with these new aircraft will see the RNZAF move from a traditional military training regime to an all-through 'systems based approach' for both aircrew and maintainers.

Classroom lectures, learning checks whilst sitting in an aircraft in the hangar and an almost exclusive use of real aircraft for flight training will be replaced by an ab initio training system utilising Computer Based Training, a Virtual Interactive Procedural Trainer, a high-fidelity Flight Training Device and finally the A109 Training and Light Utility Helicopter itself. This system was selected on the premise that it provides the best solution for training aircrew and maintainers for the NH90 Medium Utility Helicopter and ultimately for preparing for the RNZAF's mission 'To carry out military air operations to advance NZ's security interests with professionalism, integrity and teamwork.'

WGCDR Shaun Clark, the Commanding Officer of the RNZAF's Helicopter Transition Unit, will present on the capabilities of the new aircraft, the issues surrounding the transitional period and how the RNZAF intends to tackle the challenges ahead.

Expert Decision Making in the 21st Century Airline Environment (HENDERSON)

On the 15th of January, 2009, at an altitude of 2,900ft over New York, US Airways flight 1549, an A320, ploughed through a flock of migrating Canadian geese.

Three minutes and thirty-two seconds later the aircraft landed in the Hudson River. As we all know, all on board survived.

What made the difference in this accident? Why was the outcome cause for celebration rather than the usual media beat-up on the airline and pilots? What was the difference that enabled this successful outcome?

This incident adds to the growing list of, what Professor James Reason calls, "heroic recoveries" [note1]. Others include the Sioux City DC10 and the "Gimli Glider".

This presentation explores the concept of decision making and the differences between classical decision making, represented by models such as DECIDE and SADIE, and "expert" decision making.

Implications for the pilots having to management of incidents in fly-by-wire aircraft in the 21st Century are considered

The changing role of the flight examiner: Assessing pilot skills in the new generation of General Aviation training aircraft (DE MONTALK).

Since the introduction of electronic flight displays and computer technology in the 1970s the "Glass Cockpit" has become the standard for airliners, business jets and military aircraft. Traditional gyro instruments have been replaced by Attitude and Heading Reference Systems (AHARS) and Air Data Computers (ADC's) and GPS based RNAV has replaced the classic VOR and NDB navigational systems.

A new generation of "technically advanced" light aircraft incorporating these features has precipitated changes in flight training and assessment. The introduction of FAA/Industry Training Standards (FITS) has revolutionised the way that basic flight training is conducted in modern technically-advanced training aircraft. The cornerstone of the FITS programme is scenario based training and this paper gives an insight into how student pilots are examined in the context of a scenario based flight test.

Impact of advanced technology on abinitio pilot training – a case for change (PODUVAL)

Ab initio pilot training is conducted on light single engine aircraft in accordance with a syllabus prescribed by the Civil Aviation Authority of each country based on standards recommended by the International Civil Aviation Organisation. The prescribed training syllabus for the Commercial Pilot's Licence is focused almost entirely on physical handling and manoeuvre based skills. There has been no change in training methodology and practice almost since the inception of the regulations, despite the fact that the air transport aircraft which these pilots are being trained to fly are now advanced technology aircraft, with state of the art electronic cockpit displays and sophisticated computerised control systems that demand a different set of competencies.

This paper reviews the recently introduced alternative professional pilot's licence, the Multi-crew Pilot Licence, which is competency based, and examines whether elements of that syllabus can be adapted for the existing Commercial Pilot's Licence training syllabus. It also reviews a US National Transportation Safety Board study on safety in "glass cockpit", or technically advanced light aircraft that highlights the need for changes in training philosophy with the rapid increased in technologically advanced light aircraft.

Recommendations are made for changes in the abinitio training syllabus to include competency based training with emphasis on understanding of automation systems and modes of operation. The paper concludes with references to a database of flight deck automation issues to reinforce the argument of the urgency for changes to the ab initio training syllabus.