

Innovation and solutions to address NGAP challenges

Panel 4 – Thursday 13 December
NGAP 2 Conference
Shenzhen, China
December 12-14, 2018

Graham J F Hunt
Vice Chancellor & Head of Asia
Embry-Riddle Aeronautical University, Asia

Abstract

- Today's global aviation environment is still a reflection of yesterday's ways in which we selected recruits, trained, educated, and assessed their performance in the last century. Technology and education is transforming the way in which we operate our professional roles. But will we become a truly professional industry? This presentation will highlight some of the issues that are and will need to be addressed as we proceed further into this century

Where have we come from since the 1940's?



Not actually in the 1940's!

- Some Key Annexes in with consequences for education and training
 - ❖ Annex 1 - Personnel Licensing
 - ❖ Annex 2 - Rules of the Air
 - ❖ Annex 6 - Operation of Aircraft
 - ❖ Annex 11 - Air Traffic Services
 - ❖ Annex 13 - Aircraft Accident and Incident Investigation
 - ❖ Annex 17 - Security

Training or Education?

- ✓ Training - the process of inculcating specific job/task-related skills. Often requires some form of “apprenticeship” period before the objectives for that training are confirmed.
- ✓ Education – in higher education – the inculcation of broader and deeper knowledge which may lead to the display of competencies in individuals which are relevant to their present and future occupational engagement. May be delivered in a structured classroom environment or less formal learning situation. Online learning methods are increasingly popular.
- ✓ The once distinct differences between training and education are becoming much more blurred.

But, there is a growing recognition that we have to do our training and education better

There is a mismatch between the skills available (being demonstrated) and those required.
Recommendation: “build a robust training and skill building ecosystem through institutional strengthening, infrastructure and capacity planning, training process

Ashok Gajapathi Raju, Indian Minister of Aviation, January 2016

Current status: Demand for new pilots

New Pilots by Regions – 2016-2035 –
(Boeing figures)

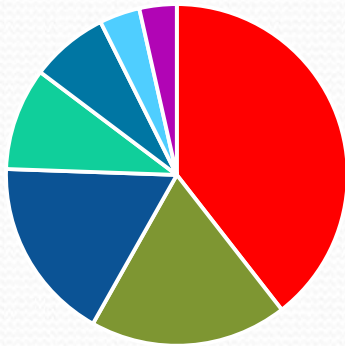


■ Asia Pacific ■ North America ■ Europe ■ Middle East
■ Latin America ■ CIS (Russia) ■ Africa

Asia Pacific	248,000
North America	112,000
Europe	104,000
Middle East	58,000
Latin America	51,000
CIS (Russia)	22,000
Africa	22,000

Current status: Demand for new Mechanics/Maintenance Engineers

Engineers/Mechanics by
Regions
(Boeing's figures)



■ Asia Pacific ■ Europe ■ North America
■ Middle East ■ Latin America ■ CIS (Russia)
■ Africa

Asia Pacific	268,000
Europe	127,000
North America	118,000
Middle East	66,000
Latin America	50,000
CIS (Russia)	26,000
Africa	24,000

Current status: And other industry sectors?

- Cabin crew??
- Airport Managers and Administrators??
- Air Traffic Management??
- Airport security??
- Customer services??

- Globally - probably over 3 million!

Current status of aviation training?

- Teaching basic technical skills as sets of discrete tasks – but with few higher-order abilities.
- Requiring the demonstration of skills rather than knowledge.
- Emphasizing basic responses and ungraded assessment of tasks and ignoring relevant higher-order cognitive abilities and professional assessment.
- Little evidence of the reliability or validity of learning outcome measures.

Current status of aviation training?

- Produces specialized practitioners
 - vulnerable to economic cycles
 - little flexibility in undertaking different work within the organization
- Usually can't afford to 'go back to full-time university'
- Shortage of workers in boom times, excess employees in bust cycle
- Need more flexible and professional workforce

Where should we be?



- *Professional aviation competency: - the sum of **cognitive, personal styles, attitudes,** and **manipulative skills** which are validated as significant in the effective demonstration of professional performance (Hunt).*
- Are we producing professionals?

For example – in the role of ‘aviation leadership’, what might be some of the key competencies to develop? A competency-based curriculum development model

Communication: listening skills/verbal skills/written skills

1. Problem solving
2. Empathy
3. Resilience
4. Assessment and evaluation
5. Organizational development
6. Innovation - entrepreneurship
7. Technology – especially finding new applications
8. Managing different cultures

Universities challenge to work with NGAP

- Applying existing and new technologies to develop professional aviation knowledge
 - ✓ Integrating STEM (Science, Technology, Engineering and Mathematics) in the development of professional aviation knowledge
 - ✓ Applying instructional design science – face-to-face; online; and virtual reality models

Universities challenge to work with NGAP(cont.)

- Creating data driven professional knowledge
 - ✓ Agreeing on and validating professional competencies – EBT/IPTC
- Developing new approaches to professional competency assessment and measurement
 - ✓ Team performance
 - ✓ Individual performance

Universities challenge to work with NGAP(cont.)

- Reviewing new approaches to instructional technology and methodology in amending and developing Annexes, SARPS, PANS Training, etc.
- Changing the regulatory environment
 - prescriptive regulatory standards, *and*
 - organizational support and mentoring
 - emphasising measureable safety and efficiency outcomes
- Developing and maintaining a global framework for the industry's civil aviation workforce – professional lifelong learning – *an integrated tertiary aviation system.*

NGAP challenge – universities role with ICAO

- Collaborate with other recognized official observers in
 - ✓ Annex amending or creating
 - ✓ Working with other ICAO partners
 - ✓ Researching future educational strategies including defining new competencies and learning environments for the *Next Generation of Aviation Professionals*



Thank you!