Army

The Ryan Review

A study of Army's education, training and doctrine needs for the future

Brigadier Mick Ryan

April 2016

Serving our Nation

Acknowledgements

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Introduction

The Army lives in the school house. [1]

The quote above, from Lieutenant General Frank Hickling (retired) in January this year, has been at the forefront of my mind since I commenced this appointment. This study was established in order to gain an appreciation of the current strengths and weaknesses of Army's approach to education, training and doctrine, and to then propose how we might rectify the challenges identified.

There will be some readers who will point out aspects of Army's education, training and doctrine that are not addressed in this study. It should be noted that it was never the intention to attend to every challenge facing education, training and doctrine in Army. This was clearly not achievable, especially in a short period of time. However, the aim has been to identify the significant issues that in being addressed; might generate impact and momentum for broader change and innovation. Further, these will comprise a framework, or plan of action, for the duration of my appointment as Director General Training.

A small study team was assembled in February this year to assist in this process. It was a hand-picked group of regular and reserve members, designed to bring a variety of educational and experiential backgrounds and to think about the future of the education, training and doctrine needs of the Army. The team consulted widely across Army and beyond to gain the insights contained in this study. The team endured days of workshops to review, discuss, critique, and argue through a diagnosis of the challenges and then propose solutions.

The paper is divided into eight parts. First, the paper reviews the series of Army reviews and evolution of its training system since the Hassett Review in the early 1970s. This is Army's 'modern era' and the institution has learned much of value

during that time which has informed or provided context for this study. The study then examines drivers for change and the rationale for why Army must evolve its education, training and doctrine and ensure it is appropriately orienting a system for education, training and doctrine based on potential future needs.

The paper then examines the four central aspects of the study. These are the 'system', a loosely defined and implicit object at present; education and professional military education; training and doctrine. Each of these four sections contains recommendations for consideration by the Chief of Army. The paper concludes with recommended priorities and approaches for the implementation of the various initiatives proposed in the study.

The study aims to be forward looking, to think about Army's future needs and ensure the education, training and doctrine system of the Army is appropriately oriented for the demands of the next two decades. I commend this study and look forward to implementing the recommendations to address the challenges described in this report.

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21 April 2016

Executive summary

> *Army education enables critical, diverse and adaptive thinking. We educate to enable mission command. Our education enables leaders to analyse and understand complex / wicked problems and design appropriate solutions.* [2]

The Australian Army possesses all of the ingredients for a world class, education, training and doctrine system. It recruits some of the finest young men and women the nation has to offer. It is the beneficiary of very good training infrastructure and a well trained instructor workforce. The Army actively thinks about and seeks to shape its future[3] as part of a joint and Defence approach. And as the *Fundamentals of Land Power* explains, the Army does possess a 'training culture'.[4]

And yet, these assets separately do not guarantee a world class education, training and doctrine system now or into the future. The constituent elements are – to varying degrees – sound, but they are not knitted together in a cohesive, unified system within Army that is guided by strategic view of Army's future human capacity needs. And the current system is not fully exploiting 'futures' studies and forward planning to ensure the Army is able to generate individual and collective professional mastery over the next two decades.

As the study finds, the Army's training system is not broken. However, the Army has not knitted together its education, training and doctrine within a broader strategy for human capacity needs. It loosely connects the broad span of activities that Army conducts internally and with its joint and Defence partners. Consequently, it is not possible to conclude with certainty that the Army's training, education and doctrine is appropriately oriented for the future. Further, without more detailed strategic guidance and objectives on future needs for individual and collective professional mastery, potential gaps in human capacity needs may be hidden.

In thinking about the future of the Australian Army and its education, training and doctrine, the study team has consulted broadly across the Army and beyond. The team sought and gained insights from schools and combat units, soldiers and officers, instructors and students. The study team received advice and opinion of varying quality. Much was evidence-based, but not always. The vast majority of those engaged believed our approach to education, training and doctrine is not currently broken, but is not as effective as it should or could be. At the same time, many opined that our Army has the intellectual wherewithal to be world class in this regard.

Why change?

As the recent Defence White Paper,[5] and a range of other studies has found, the strategic security environment is uncertain, and a range of potential destabilising events could quickly change Australia's security outlook for the worse. Rapid and unprecedented developments in information technology have enabled a level of connectivity and access to knowledge that was unimaginable when Australian troops stepped off the first aircraft at Dili in 1999.

This connectivity has spawned new ways of delivering curriculum – many of which have application to the military. A smart Army, which thinks deeply about its future, will exploit these to ensure that its soldiers receive the most effective blend of training and education. The demography of the Australian Army has changed even since the formation of Forces Command. It is an Army with greater operational experience than at any time in a generation, and it is an Army now dominated (at least numerically) by the millennial generation.

There is a view expressed by some contributors to this study that individual training in Army has declined in importance. There is some evidence for this, however, it may be that this is a consequence of enhanced attention to collective training since 2009 – which was a key objective of the *Adaptive Army* initiative. Despite this, training establishments receive a higher priority for manning than most other elements of the Army and they receive a large proportion of the funding allocated for Forces Command.

Education and doctrine in Army are areas which do require attention. While Army does place value on education – Staff College and the Chief of Army scholarships are evidence of this – these are not placed within a unified approach to developing the intellectual capabilities of Army people in a manner similar to other professions.

There is no combined residential education, self-development, unit-based professional education and experience continuum with strategic priorities to provide guidance. Similarly, Army doctrine development has become of little relevance to the combat force and is largely used only by training institutions.

Key findings

The key findings of this study are as follows:

- Army should develop a unified strategy for the development of its human capacity. An explicit system, driven by an Army *human capacity strategy*, could provide strategic direction which is executed using mission command at schools, training centres, units and individual initiative. Subordinate strategies for workforce, career and talent management, training and education may have utility.
- There is no evidence that Army's people lack imagination, inquisitiveness or innovative spirit. Current mechanisms encourage bottom up innovation however are largely focussed on short and medium term equipment outcomes; innovation at Army schools and training centres is tactical in nature. Strategic innovation must also be nurtured to review future institutional needs and world's best practice learning methodologies – this will provide a larger 'future focus' and mechanism for thinking about future education and training challenges. A larger proportion of Forces Command innovation resources could also be refocussed on training and education improvements. This strategic innovation should be conducted in collaboration with joint and Defence training and education organisations.
- The extant Army research and development plan should also be revised so that the human performance line of effort is refocussed with more effort placed on future learning methodologies and technologies. Further, this research should be explicitly linked to Army's *Future Land Warfare Report* (as well as joint and Defence future concepts) so that training needs analysis is a mandatory element of Army strategic planning.
- Army should continue its revision of the all corps officer and soldier training continuums. This should encompass a mix of training and education themes and proficiencies that embrace residential and non-residential options.

- The review of the all corps officer and soldier training continuums should consider balance of command and influence for developing leaders in the Army's training, education and doctrine system. It should explore alternative learning models for leadership development if necessary. A mechanism built around formal and informal leadership development, as well as demonstrated strategic to tactical level experience will be important for the Army to be well integrated into future joint operations and inter agency policy development and execution.
- Army should institute an officer and enlisted professional development framework. This framework should be established as an integral part of a revised all corps officer and soldier continuum. A draft of this is presented at annex C and uses civilian professional institutes as a conceptual model to develop the framework. Such a concept provides the "prod" required to ensure officers maintain their professional knowledge base. This can be coupled with promotion requirements at key gates and also employ a unit training model to capture some of the 'between the courses' knowledge and development.
- Army should build an online resource, designed around the Chief of Army's professional development priorities, that provides resources for the conduct of self-study and for the conduct of ongoing unit professional military education to support the professional development framework. This should be aimed at ranks Corporal to General, and contain a mix of readings, discussion guides, quick decision exercises, tactical exercise without troops (TEWTs) and other resources. It should be hosted on the Army internet site.
- Army should consider the establishment of an Army College to focus on improving Army personnel in the discipline of the profession of arms. This would also include preparing personnel for higher education, sponsoring them at other universities, managing and administering the learning within the profession, and providing further development of the field of study.
- Army currently provides training establishments with a high priority for allocation of personnel. This provides an appropriate priority to ensuring the right quantities of personnel are available for the conduct of training and education in Army. In receiving the right number of personnel, there is a need to ensure that sufficient numbers of high quality personnel are also being provided in each posting cycle for Army and joint training establishments. In seeking to provide an appropriate number of high quality

personnel for the training establishments, mandating training postings for officers might be considered in the same manner as is currently the case for non-commissioned officers.

- Army should review its objectives for science, technology, engineering and mathematics (STEM) qualified personnel, as well as the level of technical competencies it expects in its broader workforce.[6] This could be an element of the proposed Army *human capacity strategy*.
- Army's lessons mechanisms, which currently exist at the Army and functional command levels, could be better synchronised and linked to capability development. Army should consider streamlining its various lessons meetings and working groups into a single Army Lessons Board. The linkages to joint and coalition lessons collection and analysis should be re-affirmed and continue to be nurtured.
- Army should codify its strategy for the use of information technology in blended learning within a broader Defence environment. Army, in cooperation with the Chief Information Officer and the Australian Defence College, should develop a plan to implement distributed learning which exploits trials and takes into account Information Communications Technology (ICT) in training institutions, unit locations, reserve depots and the use of personal computing and communications devices by reserve and regular personnel. This should include test bed, or trial activities, such as those currently being conducted through the Defence Combat Support Training Centre as well as the planned trial of a revised, blended learning all corps captains course (reserve) through the Land Warfare Centre in 2017 and the Australian Command and Staff College 'flexible offering'.[7]
- Technological development, joint enhancements and a broader understanding of the utility of simulation across Army and Defence means that a new Army strategy and investment plan for this area must be a priority, in collaboration with the joint community and the Chief Information Officer Group.
- Much of Army's large doctrine library contains sound concepts but is often 'padded out' with unnecessary procedural detail. Army should affirm the hierarchy, structure and authorship of all Army doctrinal publications and write it so it is readable. Army's doctrine must be made more accessible and released for an online library.

- The extant foundation warfighting training management framework should be redeveloped so that it incorporates individual corps and all corps training, and joint outcomes. Consideration should be given as to whether it becomes an Army level training management framework that incorporates the combat outputs of all three functional commands. Alternatively, issuing Army principles-based guidance on education and training, nested below the proposed *human capacity strategy* may be appropriate.
- Army should embrace a campaign approach to significant collective training activities such as Exercise Hamel. In looking out five to ten years in planning these exercises, Army can set longer term capability development outcomes – for Army, joint and coalition operations.
- Competency-based training has assisted Army for its trade based skills. However, it does not work for the underpinning knowledge or the science/ art of longer term development and employment. Army should support the ongoing review of an RTO affiliation within Defence, so a more coordinated approach across the enterprise is possible.
- The Army Knowledge Group should be re-oriented as an Army-level technical controller of Army doctrine and lessons and it should provide clear priorities, standard for development process, structure, format and authorities for development of doctrine. As part of this, the command control, authorities and location of Army Knowledge Group might be examined.
- Command and control for education, training and doctrine within Forces Command should be reviewed, and the authorities of Director General Training and Training Centre commanders confirmed.
- Finally, Army should remain cognisant of successes and failures in previous institutional reform programs, and should apply the lessons of these during the implementation of the recommendations in this report. Implementation of the recommendations of this report should be conducted in 'business as usual' structures and processes.

The recommendations of this report are focussed on building an Army education, training and doctrine system, guided by an understanding of future human capacity needs. The outcome should resemble the system that is described towards the end of this paper. It is unambiguously focussed on generating individual and collective professional mastery in the land, joint and interagency domains.

Some aspects of this report will require cultural adjustment. This is particularly the case for education and doctrine development but also for ensuring the Army provides high quality people for these endeavours. Some elements of this report also represent a generational undertaking. While some outcomes will be apparent over the next six months or two years, the system being implemented is designed to ensure the Army possesses a highly effective approach to education, training and doctrine that supports and aligns with the broader Australian Defence Force into the future.

Part 1: A history of Army education, training and doctrine post-Vietnam

Army reorganisation 1971

In 1970 Major General Hassett[8] chaired a committee of review to examine and report upon the organisation of the Army in the context of the post-Vietnam War and the transition to a regular force following on from, and in the absence of, National Service, with the regular force acting by design as the basis for expansion. The key points of the report were: the removal of geographic commands and the creation of functional commands (field force, training, logistics commands); and the reorganisation of Army Headquarters into a functional structure.

The report is notable in the context of this study of training for its view on the placement of the staff function of the control of training, and for the view of the centrality of the training function to the generation of Army outcomes. The report highlighted the tension in the duration of recruit and corps (initial employment training and corps development and promotion) training before the assignment of trainees to field force or logistics units. The report considered the assignment of the staff function for the control of training into personnel branch, but recommended against this option given the broader implications of training for combat, and considered that it should be placed in operations branch[9]. Additionally, the role of Heads of Corps (and the directorates thereof) was revised, and it was recommended that they be assigned to the command headquarters. This recommendation was not enacted either then or subsequently up to the dissolution of corps directorates in 1997.

The report reinforced the centrality of training to Army outcomes, noting *that strong and sequential link between individual training, corps and trade training, unit training and collective training. This training results in the unit or formation being prepared for operations or peacetime task in accordance with overall Army policy and within defined doctrine*.

It also described the creation of training policy as a unified function, and that there should be staff support to this functional at each level of command, and notwithstanding the creation of a training command for delivery, that at Army level there was a clear requirement for training policy evolution. In particular, it noted that *after setting up Training Command…retain at Army Headquarters a small staff with the capability of handling policy matters and preparing broad training directives. These directives would be evolved as a result of new concepts and doctrine…in the policy making process, training as such is a complete function and responsibility for it should not be divided between branches at Army Headquarters*.

1970s

The 1970s is notable for the ongoing positioning of the training function both in staff control and as a command function, and in the emergence of a structure and liability for training, driven by the lessons from Vietnam operations. A number of major organisational and policy changes occurred during the 1970s that heavily influenced these outcomes, and these were:

- The 1974 *Millar Report* on the Citizens Military Force, which recommended the implementation of an Army Reserve, and the transition of the Citizens Military Force to that role.
- The 1976 *Defence White Paper* in which the idea of the regular component constituting the "core force" was formalised and that "self-reliance" should be the background to the context of conventional operations informing combat development. This led in turn to the preparedness model of timely expansion, with skills and equipment structured for a range of contingencies culminating in conventional operations, and that the Army should be able to operate with the US.
- The implementation in 1975 of the Tange[10] reforms to the organisation of the various Defence-related ministries. These reforms included the amalgamation of the service ministries into a single Defence ministry, and the creation of the Chief of the Defence Force Staff, the first occupant of which was General Hassett.

- The implementation of the systems approach to Army training in 1976, which was noted in the *Regular Officer Development Committee Report* of 1978 as comprising the phases of analyse, design, develop, conduct and validate.[11]
- The Regular Officer Development Committee which reported in 1978, and was tasked to examine and recommend amongst other matters on the format and content of training and education for the officer component of the regular force.
- That training is a unified function and that staff support to this function is provided at each level of command, and that the function at Army Headquarters is one of policy expressed by DAT.
- The role of simulation as both an adjunct to live training and an enabler of higher learning level outcomes was recognised by the Regular Officer Development Committee as central to effective and efficient training.

1980s

The 1980s saw the continued evolution of the Army's combat force, in particular the 1979 realignment of the role of the three task forces within the 1st Division from three "like task forces" to create three "task force specialisations". These were ground mobile operations (armoured/mechanised), light air-portable tropical operations and finally standard/conventional and open country operations. The policy underpinning force structure and attribution of manpower asset is expansion with notice to meet combat requirements of significant tempo and scale, and the creation of structures to meet the demands of skills and equipment for contingencies calling for smaller forces.

The demand for inter-operability with US forces continued. Notwithstanding the domination of the operational spectrum by "conventional operations", low-level operations were increasingly seen as a probable alternative. This resulted in the creation in 1981 around the 3rd Brigade, of a high readiness force entitled the "Operational Deployment Force". Other developments of this time included:

- The issuing in 1982 of a booklet emphasising the centrality of the division as the organisational basis for war and for training in peace[12].
- The issuing in 1984 of the *Army Development Guide*, and an *Army Force Structure Plan*, based upon the concept of expansion, and conceiving a force of three divisions including a mechanised division[13].
- The release in 1987 of a White Paper, entitled *The Defence of Australia*, which expressed the intent to move units to north Australia[14].

Over the 1980s, the Army progressively reduced regular personnel liability from approximately 33,000 to 30,000 by 1990. These reductions are particularly applied to Field Force Command from which the combat force is produced. By the end of the 1980s an imbalance arose between the demands of a high readiness force and the provision of an expansion base.

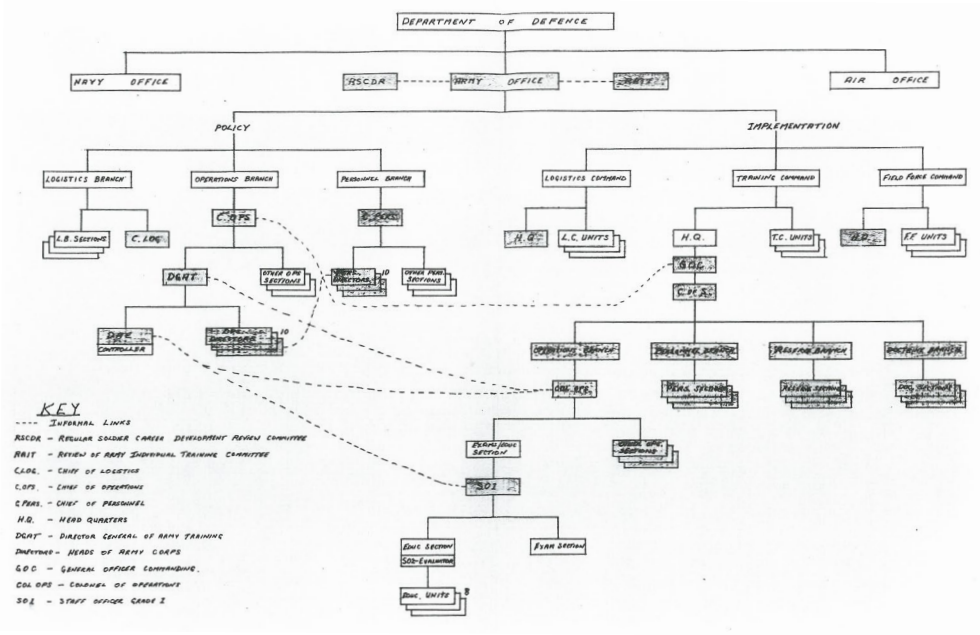

Figure 1. Organisational diagram for Army 1982

However, over this period Army continued to emphasise the centrality of training; hollowness was applied in field force and logistic units. Headquarters and training establishments were all well manned by comparison. Training remained a unified function where staff support to this function was provided at each level of command.

The training policy function at AHQ was maintained. Over this period Army created Director General Army Training as a one-star, and then converted to O6, which in turn was absorbed into Training Command at the end of 1992.

The Army Training System was retained as a superior model for the management and conduct of training. Heads of Corps continued to exercise significant level of control over the continuum of training in relation to trade streams.

1990s

With the collapse of the Soviet Union and the search for a post-cold war dividend, Defence's slice of GDP declined from 2.4% of GDP in 1992/93 to 1.9%[15] on top of no growth in budget outlays from 1987 to 1991[16]. The 1991 *Defence Force Structure Review* emphasised[17] independent, mobile brigade-level operations, and proposed the reduction of the regular component, the most obvious expression of this reduction being the conversion of 6th (now 7th) Brigade to a Ready Reserve Brigade[18].

The imbalance in the rank pyramid of officers and other ranks was remediated to an extent by redundancy programs. Additionally, further reductions in liability were implemented by a change in 1993 of the role for Headquarters 1st Division to no longer perform as a divisional headquarters, resulting in the consequential removal of arms and services headquarters. The change in Army command and control in 1997 also resulted in the removal of corps directorates.

1997 was a pivotal year in the management of training. Individual training was rationalised within Training Command to reflect the reduced Army asset available for the command. This initiative involved three key elements: adopting competency based training; adopting computer based self-paced study in barracks locations; and a reduction in cash for Training Command, which drove the need to reduce student movement funding.

The adoption of competency based training was designed to focus only on training that was needed for the job. A planned subsequent effect was for a reduction in residential requirement due to reduced duration, combined with the intended adoption of on-line competency manuals for each officer/soldier. This led to "modularisation" of existing courses, which was meant to address and largely separate the residential and non-residential components of the training requirement, but which in many cases simply split courses and tended to largely preserve the pre-existing residential duration, or provided only minor reductions in duration.

Of particular interest is the second-order effect from placing Training Authority responsibility on training centre commandants following the removal of this responsibility from corps directorates. This move resulted in the tendency to make all learning requirement arising from the training continuum into an individual training course need. Over time, this tended to progressively eliminate reductions in residential attendance gained through the initial modularisation process.

These initiatives relied heavily on funding of information technology. However, the cost of sustaining information technology systems and the associated workforce, and retention of currency of both system and product was large, and often under-estimated. Other features of the Army in relation to training over this period included:

- The centrality of training delivery and advice retained at levels below Army but not in the Army Headquarters staff.
- The Army Training System was retained as a sound model for the management and delivery of training, notwithstanding that the fifth phase – validate – changed in title to evaluate but sought at that time to retain the focus of both evaluate and validate concepts.
- The management of hollowness changed with the reduction in combat force structures, placing the focus on combat force units.
- Simulation as a key arm for the delivery of training outcomes was reinforced with the transfer of Army Wargames Centre to Land Warfare Development Centre.

This period also resulted in the increased reliance of Training Command upon non-platform support for the delivery of training, and the loss of a mediator and moderating influence on the continuum of corps training occasioned by the removal of corps directorates.

2000s

From 1999, the Australian Army was committed to a range of operations continuously. The Army started to regrow from its post-Vietnam manpower low (see diagram below) which was funded by the Hardened and Networked Army / Enhanced Land Force programs. This was followed by the 2008-2009 *Adaptive Army* initiative which restructured Army's higher command and control. This included the disestablishment of Training Command and Land Command, and the establishment of Forces Command.

Notwithstanding the growth in manpower asset over the 2000s to pre-1990s levels, a number of features of the 1991 Force Structure Review implementation remain. This includes unit establishment of training establishments supporting training delivery, albeit with significant non-platform support from the reset combat brigade, but does not support design and provides limited capacity for development. It also includes the Army Training System, which has been retained (under new name) as the model for the management and delivery of training.

Australian Army – Permanent and Part-Time Strength 1990-2012

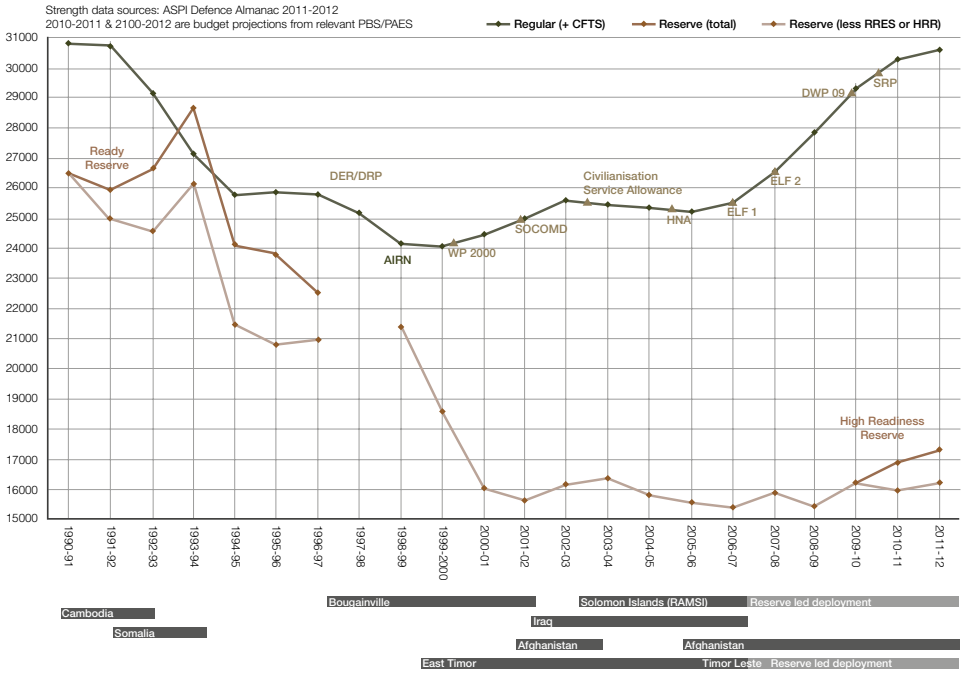

Figure 2. Army's reduction and regrowth of strength 1990-2012

The impact of the removal of control over the continuum of corps training arising from the disestablishment of corps directorates continues, notwithstanding the assignment of training authority status on training centre commandants. This tends to make all learning requirements arising from the training continuum into an individual training need to be met at the training establishment. The effect of this is to retain the tension reported in the 1971 Army report over the time in recruit, initial employment training and corps development and promotion courses.

Examples of projects and plans that sought to implement improved intellectual capacity (also affecting cultural change) over the past 10-15 years include:

- Army as a learning organisation (including the development of a committee structure to deal with strategic learning requirements to set the training and education agenda).
- The future of doctrine and the Army knowledge domain (focussing on the integration of lessons into doctrine and training).
- Recommendations from the 2006 *Defence Learning Culture Inquiry* focusing on the development of an optimal learning culture.[19]
- Recommendations from the Inspectorate of Training which focused on, among a number of different issues, the maintenance and ongoing development of instructional skills and knowledge to affect cultural change.
- *The TECHSIM Report* which focused on the development and delivery of distributed training and education.

This short history of education and training in the modern Australian Army is designed to provide context for the current study. One of the recurring themes within Army's desire to increase intellectual capabilities through professional military education has been the inability to ensure the longevity of project and plans related to educational outcomes. It provides some markers for where the Army has examined education and training previously and offers lessons for the implementation of the recommendations of this study.

Part 2: Factors affecting change

The need to re-examine some of the fundamental aspects of our reasons for existence – to train and educate our people for war – is impacted by a range of factors.

Defence and Army documents have covered in detail changes in our strategic environment. Publications such as the most recent *Defence White Paper* (2016)[20], the *Australian Army Future Land Warfare Report* (2014)[21] as well as the UK Ministry of Defence *Global Strategic Trends - Out to 2045*[22] and the US National Intelligence Council products[23], have described a regional and global security environment, where constant change to threats force adaptive and innovative workforce to recognise changes in the environment and then rapidly adapt intellectually to address those threats.

Close combat will always involve a human presence. Beyond 2025, with significant enhancements to precision and lethality, increasing levels of physical and mental robustness and resilience in soldiers will be essential. Land forces will continue to train and experiment with the other services to develop joint capabilities, and this cooperation will extend to non-traditional partners at both the state and sub-state levels. The Army must be able to 'plug into' these (and other global systems) if it is to sustain the skills to effectively contribute to decisive combat operations in a multinational operation.

Army's training and education systems must continue to focus on developing commanders capable of intuitively understanding, utilising and exploiting joint and inter-agency capabilities where learning outcomes are consistent with the workplace performance. To achieve this, the manner in which the joint force exercises command and control of any joint inter-agency task force, as well as other more

land focused command and control situations, may require review. Simulation will provide an increasingly capable and cost-effective means of conducting individual and collective training. The creation of a joint synthetic training environment that enables the land force to train within a joint, inter-agency, inter-governmental and potentially multinational military community will be necessary. [24]

Documents such as the national level Australian Government *Intergenerational Report 2015*,[25] and Army's *Strategic Workforce Plan 2013-2021*[26] have described how our national and military workforce is changing; the majority of Army now consists of 'millennials'. Generational social profiles have either correctly or incorrectly influenced what happens in the workforce, given each generation's aspirations and expectations. To better understand the workforce it is important to appreciate that each social generation is assigned approximately a 20-year timeframe which links people through 'same phase of life' including key historical events and social trends.[27] Each generation moves into the next phase of life and their own expectations (basic attitudes towards family, risk, culture and values, and civic engagement) may not be aligned with the next generation.

Army will have at least four different generational profiles within its workforce at any given time – all shaped by their own experiences and expectations. Thus no one set of aspirations or expectations are likely to be dominant. Army is a relatively homogenous organisation, which while it embraces diversity, it continues to attract but also retain like-minded individuals regardless of generational profile. Thus, Army must be sure that changes based on generational profiles have longevity noting that retention behaviour and separation rates remain consistent regardless of the generational profile.[28] This would suggest that the attributes and motivations for those who wish to join Army are also largely unchanged. Thus, effort should be made to better exploit certain generational profile traits which accord with Army's values and culture.

Over the past decade, significant advances have taken place in our understanding of the human brain and how humans learn. Described in books such as *Thinking Fast and Slow*[29], this drives a need to evolve how we approach and deliver education and training. Understanding how learning occurs is important particularly when learning approaches and technologies have also continued to evolve.
A panel of more than 850 recognised practitioners and experts in 2015 produced the internationally recognised *New Media Consortium (NMC) Horizon Report: 2015 Higher Education Edition* identified the several key trends that are likely to drive planning and decision making in learning: learning technologies; digital strategies; internet technologies; social media technologies; and visualisation technologies.[30]

Technological developments have changed the face of learning delivery in the past decade. The trends that will drive this change include: synchronous communication; massive open online courses; flipped classrooms; and learning analytics. Through better integration, technologies such as MOODLE, Blackboard, TED Talks, Academic Earth, Khan Academy and Massive Open Online Courses, offer Army the potential to change the balance of learning delivery from one that is currently best described as residential, learning push to one more finely balanced with non-residential learning pull approaches. Annex B has a more detailed exploration of these issues.

Figure 3: Online learning landscape 2014

Interestingly this technological trend is reinforced by higher education's push towards increased blended learning. According to the Pew Research Centre, 60% of digital stakeholders within education agreed that by 2020, "there will be mass adoption of teleconferencing and distance learning to leverage expert resources … a transition to 'hybrid' classes that combine online learning components with less-frequent on-campus in-person class meetings".
The concept is being treated seriously in higher education and the Australian Trade Commission sees that education systems around the world are on the brink of major transformation.

Finally, the Australian Army is a different organisation from the one that was examined in the last major review of training and education in the late 1990s under Project Opera. The Army is a more operationally experienced entity, with a better understanding of the need for robust and relevant training in the land and joint domains.

The *Adaptive Army* program aspired for Army to build on its world class individual training system to build a collective training system of a similar standard. To this end, Forces Command was established in 2009 abolishing the old Training and Land Commands. In many respects, the Army has achieved this aspiration. The governance and direction for collective training has significantly improved. The *2014 Foundation Warfighting Training Management Framework* [31] provides substantial collective training objectives and standards in a manner not achieved previously – noting this is only for a single functional command in Army.

Impact of changes

The drivers examined here have a range of impacts on the future of Army's education, training and doctrine. These factors also impact on and how Army might connect these within a systemic approach in the wider Army and joint organisation.

First, the developments in technology allow for a broader range of learning techniques in the development of Army's people. This also enables new learning methods. Second, the developments of the strategic environment and technology demand a more focussed monitoring of trends in education and training, and an accompanying approach to innovation that allows assessment and implementation of new and relevant approaches to learning.

Third, the development of a closer relationship between the services in a joint environment necessitates a more 'joined up' approach to education, training and doctrine – in Army and beyond. Any Army exploration of future training and education needs should be conducted within this broader joint environment. Finally, the changing nature of the expectations and motivations of Army's people must be constantly monitored. As was noted earlier, current analysis shows that the attributes and motivations for those who wish to join Army have remained largely unchanged. But Army must remain alert to evolving needs of its people in their development of individual and collect professional mastery. Where expectations or learning needs change, adjustments to training and education must be assessed, tested and applied.

Part 3: The Army education, training and doctrine system

Introduction

The Army currently has an implicit system that includes education, training and doctrine, each with different value propositions. This 'system' loosely connects the broad span of activities within Army, and outside it, which comprise pathways to individual and collective capability. However, this implicit system, with more detailed strategic guidance and objectives on future needs for individual and collective professional mastery, could operate more effectively.

The Army 'system' as it currently stands is not 'broken'. The current Army approach to education, training and doctrine has many strengths. It delivers very good training to its people. It produces quality instructors. The facilities that have been built in the last decade to support the delivery of training are generally excellent. The system, however, also has weaknesses. Doctrine in not widely read in the Army outside of the training centres, is difficult to access, and lacks relevance in many areas due to the low agility in updating it. There is low perceived value placed on the benefit of education to the organisation and on imbuing an intellectual curiosity in our workforce.[32]

This chapter examines key issues related to the interaction of the distinct education, training and doctrine elements of the Australian Army. It examines how these might fit within a larger construct to develop Army's future human capacity. The chapter then covers the following topics:

- Strategic direction and synchronisation,
- The Army's officer and soldier development continuums,
- Leader development in the development continuums,
- Agility and innovation in Army's education, training and doctrine,
- Army's training workforce, and
- Simulation.

The chapter concludes with the authorities and command and control of Army education and training, and recommendations for how Army's future education, training and doctrine needs might be delivered within a broader approach to human capacity development.

A system for Army human capacity development

Many of those interviewed for the study highlighted the links between personnel, career management and training policy. Some of the responses spoke of a disconnect between personnel and training policy and implementation. However, the link between these three areas is also related to flexibility of the system as a whole to adjust.

Training, education, personnel policy and career management could be more closely aligned to build human capacity. Training enhances and develops capacity and personnel policy guides the identification, management and requirements of the capacity. In both cases, there is a reinforcing relationship to ensure that changes in institutional direction can be incorporated into personnel and training requirements. Education within the Army and in the joint context assists in this. The final area, career management, ensures personnel receive experiences in appropriate areas to both increase knowledge, as well as internalise previous events.

A view for Army's human capacity should emerge from Army modernisation analysis of future needs of Army's people. However, understanding and implementing this – by translating it into training and education effects – is one of the roles of the training system. Human capacity, as a system, is developed and guided by Army Headquarters. This identifies the concepts and needs that lead to the vision of human capacity, thereby informing the mental capacity building requirements that the education and training system must provide. This is intrinsically linked to personnel policy and career management. However, collective training is different. Here, the focus is on the interface of all capability to

produce the required land effect. This is also guided by Government's contingency requirements. Although human capacity influences collective training, the key determinant is the Defence preparedness requirements, and the likely scenarios for land power.

The individual training and education aspects take their lead from capability development. As capabilities change, so to will training requirements. Further, as the situation changes at the strategic level, adjustments to individual education must occur to account for the lag between adjustments to platform/sustainment capability and associated human training, and the strategic situation. Collective training must span the spectrum of future possible contingencies, including the least likely but more dangerous scenarios.

A system to develop Army's human capacity

A thinking Army needs to be creative in how its trains its people in highly complex trades. It does so by creating a system that blends contracting training out to industry best practice, with training delivered in the Army school house that matches the learning style of Army's people. This becomes critical as Army continues to modernise and adopt high end technologies.

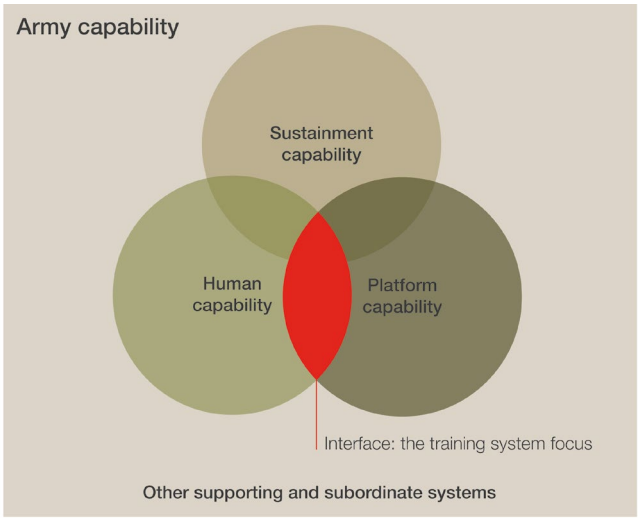

Figure 4. Representation of 'system of systems' positioning training focus

The training system is focused on preparing Army, as individuals and a collective, for operations. However, training is only a part of the fundamental inputs to capability (FIC). Therefore, training must be considered within the wider context of Army capability, something often defined as a 'system of systems'.[33] This can cause difficulties as it suggests that the 'training system' as a part of the wider system, is linked to multiple elements: platforms, sustainment, and the human. Although this is technically correct from a purely systems engineering approach, it misses the purpose of the system – to develop human capacity so it can interface with other top-level capabilities.

The representation at Figure 4 highlights that the training system's focus is on ensuring the human can use the platform and sustain it. This is more than just 'driving the platform'. It includes understanding effects to recognise what a platform can do, conceptualising those effects to integrate multiple platforms towards a goal (a tactical plan), and perceive the follow on effects that could occur – in effect, understand the potential causality of a situation and its effect. This represents a recognition of the need for professional mastery for all members of the Army. The primary method for building this now and into the foreseeable future remains capacity building. This is best achieved through an explicit, well designed and described system that has professional mastery as its primary outcome.[34]

Capacity building, at its basic level, seeks to increase the capacity of the physical and mental aspects of humans (Figure 5). The overlap between these is the true intellectual component of fighting power: where mental fortitude and physical capacity reinforce each other, enabling professional mastery.

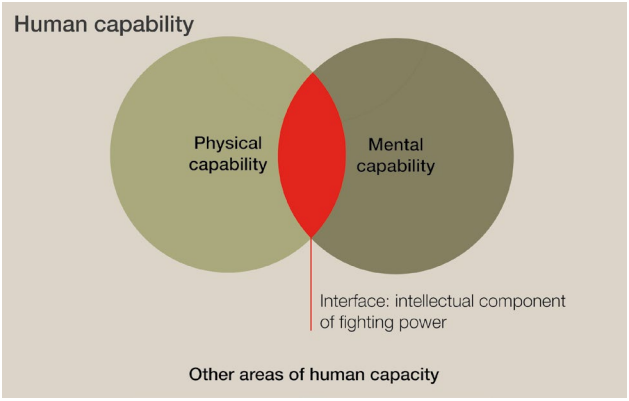

Figure 5. Human capacity simplified

Although physical capacity is important, and is part of any military training system, it is mental capacity that ensures the human capacity can successfully interface with, and then manipulate, the other key areas of capability. In effect, the key methodology of achieving the training system's purpose (better capability interface) is to target and enhance mental capacity – or the cognitive domain. This directly relates to the development of knowledge.[35] Given this, the development weight of effort must be towards mental capacity. However, though Army's training system's methodology may focus on mental capacity, there are questions as to whether its method of execution is appropriate.

Strategic direction and synchronisation

Strategic guidance

The Army's approach to human capacity development could be unified with the development of an Army *human capacity strategy* that incorporates the elements of Army's capacity development including workforce attraction and strategy; career management; training and education. Such a strategy, informed by Army and Defence (as well as external) analysis, might include the following elements:

- **Rationale and key drivers.** This should include the driver, or rationale, for a unified approach to human capacity development. Additionally, it may confirm how far into the future Army wishes to explore in areas such as, psychology, technology, education and training developments, the strategic environment, and demography.
- **Army mission.** This should be considered in a joint, coalition context. The current Army mission comprises a task (to win the joint land battle) without purpose.
- **Army human capacity vision.** Army should consider a holistic view of what it seeks for individual, team and leaders. This could be nested beneath a broader Army vision for its future capability from the *Army Modernisation Plan*.
- **Strategy elements.** Similar unified strategies from the United Kingdom and the United States have used an explicit 'ends, ways, means' narrative in their documents. This would be a useful approach for the Australian Army. As such, each may include:

- **Ends** (objective/s): This should describe the Army's view of professional mastery as the outcome for its individuals, teams, and leaders.
- **Ways** (supporting achievement of objectives): This should describe the key elements of the system that will work together to meet the 'ends' such as workforce attraction, policy and management, education, training and doctrine.
- **Means**: This should be a clear statement of where human capacity sits in Army's priorities and should include a commitment to resources, authorities, timelines, governance, as well as research and development programs.

- **Risk.** Any strategic approach to developing Army's future workforce must include analysis of risks, and make judgements about the level of institutional risk that can be accepted or managed in the execution of a unified *human capacity strategy*.
- **Connectivity.** The proposed Army *human capacity strategy* should take into account strategic direction as well as Army's connectivity to other services and elements of Defence, as well as other government departments, allies, Australian academia and vocational training capacity. This consideration of Army's connectivity might also incorporate the impact of Australian societal culture on Army's culture.

The development of this strategy would provide a definitive structure for different elements of Army's human capacity development, incorporating its interaction with external actors in building the professional mastery of individual, team and leaders.

Strategic planning for training and education

Army requires enhanced anticipatory functions to ensure its future training and education will be fit for the environment in 10-20 years. While the *Army Research and Development Plan* contains some research tasks, these are disconnected from training, education and doctrine outcomes at the Army or command level.[36] Additionally, Army's futures work which is normally contained in the *Future Land Warfare Report*[37] is not well utilised in anticipating future education and training requirements.

Strategic direction for training and education can be better informed by this focus on future Army capability needs. There are a range of non-residential training capabilities such as new information technologies which offer Army the chance to significantly modify training time and location. There are some initial experiments

underway in Forces Command, particularly in the use of online courseware.[38] Army will soon be in a position to use the information from these trials to begin codifying its strategy for the use of information technology in learning delivery and the level of investment that it is willing to make in this area.

Strategic training 'needs' development

The Army's directed training requirement[39] process is described in Army Training Instruction 1-5 and Defence Instruction (Administration) Personnel 70-9. It is determined and issued by Army Headquarters and is the 'contracted' training to be conducted by a training establishment. It comprises the number of individuals that are to be trained in order to meet job entry, trade or pay standard or specific capability requirements as determined by Headquarters Forces Command.

The directed training requirement process is endorsed by Director General Personnel and Director General Training. It covers the training requirements for job entry, trade or pay standard or specific capability requirements as determined by Army given certain constraints. Better oversight is required to ensure it reflects Army *needs* rather than individual trades *want*. Army has lost the appreciation at the strategic or operational level of the gross individual training requirement which focussed on capability based skills, knowledge and attributes. The systems and process to achieve this focus has been absorbed by other influences. As such, the issue is not definition of the directed training requirement and unit resourcing, as that is the outcome. Army needs to reinvest its focus on the strategic requirement in order to allow implementation and innovation on ways and means of achieving the outcome.

In defining the directed training requirement, there are a number of competing conditions, in particular allocation of resources for the introduction into service of new capability or significant procedural change. Often these activities are covered as part of project funding or determined as unit needs training. These decisions impact on the ability of the coordinating training support functions to ensure longer term sustainment requirements or modifications to learning management packages are achieved. As this process is not just based on the human, there is a conflict of responsibility, a more strategic viewpoint defined as part of the gross individual training requirement would provide a firmer foundation from which to develop a strategic training 'need' document.

Another area for redefinition is the connectivity between the training establishments and the units. Where practical, all training should be based on a learning management package – regardless of it being unit needs or trade or

corps requirement. If this process is not followed, then tracking unit courses (and potential over training, training duplication or mis-training) cannot be achieved. Noting that some courses are predominately conducted in units, e.g., transport related training, the definition and inclusion of this training is critical to the gross individual training statistics and a clear opportunity for reform.

There is some evidence that the current approach to setting the directed training requirement is leading to unnecessary courses and increased reliance on non-platform support. If Army has failed to achieve 80% of the directed training requirement in the past three years, then there should be clearly identifiable capability output issues. Whilst this may be the case in some trades, where the sustainability has reached critical levels, this is not the case for many of the more generic- all corps- skills and courses. Transparency of the requirement setting and a focus on the broader capability need should reduce the over-estimation of resources and the ability to calibrate over training and true areas of critical capability.

Army's employment specifications are key to defining performance outcomes that underpin human capacity. However, there are shortfalls in the development of these specifications. In most multinational companies, human resources departments determine the baseline workplace requirements (position, functions and tasks), and are also responsible for the development of their people for transition through the company. This provides access to recruitment at any level and advancement within the organisation.

However, Army does not emulate this for personnel development, and chooses to rely on training designers and employment category managers from within Army training centres to develop employment specifications based on individual trades and now corps specifications for the officers. By choosing to adopt this system, it does not accurately reflect the workplace performance requirements thus generating gaps and potential unnecessary duplication of roles and tasks. Civilian qualifications have also been included into specifications to gain greater pay and conditions. While this may be appropriate in some cases, Army needs to articulate the spine employment requirements by rank to generate the generalist ranks, and provide the specialisations with a frame of reference and underpin determinations on pay.[40]

The training and education continuum

Army's cradle to grave professional development continuum is currently encapsulated in the all corps officer and soldier training continuums. These are predominantly training based, with outcomes being delivered through residential courses or experience in units. Review of other military approaches to developing professional mastery indicates that a unified approach including residential courses, online education, incentivised self-development, career management, experience and joint education – linked to career management milestones – may be more effective.[41]

This continuum could also aspire to be more competitive in nature. Residential courses – the combat arms officers course is a prime example – might be transitioned to cater to those who have demonstrated the personal commitment to their professional mastery, and who are entirely comfortable being educated in a competitive environment. The essential nature of the profession of arms is competitive – Army officers should feel comfortable in such an environment for professional development.

Professional military education in units, for officers and non commissioned officers (NCO), should provide the intellectual wherewithal for implementing mission command in Army. The conduct of professional military education in units must be seen in much the same way that investment advisors view compound interest – it is something that accretes over time providing long term benefit. In the case of professional military education, the period between graduation from Duntroon and attendance at Staff College is approximately a decade. There is much that can be done outside the school house over this time. Army must guide the intellectual development of its personnel with regularly reviewed and revised thematic priorities for study, incentives in career management and easily accessible resources for all members.

In units, the conduct of ongoing professional education and development is inconsistent. Some units are excellent and have a deeply embedded culture of ongoing professional education. But the reality is that many units find it convenient to be too busy for an ongoing professional education program, other than the pre-course preparation of our soldiers for promotion courses. Additionally, professional education in units is driven by the energy of unit and brigade commanders – Army provides no direction on themes or topics that align with Army educational and professional development priorities.

A review of the soldier and officer continuums has just commenced. It offers the chance for Army to incorporate blended learning as well as a larger proportion of self-study and unit-conducted study, as discussed in the previous chapter. Importantly, it also provides an opportunity to review Army's approach to leader development.

Leader development in the continuum

One core element of nearly every soldier and officer course in this continuum is leadership. While there are many schools of thought over whether leaders are born or developed, the Army has generally accepted it can develop leaders regardless of their inherent skills. This approach is encapsulated in its extant doctrine, *Land Warfare Doctrine 0-2 Leadership*.[42] For many years the Army has employed a combat leadership model, focused on command, to develop leaders through courses, experience and personal appraisal reports.

This has generally served the Army well in combat and at our junior leadership levels. But it is less clear if it is useful at the field rank officer and NCO level where *influence* is becoming increasingly more important than command authority. While influence is recognised in Army doctrine, noting *leadership is about influence*,[43] it is done so generically. Further, a review of learning outcomes for leadership development conducted in the all corps officer and soldier training continuums reveals that this element of command is not a explicit learning outcome. It is not covered in a context outside Army leadership needs; the role of influence as opposed to command in the joint, coalition and interagency construct might be usefully explored.

The Chief of Army has recently challenged the Army's senior leadership that Army's current leadership techniques might be too direct and counter productive to building effective teams. Army must build effective teams so that it can be the kind of diverse Army required for contemporary operations, participate in the joint force missions and contribute to inter/intra departmental efforts that are essential to Army's sustainment.

The review of the all corps officer and soldier training continuums might represent a watershed for resolving the balance of command and influence in the Army's training, education and doctrine system. It should at least explore alternative learning models and methods for leadership development. In doing so, Army should aspire to balance the needs for foundational leadership in the early part of a career with the need to develop strategic leaders after that. Army must make its leaders better influencers while also being effective combat commanders. Finding a

new mechanism built around formal and informal leadership development, as well as demonstrated strategic to tactical level experience will be an important building block for an Army that is well integrated into joint operations and inter and intra agency policy development and execution into the future.

Strategic and tactical innovation

Innovation

Training centres and schools are tactically innovative. They are thinking about new ways of effective and efficient delivery of curriculum. New approaches to simulation in armoured vehicle training and blended learning are occurring. Innovation is also occurring in brigades – new approaches to simulation and online learning are being trialled[44] and brigades have also been innovative with initiatives such as innovation days, combat shooting, command and control[45] and air-land integration.

However the training establishments face constraints on their capacity to innovate. First among these is the convergence of tempo and staff capacity. The pace of day to day training ensures that training establishments have minimal capacity to focus on innovation. While they are innovating, this is often serendipitous and not a deliberate activity. Innovation studies have found that the majority of work to achieve innovation is involved in adoption of new practices rather than creating new ideas. The implication here is training establishments simply lack the time or staff to develop new ideas (which happens organically) and systemically implement them without higher level connectivity and support. Higher headquarters, and Director General Training in particular, might better support adoption than idea creation, resulting in a more strategically innovative approach to training and education.[46]

The changes in the technological means to deliver information over the past decade described in Part 2 should also be driving strategic innovation in how Army delivers training and education to its reserve and regular workforce. These areas might include outsourcing delivery to joint/civilian, assessing students at beginning of training to determine student needs, dividing curriculum so students can complete modules in any order, multiple curriculum with common elements, removing some physical attendance, self-paced and learning, among others. A more strategic approach to innovation also provides Army the opportunity to trial and experiment with different approaches to residential and distributed learning in collaboration with other services, the Australian Defence College, and external training and education entities.

Support for innovation

Current 'innovation mechanisms' resident in Forces Command and Army Headquarters are primarily focussed on short and medium term equipment outcomes, and largely support equipment outcomes. While this is generally appropriate, some focus on training and education innovation is also necessary. In particular, nurturing and highlighting where tactical innovation in training establishments is taking place should be given a greater level of attention. This is a low cost and high return activity and can be conducted through sharing of lessons on new approaches between training schools, through online articles, staff assistance visits, 'innovation days' for training and education, and 'innovation' bulletins.

Collaborative innovation, between training schools and operational brigades should be fostered. This was undertaken as a test bed in 2015 with the establishment of the shooting centre of excellence in a collaborative approach between the 3rd Brigade and the School of Infantry. It offers a good model to support tactical innovation and reinforce the link between units and training establishments.

To better nurture training agility and innovation, Director General Training should ensure that training schools and centres have the appropriate authorities to conduct short term changes to support move innovative approaches. Director General Training should also be responsible for linking tactical innovation in training and education to strategic innovation in this field. To this end, a portion of staff effort (at Forces Command and potentially at training centres) should be dedicated to future training and education needs and innovation. This might form the leading edge of institutional innovation for training and education and fostering sharing between training centres as well as between training centres and brigades.

There is also a need to link into Army level endeavours such as the *Army Research and Development Plan* and the *Army Experimental Framework*. Director General Training might better link training institution's future planning to horizon scanning conducted by Army, Defence and other nations on training, education and doctrine or the Defence-Industry-Academia collaboration activities conducted by the Rapid Prototyping, Development and Experimentation organisation. Director General Training staff should also link into and seek to influence Defence and coalition initiatives.

It is recommended that some of Forces Command innovation resources be more focussed on training and education improvements. Additionally, the establishment of a dedicated section that is focussed on future training and education needs is recommended. This will ensure that there is a champion for strategic innovation in training and education, which also links together the range of tactical innovations at schools and training centres, while also linking these into a wider ecosystem of strategic innovation (or research and development) capabilities.

Institutional lessons learning

While the lessons process has many potential outcomes, it is clear that there is a linkage from lessons to evolution and innovation in education, training and doctrine. Whether the source is Army, joint or overseas experiences or studies, Army's education, training and doctrine must be constantly nourished and adapted to take account of changes in the strategic environment and in the needs of Army people. For this reason, Army's institutional lessons process was reviewed as part of the study.

As part of the *Adaptive Army* initiative, Army's function commands were built around temporal learning cycles. Headquarters 1st Division and Special Operations Command were 'short learning loop' organisations; Forces Command a 'medium learning loop' organisation and Army Headquarters a 'long learning loop' headquarters. Each 'learning loop' established lessons boards and in theory, they were to interact, share lessons and inform training for operations, doctrine development and Army modernisation.

Army's various lessons learned mechanisms could be better connected. Each command runs its own lessons process and this is loosely connected to an Army lessons approach. Equally, the lessons process of the Australian British Canadian Armies (ABCA) community appears to be disconnected and could be better utilised. A potential solution is to have a single lessons board for Army. This would streamline the current approach but also allow for a single 'lessons input' into key areas such as equipment, doctrine, training and education evolutions. It would be further improved by better articulation of information requirements through a consolidated collection plan available at all levels that would aid a synchronised approach across Army.

Army should therefore consider streamlining its various lessons meetings and working groups into a single Army Lessons Board to consider short, medium and long term lessons that apply to Army and joint doctrine, equipment, training, education, infrastructure and personnel policy. Results from the Army

Lessons Board should be routinely briefed to the Army Resource, Capability and Modernisation Committee (ARCMC) and where necessary, the Chief of Army's Senior Advisory Committee (CASAC). The Army Lessons Board provide input into the priorities for Army's experimentation program if lessons require further examination through limited objective experiments or larger headline or joint experimentation activities.

Army's education, training and doctrine workforce

One of the foundations of Army's education, training and doctrine is high quality people. Being immersed in a training environment is good for officers and non-commissioned officers. It provides them with a depth of understanding in their profession that day to day operations in units may not provide. Further, being an instructor requires careful study of military operations in order to teach them, and enhances the confidence and communication skills of Army's people.

Army is currently in the position where training establishments – both Army and joint - receive a high priority for allocation of personnel. The provision of personnel for the Army training institution is priority three in the Chief of Army staffing priorities.[47] This provides an appropriate priority to ensuring the right quantities of personnel are available for the conduct of training and education in Army (however this does not include the Army Knowledge Group).

In receiving the right number of personnel, there is a need to ensure that sufficient numbers of high quality personnel are also being provided in each posting cycle for Army and joint training establishments. While the most recent Chief of Army Directives[48] on soldier and officer career management emphasise that training postings are part of a career continuum, these are not mandatory elements for officers. In seeking to provide an appropriate number of high quality personnel for the training establishment, mandating training postings for officers should be considered. As discussed as part of the review into Army as an RTO, there has been a degree of mission creep which has also impacted on the standard of the Army instructor. In line with the RTO standard that highlights all instructors are to have a civilian instruction qualification, Army has lost its focus on military methods of instruction and the role that instruction has as part of leadership and development.

Army also employs education specialists in order to ensure a degree of in-house capability to guarantee the highest standards are achieved in instruction, coaching, facilitation and mentoring of learners. However, many of these specialists are being used as administrators of compliance towards the RTO standards and not in the development of the instructor or the delivery of information.

The instructor and assessor continuum is being reviewed to increase the focus back on to Army's workplace instructional needs. The proposed paradigm addresses methods of instruction and performance review (assessment) at both the corporal level and the Royal Military College (RMC) graduate as the entry-level instructor. The emphasis is on structure and the role of instruction within leadership. This provides Army with soldiers and officers who can implement training, coach and facilitate learning. The more complex classroom instruction and distributed learning facilitation will then be practised by those posted to recognised training establishments as part of their professional development, and any civilian requirements will be completed by senior or chief instructors and the specialist educators.[49]

The recent review of the Royal Australian Army Educational Corp (RAAEC) has seen the focus of the RAAEC as the learning and education specialist redefined. The requirement for improved 'train the trainer' in order to provide detailed support and education of training methodologies and use of emerging media, instructional techniques and strategies, learner analytics, learning styles and greater development of mentoring, coaching and facilitation are part of this definition. The specialist educator who understands the Army cultural requirements and role is critical to the development of the leaders as instructors instead of the instructor who has leadership responsibilities (a civilian model).

Once the instructor and assessor development is recalibrated, this will provide a more robust opportunity for Army to review remote, distributed and supported non-residential training and education interventions in more detail. Without a broad support structure, reliance on online instructional design as the sole resource for some information dissemination could recreate the poor success rate of distance learning from the early 2000s. The importance of instructor skilling in the broader learning environment cannot be understated as Army pushes forward into the variety of media available for training and education delivery.

Instructor skilling

Army currently has several courses that enhance the skills of instructors, primarily (but not exclusively) those who are posted to training establishments. The Army runs an effective Army Recruit Instructor Course and acknowledges the critical role of instructors, assessors and training supervisors through the award of the Instructor's Badge.

The all corps instructor and assessor continuum is currently being reviewed however to more effectively meet Army's workplace instructor needs. The proposed paradigm change is to a military instructor delivering a capability rather than civilian units of competency. Current weaknesses include: the soldier pathway being based on an all corps model which frequently results in over-training; and the officer pathway is a '*just-in-time*' model which does not always prepare them for normal workplace requirements.

Tactics instructors

Army training doctrine notes that the heart of Army's training philosophy is being 'brilliant at the basics'. Army's core skills, or foundation warfighting skills, are those which ensure that force elements are able to successfully conduct operations against an adaptive enemy.[50] Arguably one of the most important of these skills is tactics – and for the training institution, the training of officers and soldiers in tactics. This occurs on courses across the all corps officer and soldier training continuums. But what of the instructors that deliver this tactical instruction?

Army possesses a Tactics Instructor Course – Basic to train and assess officers and senior soldiers in the delivery of tactics instruction. This five-day course was last reviewed in 2005, and is currently inactive without an approved directed training requirement. The capacity to teach tactics is an important instructor skill set, particularly for those posted to the Land Warfare Centre and RMC. It is also a 'retained skill' that can be employed to good effect in subsequent postings to units and headquarters for professional development of subordinates. The Tactics Instructor Course should be restructured and reinstituted.

Leveraging international instructional best practice

Army currently has limited opportunities for temporary or short-duration instructional opportunities with foreign countries. Although Army sends personnel on overseas exchanges, only a small number of these relate to instructional positions and the mechanisms do not exist to leverage these experiences into improving Army's extant instructional techniques. Pursuing a deliberate program of temporary exchange with foreign military training establishments offers Army an ability to gain exposure to current best practice as well as validate the effectiveness of its own systems.

Simulation

Army's strategic guidance for simulation capability development can be found in the *Defence Simulation Strategy Roadmap* (2011) and the Army Capability Management Committee approved *Army Simulation Campaign Plan* (2011). For 40 years, the Army has accepted the need for more and better quality simulation as an integral element of training design.[51] Current Army policy is over a decade old (2005) despite the existence of the *Defence Simulation Strategy Roadmap* and the *Army Simulation Campaign Plan*.

There are many examples across Army where simulation has been embraced in individual establishments, such as training aircrew, tank crews and joint fires teams. The use of simulation for tank driver grade two courses using a 40:60 live: simulation approach reduces the annual cost from $2.8m to $1.16m.[52] Over the next five to 15 years, through a number of programs, Defence will continue to deliver a number of simulators to Army. Examples include the Land 400 Land Combat Vehicle System, the Land 17 Artillery Replacement, and Land 121 Overlander.

Simulation has the potential to generate training capacity that will be vital in order to achieve required training throughput. Further, simulation systems are currently being used at Officer Training Wing at Canungra to enhance command post exercises and on Defence Force School of Intelligence courses.[53] Greater fidelity in simulation also offers opportunities in greater levels of individual and crew served weapons training, potentially increasing the value of live firing and reducing costs for Army's training ammunition.

There have also been failures, such as the School of Transport, where a one-off purchase of driver training simulation was not followed up with sustainment funding or the supporting workforce. Consequently, this capacity has lain dormant in a dusty room for over two years.

Army's current live-virtual-constructive (LVC) simulation architecture is characterised by bespoke systems purchased to achieve limited individual to formation-level training. These systems have developed into 'pockets of excellence'. Examples include the Combat Training Centre's live simulation for sub-unit to formation force-on-force training, the high fidelity virtual simulations used by schools and units for part-task and crew procedural training, and the Land Simulation Centre's provision of constructive simulation in support of Combat Training Centre-enabled command post exercises and Joint Operations Command exercises.

However, with few exceptions, these LVC systems are neither networked nor interoperable; inhibiting the development of a coherent, complex training environment that meets Army's needs into the future. There are at least seven software systems in use just within Forces Command several of which are no longer commercially supported. In recent years, the Land Simulation Centre has also taken on the responsibility of developing and storing terrain data sets in addition to verifying, validating and accepting into service the one-off buys of simulation capabilities purchased by Forces Command many of which have been delivered without sustainability funding.

Army has also been challenged to both establish and fill uniformed and civilian positions needed to deliver sustained simulation inputs into the individual and collective training cycles. Positions initially identified to be filled by public servants have been left vacant due to the extended recruitment freeze. Half of Army Reserve positions have been vacant on a long term basis and it is unlikely they will be filled given the lack of relevant skills, knowledge and experience with simulation systems within that workforce element.

Army's lack of a strategy for the purchase and development of simulation capacity in the medium term reduces return on investment and quality of training outcomes. However, work has recently commenced to redress this situation. There is currently an Army Headquarters initiative focused on developing a new Army simulation strategy and plan based on understanding our current systems, their use and associated gaps; defining our future requirements and establishing associated measures of effectiveness; and, identifying opportunities by matching resource opportunities to Army's priorities. It is a positive step and will go some way to ensuring Army possesses and effective, funded and networked simulation capacity that is also nested within the broader ADF simulation capability.

The three functional commands each have training continuums where simulation can play a significantly greater role. For Army's simulation capability to provide the levels of outputs envisaged under the training management framework, its priorities for staffing must elevated to at least match those of Army's training centres and establishments. A recent Commander Forces Command study tour of US Army and USMC training establishments suggest that addressing these shortfalls should be a priority for Army.[54]

Command and control of the education, training and doctrine System

Direction on Army training and education is provided through Army training instructions. While produced within Forces Command, these apply across the Army. In essence, this provides a shared services model for training, education and doctrine in Army. It provides for central direction but decentralised control in training and education. This allows for interaction between the commands and self-synchronisation; it should be sustained.

Strategic direction on the authorities for Army education, training and doctrine was one of the key challenges identified during study team consultation. Extant authorities and responsibilities for training centres and schools are described in multiple directives and publications. However, these authorities in training could be standardised for a more efficient approach and to enable training agility through timely modification of learning management packages at lower levels.

While Army Headquarters does not possess a dedicated staff section that develops policy and strategy for education and training, this function might be exercised in several ways. Further, Army might also consider rationalisation of command and control for training schools and centres. As part of the ongoing unit establishment review series, Army might consider efficacy of the policy and tactical execution functions for training and education in Army. Four feasible options to achieve this, each possessing several advantages and risks, are included in Annex A for consideration.

Recommendations – 'The System'

Recommendation 1

While there is a robust policy development and workforce planning capacity in Army and Defence, this is not unified with training and education.[55] Therefore Army should develop a *human capacity strategy* that incorporates the disparate elements of Army's capacity development including workforce strategy, career management, training and education. As part of this, Army might review its definition of professional mastery and its needs for technical competencies and qualifications, and incorporate these into the all corps officer and soldier training continuums.

Recommendation 2

Continue to refine the extant directed training requirement process to ensure it is fit for Army's future needs, aligns school and unit learning outcomes, it is resourced appropriately and that analysis of the impacts of any shortfalls in achievement is conducted.

Recommendation 3

Army should continue revision of the all corps officer and soldier training continuums. This should encompass a mix of training and education themes and proficiencies that embrace residential and non-residential options.

Recommendation 4

The review of the all corps officer and soldier training continuums should consider a balance of command and influence in the Army's training, education and doctrine system. It should explore alternative learning models for leadership development if necessary.

Recommendation 5

Forces Command innovation resources should be more focussed on training and education improvements. Director General Training should also ensure that a portion of staff effort is dedicated to future training and education needs and innovation. A dedicated section that is focussed on future training and education needs should be established to better balance strategic and tactical innovation for training and education.

Recommendation 6

To support tactical innovation in training establishments, a greater level of attention should be placed on sharing lessons about new approaches between training schools through online articles, staff assistance visits, 'innovation days' for training and education, and 'innovation' bulletins. Further, collaborative innovation, between training schools and operational brigades should be fostered as it offers a good model to support tactical innovation and reinforce the link between units and training establishments.

Recommendation 7

The extant *Army Research and Development Plan* should be amended so that the human performance line of effort is refocussed with more effort placed on future learning methodologies and technologies. Further, this research should be explicitly linked to Army's *Future Land Warfare Report* and future concepts.

Recommendation 8

Army should streamline its various lessons meetings and working groups into a single Army Lessons Board to consider short, medium and long term lessons that apply to Army and joint doctrine, equipment, training, education, infrastructure and personnel policy. Results from the Army Lessons Board should be routinely briefed to ARCMC and where necessary, CASAC. The Army Lessons Board should provide input into the priorities for Army's experimentation program if lessons require further examination through limited objective experiments or larger headline, joint or ABCA experimentation activities.

Recommendation 9

Army should consider including training postings as a mandatory element in the officer career management continuum. Further, instructor skilling should continue to be resourced (and supplemented where required) to provide the highest quality instructor workforce possible.

Recommendation 10

Army should continue to invest in training simulation. Technological development, joint enhancements and a broader understanding of the utility of simulation across Army and Defence, means that a new Army strategy (nested within a Defence approach) and investment plan for this area – to support training and education in particular but not exclusively – must be a priority. Army should develop a contemporary simulation policy that is forward looking and can be used inform and enable the cost effective delivery of simulation in training as part of the joint land combat training system. Any future implementation of simulation capability includes provision for ongoing sustainment, workforce and technical support.

Recommendation 11

Army should streamline the authorities of school and training centre commanders, and permit an appropriate capacity to adapt and make efficiencies in a timely fashion.

Recommendation 12

As part of the upcoming unit establishment review series, Army should consider whether the strategic policy and tactical execution functions for training and education in Army should be concentrated within a single command, or whether separating these functions is more appropriate.

Part 4: Education

Armies depend on the abilities of professional, innovative, and adaptable individuals who can react quickly to changing conditions. Such soldiers must be high quality people; moulded by training, education and discipline into cohesive teams with high morale and the will to win[56].

Introduction

Army has identified the need to develop personnel to create a 'cognitive edge' to achieve required capability outcomes.[57] Therefore there is a requirement in the short and medium terms to intellectually develop Army personnel if Army is to provide the foundation upon which to improve cognition. This intellectual investment has waned in recent years for a number of different reasons, including, but not limited to; subtle changes within training culture[58], the erosion of professional military education as an individual and command responsibility and the perceived relevance and utility of Army's contemporary doctrine.

This chapter examines key issues related to educating members of the Australian Army. It commences with a statement on the importance of education in the Army and then examines the relationship between education and training within a larger framework that develops professional mastery. The chapter then covers the following topics:

- Professional mastery.
- Education and professional military education.
- Joint and interagency education.
- Technical and non-technical education.

Key issues related to the conduct of learning are then examined. Commitment, blended learning, a future training continuum model, the establishment of an Army College are included. The chapter concludes with principles for professional military education and recommendations for Army's future education needs.

The importance of education in Army

In an Army context, education provides individuals with the enabling skills, knowledge and attributes necessary to undertake military tasks, and includes activities that aim at developing communication and thinking skills. Education develops thinking processes that allow trained individuals to make connections between their training and the situations in which they find themselves in order to apply the best course of action to the situation. Education broadens an individual's horizons, allowing training to be assimilated more quickly and with greater understanding. Education helps develop individuals and leaders who can think, apply knowledge, solve problems under uncertain or ambiguous conditions, and communicate these solutions. Through education, soldiers can find reasoned and viable solutions to complex and unanticipated situations; that is, they can deal with complex problems in unfamiliar contexts.[59]

Training and education

Central to Army's capability is the soldier. If Army is to generate its human capacity, it must continue to aspire to mastery of the intellectual and moral components of fighting power – the ability to analyse, reflect, select and adapt within ethical boundaries. The Army trains its personnel to respond instinctively to tactical threats and to constantly repeat desired responses with a high degree of accuracy, individually and in teams. However, when potential threats are unknown or yet to be experienced and recorded, the appropriate response to this threat cannot necessarily be trained. Educated soldiers have the skills needed to adapt to new and unfamiliar situations, thereby enhancing Army's capability.

A training solution cannot be achieved without an educative framework to support learning. In establishing 'the solution', Army seeks to transition current knowledge into new capability. This requires a recognition what cognitive development is required to meet that solution and how that is best delivered. An optimised learning methodology is needed, as training alone does not achieve this.

There are a number of misconceptions with regards the distinction between training, education and learning, the perceived linkage between education and qualifications, and educational opportunities that exist outside of the traditional educational models. The desire to separate for military purposes, 'education' and 'training' as two different activities is misleading and creates a false divide that makes it even more difficult to define intellectual capability. If the capability is to be correctly defined then it is imperative that the foundations underpinning learning, education and training are discussed to demonstrate the interconnectedness as well as complexity to aid decision making in this space.

One of the key issues during this study has been that of the relative importance between training and education. There is a belief, broadly, that Army may not be doing enough education. However, the same feedback gives examples of 'education' that others would describe as 'training', and still others would consider outside of the professional military remit. Training and education remains an ill-defined concept within Army.[60] This is further confused with the increased use of cognitive science terminology and concepts. Although this area of study is important, its use in lay discussions concerning the purpose of mental capacity building often creates a situation where it is difficult to understand the differences between the intent of training and education. The rationale of the Army's education and training system is to increase knowledge.

At its foundation, enhancing mental capacity is predominantly focused on learning and increasing knowledge. It is this knowledge that best helps define the differences in training and education for mental capacity building. Knowledge can be a skill, attitude, theoretical principle, or rote-learned list. Knowledge is the key building block of mental models, which drive heuristics and decision-making. However, cognition, and its underlying mental models, can be undermined if this breadth only comes from one type of knowledge.

Although cognitive science may highlight how the brain assimilates and processes information, philosophy provides the best description of the different types of knowledge. This has been reinforced over time by psychology. Epistemology, or the study of knowledge, highlights two key knowledge types: procedural and propositional.[61]

Procedural and proportional knowledge, combined, considers the 'how, where, what and why' of knowledge. Procedural knowledge is concerned with how things are done. Although this seems to imply 'skills', it actually covers any knowledge that is focused on a process and its execution. An example is the military appreciation

process. The intent of a lesson on this is to teach students *how to plan*. Tactical exercises without troops on all-corps courses are focused on implementation, reinforcing *how to use the process*. Collective training through command post exercises then exercise a specific group's capacity to utilise the process to achieve plans, and enhance understanding on *where to use the process*.

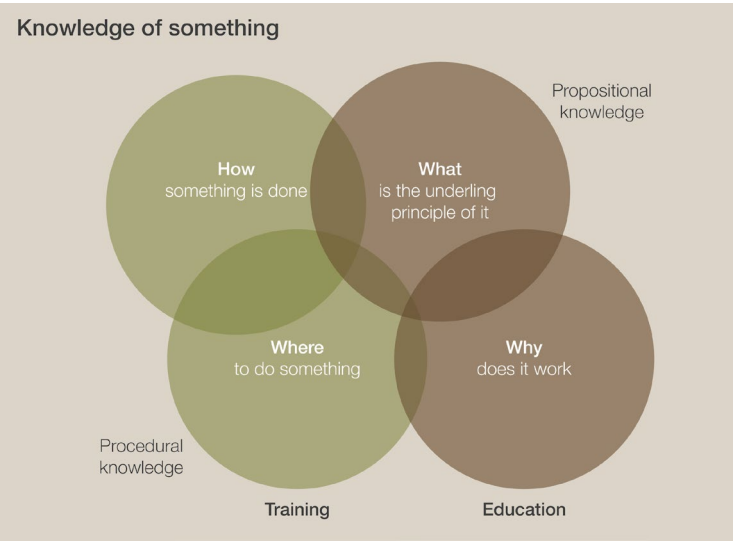

Figure 6. Training and education

In all cases, there is no discussion on ***what*** the process attempts to achieve.[62] Nor is there a discussion on ***why*** the process is like it is. These other aspects are covered by propositional knowledge. It is this distinction that is useful in understanding the differences in *training* and *education*.

The above highlights how procedural knowledge focuses on the execution of skills, while propositional knowledge is concerned with its first principles theory. Both are required for mental capacity. However, it is propositional knowledge that drives mental model creation, and therefore higher cognition. It allows one to modify procedural knowledge based on circumstances – thereby allowing military professionals to "…deal with complex problems in unfamiliar contexts"[63]. Although these areas overlap (Figure 6), it is possible to see that training is focused on the how and *where* of something, while education is the *what* and *why* of it.

Understanding the breakdown of the *how*, *where*, *what* and *why* of ideas assists in first determining what types of skills, facts and attitudes need only be focused on *how to do something*, and which areas of skills, facts and attitudes would

be enhanced with the underlying first principles of *what is its effect*, and *why is it like that*. It also provides a simple model to define what is meant by training and education. Although it is true that 'learning' can be acquired through many mediums: training, education and experience; only education and experience can produce propositional knowledge.[64]

The profession of arms

Mastery of the profession of arms is, at its heart, about people – preparing our soldiers to fight and potentially die to achieve their mission. It is important to understand the nuances of the word *profession* to fully appreciate the interrelated nature of the intellectual and moral components of fighting power and their impact on Army's ability to achieve the mission. Professionalism at a foundational level refers to a member of a profession or person who earns their living from a specified activity, which primarily engages that person in creative and intellectually challenging work.

The profession requires particular skills and knowledge, often based on first principles – propositional knowledge. Professions are also subject to strict codes of conduct, which in some cases are based on rigorous ethical and moral obligations – think doctors and the Hippocratic Oath or closer to home – military rules of engagement. Further, standards for professional practice are agreed and maintained by professional associations. The attainment of skills is generally achieved through apprenticeships which primarily engage in physical work, as opposed to the intellectual work of professionals gained through rigorous study of first principles, ideas and concepts.

Thus as professionals, Army personnel must expand not only on their skills and physical abilities as soldiers and officers, but concentrate on the intellectual capacity to transfer their skills across a wide array of tasks and activities for which they have not been specifically trained. They must be able to analyse problems they encounter to provide workarounds that not only solve their immediate problems but are robust enough to withstand the second and third order effects.

This intellectual ability must be developed and refined over time, and supported by institutional knowledge and the desire to learn. This remains as relevant into the future as it is now, as mastery of foundational skills is considered a core competency as it builds upon the confidence to make decisions, as well as the speed of the decision maker to reach the decision and the agility of the decision maker to consider all available information and effects.

A range of documents, from the 1950s through the most recent edition of *Land Warfare Doctrine 1* (2014)[65] describe the need for professional mastery.[66] While various definitions have been provided[67] it is not clear that Army has adequately defined what it means by professional mastery and importantly, what this necessitates in our performance needs and professional education continuum.[68]

Army's educational need

In terms of intellectual attributes, Army has articulated a list of desired intellectual outcomes in its 'I am an Australian Soldier' approach. Army requires soldiers who are mentally prepared leaders who are ethical and engage in life-long learning. They are also motivated, innovative and compassionate[69]. This is to be coupled with the 'disciplined independence' of the future soldier who is 'capable of enhanced cognitive function' in order to 'reach their full potential'[70]. At a basic level, the intellectual capabilities required of the current and future soldier still rely on the ability to improvise, make decisions under pressure, consider the consequences of their decisions, be ethical, be intuitive and be able to understand cultures, history and politics in order to effectively engage with other humans.

Army's soldiers must also be resilient and be able to communicate effectively. The attributes outlined are exhaustive, and as a consequence of such a large list, it would appear that this has resulted in Army being unable to develop these intellectual capabilities in a consistent manner. Instead, Army relies on its current training methodologies and fragmented formal education opportunities to affect these requirements in the short term.

Given current information about future learners within a military context, it is important to recognise that issues that will be faced into the future are also indicative of current learners. Army needs to consider how it motivates its learners and how it develops reward mechanisms that are appropriate and proportional to the needs of both the system and the member. Other assumptions that should be addressed include, but are not limited to:

- The perceived attributes of generational profiles as they apply within the context of Army.
- The functional literacy levels of generational profiles, and the anticipated functional literacy requirements of Army.
- The notion of qualifications as representative of intellectual capacity.

- The impact of formal education to increase intellectual capacity to make sense of the environment in order to make effective decisions.
- Credentialism as a mechanism which ensures promotion.

What appears to be consistent is the mastery of foundational skills such as higher order thinking skills and communications skills. Further definition of these requirements, as well as an expansion of this current set to include emerging trends, is required to ensure that they bridge the gap between the skills and knowledge of the current workforce, but also to set the cultural conditions under which future soldiers and officers will operate. These emerging trends encompass the following:

- Creative and critical thinking. This is linked to the application of these intellectual skills with the context of future warfare, including situational awareness, decision making and sense making.
- Social intelligence and global citizenship.
- Communication skills. This is foundational to functional literacy across a number of domains.
- Digital literacy. This includes understanding the basic principles of computing devices, being able to find, capture and evaluate information, possess critical thinking skills and to engage in online communities and social networks.[71]

Future needs

Based on the influence of learning theories and Army's stated desire to be a 'learning organisation', it is important to accurately describe why and how Army learns and its potential positive impacts on future capability requirements. The way that Army must learn to meet future needs is a significant institutional enabler that transcends single operational deployments or niche training capabilities.

The Army modernisation lines of effort articulate the need for improvements to human performance through a number of lines of effort. Further, the likely demands on Army's workforce into the future are described in the *Future Land Warfare Report* and the *Future Land Operating Concept*. It is important, however, to ensure that any activity in support of cognitive development is linked to application within a

workplace context and remains supported post initial development. In this respect, education provides the framework within which to harness elements of cognition, and to test and adjust these abilities and performance requirements within cultural and ethical boundaries.

Education also supports the move from industrial age to post-information age learning with a focus on 'authentic learning' and work-integrated learning, push-pull forms of education and training, and the more synergic blending of education and training in support of professional and personal development. As the environment continues to change, so do learning theories, and this is evident in the move towards social theory of learning and the necessity to balance this with educational psychology to maintain effective and efficient institutional training and education practices and policy developments.

Education and professional military education

Educational needs are different from professional military education, but are also contained within. For soldiers and some officers, professional military education may include traditional education concepts like literacy and Army specific requirements; however, analysis is required to address the cognitive requirements throughout a number of capability areas. Professional military education must then be considered in light of formal training, in-unit training, and experiential learning opportunities to make best use of all available opportunities to create learning moments and encourage and foster a desire for knowledge and self-directed learning.

From an educational development perspective, Army must be clear about the difference between education and training and refocus its efforts on the longer term requirements of education over the quick (and visible) wins in training. Training can be evidenced easily; however, education needs to be evaluated and outcomes are more difficult to record.

Cognisant of Army's raise, train, sustain functions, as a learning organisation, Army requires educational support across all three functions depending on the requirement to reinforce experience, acquire or change current understanding, and/or refresh extant knowledge and skills. Army has embraced competency based training and assessment, a recognised training method for vocational educational and training which emphasises what a person can do in the workplace. While this has proven to be useful, it has been difficult to adequately ensure that cognitive skills (which are not easily trained like creative and critical thinking or knowledge relating to ethics and values) are appropriately recorded within current curriculum documentation.

Army's recent experiences indicate that there is an ongoing requirement for educational support dependent on the type of outcomes required of the operation. Army requires a flexible approach as educational requirements will vary. This approach may include the requirement to provide assistance to soldiers and officers in order to not only promote healthy cognitive development; but also to add the development of individual and team resilience. This is achieved through building on cognitive confidence in higher order thinking skills to aid decision-making and better cope with adverse or unforeseen actions/reactions. Army personnel currently have access to a range of Defence and Army support mechanisms for education which should continue to be funded.

The United States Army released a professional military education continuum in May 2015 which provides a structure the Australian Army could use as a baseline. In particular, the officer version uses phases from pre-commissioning all the way through to General. They refer to specific course requirements and directly relate the focus of the outcomes to the phase of operational requirement of the various rank levels – tactical, operational, and strategic. The model provides a spine from which we can develop an Army professional military education strategy.

Joint and interagency education

Army personnel participate in a range of joint training and education activities including the joint Warrant Officers course, the Australian Command and Staff College and the Centre for Defence and Strategic Studies. The Chief of Army provides guidance on Army's needs for the Australian Command and Staff College course.[72]

Although strategic culture may indicate that the most probable and likely course is single service action within a combined joint force, Australia's context requires joint and interagency understanding in the educational sense. Australia often deploys personnel into key roles across coalition headquarters. This requires joint thinking. Consequently, Army should continue to exploit the opportunity for joint education and training at the Australian Defence Force Warfare Centre and provide high quality students on those courses.

Further, to increase the mental capacity of personnel to handle uncertainty, understanding joint concepts enhances breadth and depth of knowledge. Even though battle groups and brigades may be tactical in a coalition context, for Australia, the deployment of such an asset is a strategic calculation. This highlights that professional military development should focus on the 'whole-of-war' and 'whole-of-campaign' to provide the propositional knowledge necessary to assist personnel adapting to less likely circumstances.

Further, the understanding of an interagency environment is key to contemporary and likely future operations. This is the case domestically and internationally. There are many opportunities for interaction with other Government departments, but also training and education opportunities such as those provided by the National Security College at the Australian National University.

Participation in these courses has several benefits. They provide a wider network for officers and non-commissioned officers within their profession. These learning opportunities also broaden the educational and experiential background of those who participate and provide them with the wherewithal to appreciate the strategic drivers, and implications, and land operations. Finally, Army people who are trained and educated in this environment are given the opportunity to learn the art of 'influence'. This skill, as opposed to more direct 'command' approaches, provides the means to effectively building and leading teams that are comprised of different members from many backgrounds.

Technical and non-technical education

The need for enhanced science, technology, engineering and mathematics qualifications in the broader national workforce has been the topic of study and analysis over the past decade. In particular, studies from the Australian Council of Learned Academies (2013) and the Office of Chief Government Scientist (2013)[73] have highlighted the need for greater quantity of technically qualified people in the workforce, and for improved technical skills in the broader workforce.

Army does not stand apart from this requirement. As its equipment continues to increase in technical complexity, it will require more technically-qualified personnel and enhanced technical competencies from the entire workforce.

There has been a move away from technical (science, technology, engineering and mathematics – STEM) disciplines in those general service officers who have tertiary qualifications. Data for Lieutenant Colonels and above suggests that in the 1980's and early 1990's over 30% of general service officers completed science and engineering tertiary degrees. Currently, 22% of Majors, 17% of Captain and 13% of Lieutenant general service officers hold engineering and science degrees. The Australian Defence Force Academy (ADFA) remains the primary source of tertiary qualified general service officers.

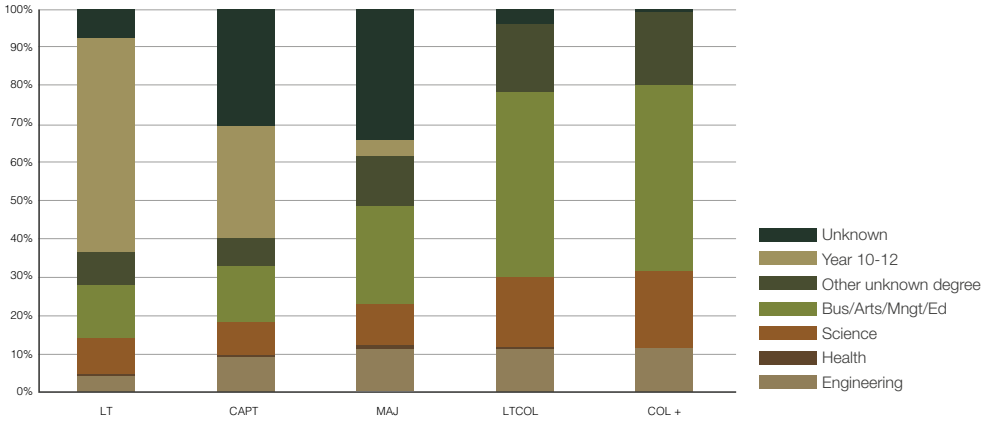

Figure 7. Army's technically qualified officer workforce

However, 2011 ADFA data suggests the trend of decreasing technical qualifications will continue, and potentially worsen over the next few years. This is reflective of broader Australian society trends where the study of STEM subjects at the tertiary level has been on the decline since 1992.[74] Army has more degree qualified officers now than in 2012. Despite this, the growth is primarily in the business, arts, management, education disciplines rather than the science and engineering disciplines (where the growth is very small). The key area of concern is the rank of Lieutenant, where there is a reduction in science qualified officers. This mirrors broader societal trends. For example, in 2012, only 15% of new entrants into tertiary studies undertook engineering or science studies.

Army's demand for technically qualified officers, for service in technical appointments in units and in capability development and acquisition, is likely to increase over the coming decades. Army states its current workforce requirement for technically qualified specialist officers is 17% of the officer workforce.[75] Noting this baseline, Army should develop it future objectives for STEM qualified personnel and use this in shaping the sponsoring of tertiary qualifications in this area from the rank of Lieutenant onwards.

As the studies from the Australian Council of Learned Academies (2013) and the Office of Chief Government Scientist (2013) note, there is a need to enhance the technical competencies of the broader workforce, outside of those with specialised technical qualifications. Military technology training and building digital literacy, for general service officers and senior non-commissioned officers is essential. There is concern that professional military education has not evolved

to equip officers and soldiers to innovate and make sense of the operational environment. Capability and project management skills are applicable beyond specialist postings; they are useful to Army in a broader sense. As such, new ways of utilising technical training beyond employment in Capability Acquisition & Sustainment Group (CASG) needs to be considered. Having personnel with such skill sets is an opportunity to assist Army to introduce new or updated capabilities.[76] Army's most recent assessment is for 13% of the generalist officer workforce to possess technical competencies; the same assessment notes that only 5.5% meet these criteria.[77]

To address this, education for commanders and staff on military technologies should be delivered at either the Capability and Technology Management College, or as part of residential or non-residential courses in the all corps officer and soldier training continuums. This issue should also be considered as part of the proposed *Army human development strategy*.

Commitment

Fuller once noted that "you will become your own students and until you learn how to teach yourselves, you will never be taught by others".[78] The entitlement culture that exists in Army's approach to education and training drives a compliant, rather than a committed learning environment. The key difference between a compliant versus a committed student is that a committed student wants to learn and is not told what to learn. It involves developing an emotional attachment to the subject at hand, which in turn drives a responsibility for the learning of others in addition to their own. But this commitment is not the sole responsibility of learners – senior leaders, instructors and staff must all possess this commitment to learning.[79]

Army has described itself as a learning organisation but it must also possess a 'committed learning culture'. This is most vital in new Army officers and soldiers and should encourage self-development and values intellectual diversity. As is discussed in a separate part of this paper, Army officers attending residential courses at the Land Warfare Centre have demonstrated a propensity to not undertake all of the requisite pre-course study, which indicates the lack of a commitment. Army provides minimal resources to pursue self-study in professional military endeavours.

Land Warfare Doctrine 7 states that "every soldier has an individual responsibility to study the profession of arms. A soldier without either interest in or knowledge of the history and theory of warfare – the intellectual content of the military profession – is a soldier in appearance only. Self-directed study in the art and science of war, appropriate to one's rank and trade"[80]. While the *Army Journal* and *Land Power*

Forum provide mechanisms for professional discourse, the Army could provide access to a broader range of material to support studying their profession in accordance with institutional priorities and relevant themes. Soldiers and officers then might collaborate or hold professional discourse in a distributed fashion using the internet or social media.[81]

Blended learning and education

Almost all formal Army training and education is delivered in a residential environment.[82] This does not align with the practice of many civilian tertiary and vocational establishments around the world, and many other military organisations globally. However, Army is conducting trials with various tools to aid more distributed delivery.

Many of the Army's training centres are using the Forces Command e-School to deliver aspects of their training through initial trials of blended learning. But there are inconsistent levels of uptake due to confidence, awareness and expertise within the training centres. There are currently no standard operating procedures (SOPs) to provide a consistent approach.[83] The roll out of distributed learning through Forces Command e-School has been led by the Defence Combat Support Training Centre. In doing so, it has provided initial guidance on the capabilities of the software, access, site administration responsibilities, initial training and site governance. Box Hill Institute has been contracted to provide some initial training and develop content in selected courses.

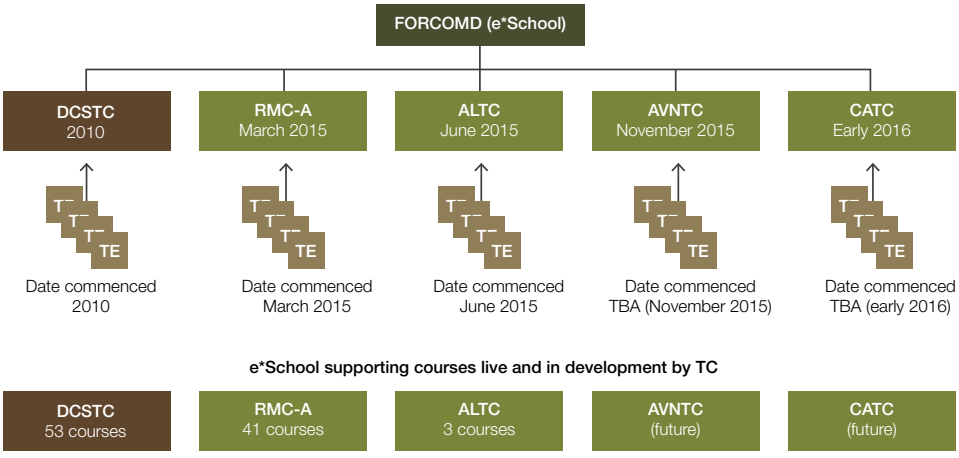

Figure 8. Current implementation of Forces Command e-School

The infrastructure hosting the e-School is located on two servers, one each at Kokoda and Simpson Barracks, and operates within the Defence Protected Network. Use of the Australian Defence College's ADELE by training centres is 'by request' and generally 'by exception'. All training centres, with the exception of the Combined Arms Training Centre, are using the e-School. The level of use varies from 'undergoing planning and implementation' to 'wide usage' as occurs in the Defence Combat Support Training Centre.

Additionally, the Australian Defence College has just launched a program to provide a 'flexible offering' for the Australian Command and Staff College. This involves development of a blended learning package so that a large number of officers, outside the current small percentage of those who attend the residential course, might access all or part of the curriculum. Army should monitor the progress of this trial for insights into its own approach.[84] To illuminate Army's early use of distributed learning, it is worth considering the case of the Land Warfare Centre over the past two years.

Case study – blended learning[85]

The Land Warfare Centre commenced use of blended learning in 2013. It is currently being utilised for the delivery of the Instructor and Assessor Development Program and Regimental Sergeant Major Course pre-course by the Warrant Officer and Non-Commissioned Officer Academy. The benefits for trainees has included: remote access to materials, particularly for displaced members such as deployed personnel and international trainees; the capacity for immediate feedback for short answer and multiple choice questions through automation; enhanced support with learning provided by facilitators; and a more media rich environment.

Further, benefits for instructors have been identified. Among these have been: increased communication with trainees; increased options for content delivery; increased flexibility to make changes to materials; the automation of pre-course marking; and data analytics that allowed for strengths and weaknesses of the group and individual trainees to be identified.

Additional opportunities may include:

- **Blended learning in residential training.** Blended learning with concise instructional design can potentially result in a 50% reduction of passive training time.
- **Increasing Army digital literacy.** Understanding and being able to fight effectively within digital C4I systems is as important as training on weapon systems. Increased learning on digital systems builds a foundation for this.
- **Flexible training delivery.** Employment of a suitable learning management system can enable the conduct of distributed learning. Whilst this does not reduce overall training time, potential exists to reduce residential component duration.
- **An increase in face-to-face instruction.** Replacing lectures with blended learning does not diminish the importance of instructors; it champions their value and the experience of learning with peers.
- **Monitoring and analytics of trainee learning.** Monitoring and analytics available from the conduct of pre-course remotely is aiding the identification of group and individual weaknesses for focus during residential training. Trainee methods of learning can also be identified to aid in improving course design.
- **A professional military education database.** With pre-course and residential blended learning opportunities present for soldiers and officers to enhance and maintain professional military education with constant access to these materials.

Army should maximise the use of technology; however, not ignore a number of myths. Not all of the current or future learners like learning on their own. Neither are all new soldiers digitally literate – and digital literacy is not a single language. Work life balance remains a critical requirement – and extensive use of social media might be seen as harassing and invasive. Distance learning, remote learning, non-residential learning are not the same thing and each needs to be addressed for the subject matter being delivered.

While blended learning requires an upfront investment in developing learning material, it is also apparent that the flexibility of the approach; enhanced monitoring and analytics of learning and the more focussed employment of instructors, is of significant benefit. Over the next two years, Army is likely to have gathered sufficient information from ongoing trials with blended learning to better codify its

strategy for the use of information technology in residential/distributed instructional delivery and the level of investment that it is willing to make in this area. This should be developed in collaboration with CIO Group and the Australian Defence College.

A future distributed all corps officer continuum?

One issue that is interesting to ponder is the level of residential officer professional military education that is required. During the course of the study, opinions have been received that veer from one end of the spectrum (all professional military education should be residential) through to full distribution of professional military education courses. The solution is likely to lie somewhere in between.

As part of Army's incentive for development of a committed learning culture, some of the current residential courses might be transitioned to cater to those who have demonstrated the personal commitment to their profession, who have demonstrated potential for command and senior instructor appointments, and who are entirely comfortable being educated in a competitive environment. The extant Combat Officers Advanced Course or Logistics Officers Advanced Course could be the vehicle for this "perisher" like approach to encouraging professional mastery.

One option for the 'perisher' approach is to consider the whole professional development continuum as a 'cradle to grave' program. This would generate briefings to first day Duntroon cadets on their personal responsibilities for professional development. The all corps officer training continuum must be available online to all, so that committed and energetic officers can complete coursework when and where they wish – years early if they want.

Residential courses would be selective, and focussed on student interaction incorporating 'flipped classrooms' where an instructor delivers lectures before class in the form of pre-recorded videos or podcasts and spends class time on learning activities that involve collaboration and interaction.[86] Pushing this further, social media – such as Twitter and Slack among others – can be employed to facilitate ongoing professional discourse.[87] This would be linked to Army professional military education thematic priorities and online resources for individuals and units.

Such an approach must be built on a change in culture, where Army schools shift from a teaching mindset (where information is only delivered residentially) to a learning mindset, where blended learning is embraced and business as usual. There is a demand for such an approach. Army officers are producing their own reading lists and producing their own podcasts and blogs to facilitate professional discourse among peers.[88] A distributed all corps officer continuum may be the logical next step.

Unifying professional military education delivery – an Army College

One mechanism to fuse academic research with the educational development of Army personnel might be the formation of an Army College. A College, unlike a University, is an institution of learning focused on specific fields of study, or specific types of people.[89] In the case of Army College, it is both – focused on bettering Army personnel in the discipline of the profession of arms. This includes preparing personnel for higher education, sponsoring them at other universities, managing and administering the learning within the profession, and providing further development of the field of study. Given this, an Army College concept could encompass the following:

- Facilitating or delivering year 12 courses and/or university preparatory courses.
- Partner with the University of NSW or the Australian National University (both currently contracted by the military at the ADFA and Australian Command and Staff College respectively) for graduate style study at Captain and Warrant Officer Class Two/Class One ranks.
- Sponsor Chief of Army post graduate research work and scholarships.
- Oversee the Army professional development framework.
- Provide input into the prioritisation for Army's overseas professional education resourcing.
- Provide input into the prioritisation for Army's education assistance scheme study lists.
- Provide academic support to the Army Tertiary Education Program candidates.
- Run or affiliate with a strategic studies/operational art think-tank.
- Collaborate and be informed by the nascent Army Research Centre.
- An Army Doctrine and Knowledge Centre. A relocated Army knowledge group, in Canberra that takes coverage of identified doctrine at the strategic and operational level, linked to joint and other single service doctrine centres.

There are other successful models that employ this concept overseas.[90] Noting this, Army might anticipate a less than positive reaction from the joint centre in Canberra given extant Defence investments in higher education institutions.

Principles to build a professional military education system

Based on the work of the study team, it is proposed that an Army professional military education needs to be SMART – specific, measurable, achievable, realistic and timely – outcomes used to highlight the broader requirements of the organisation through its people. It must include access to experiences (real or simulated), coaching and mentoring as well as self-motivated cognitive development (be that university studies or work-experience in like organisations). The key to the strategy is defining a professional military education and development continuum, and providing a number of options/solutions for individuals to progress through it. Further, it is proposed that there are three key objectives which should drive Army's professional military education in future. Recommendations will build on these objectives in order to address shortfalls diagnosed at the start of this chapter.

Principle 1

Army must build on existing educational capacities to strengthen formal and informal educational outcomes. This can be achieved through:

- Development of ongoing professional military education spine through all corps development to engender lifelong learning.
- Integration of directed and resourced professional military education into unit and organisational activities to reinforce a committed learning culture.
- Integration and alignment of learning systems to support timely learning.
- Alignment of governance to support a top-down / bottom up approach to achieving educational outcomes.
- Incentivisation for individuals and teams to commit to life-long learning.

Principle 2

An effective professional military education approach must focus on knowledge dissemination – especially the augmentation of valued explicit (corporate) and tacit knowledge. This can be achieved through:

- Incentivisation to contribution to explicit and tacit knowledge development.
- Development of organisational trust that allows for the diversity of ideas and opinions to foster innovation – publish in a safe environment.
- Maintenance and augmentation of systems that push, pull and prod.

Principle 3

Finally, a professional military education system (or spine) should utilise of a range of educational approaches – the right tools for the job. This could be achieved through:

- Sustainment and maintenance of appropriate learning systems.
- Targeting the 'right people' to build a critical mass – building 'corporate memory' to increase the redundant capacity of the organisation.

Recommendations – Army's education

Recommendation 13

Senior leadership must openly advocate for and invest in an Army professional military approach. This can be achieved by recognition opportunities within units and continued investment in tertiary education options.

Recommendation 14

As part of the review of the all corps officer training continuum, Army should consider whether the Combat Officers Advanced Course and/or Logistics Officers Advanced Courses might be evolved to be a selective.

Recommendation 15

Army should institute an officer and enlisted professional development framework as part of the all corps officer and soldier continuum. A draft of this is presented at annex B and uses civilian professional institutes as a conceptual model to develop the framework. Such a concept provides the 'prod' required to ensure officers maintain their professional knowledge base. This can be coupled with promotion requirements at key gates and also employ a unit training model to capture some of the 'between the courses' knowledge and development.

Recommendation 16

Army should build an online resource, designed around Chief of Army professional development priorities, that provides resources for the conduct of self-study and for the conduct of ongoing unit professional military education to support the professional development framework. This should be aimed at ranks Corporal to General, and contain a mix of readings, discussion guides, quick decision exercises, TEWTs and other resources. It should be hosted on the Army internet site.

Recommendation 17

Army should issue periodic Chief of Army professional development priorities. This should also include a regular redevelopment of the Chief of Army reading list, and place emphasis on the Chief of Army Scholarship as educationally focused and not just experiential.

Recommendation 18

An effective Army education, training and doctrine system balancing land and joint training and education outcomes should be part of the redevelopment of the all corps officer and soldier training continuums.

Recommendation 19

Army needs to confirm its need for capability driven technology qualifications, and confirm objectives for STEM qualified personnel, as well as the level of technical competencies it expects in its broader workforce. Education for commanders and staff on military technologies should be considered for delivery at either the Capability and Technology Management College, or as part of residential or non-residential courses in the all corps officer and soldier training continuums.

Recommendation 20

Over the next two years, Army is likely to have gathered sufficient information from ongoing trials with blended learning to better codify its strategy for the use of information technology in residential/distributed instructional delivery and the level of investment that it is willing to make in this area. This should be developed in collaboration with CIO Group and the Australian Defence College.

Recommendation 21

Army should consider the establishment of an Army College to focus on improving Army personnel in the discipline of the profession of arms.

Part 5: Training

The importance of training, both individual and collective, is central to how the Army raises and sustains capability. Even during periods of low budgets and under-investment in modern equipment, particularly in the post-Vietnam War era, the Army has sustained a focus on ensuring it maintains high standards in training. This training culture has focussed on achieving excellence in three areas: individual and small team skills, leadership at all levels of command; and combined arms operations.[91]

Introduction

As *The Fundamentals of Land Power* notes above, the Army has demonstrated throughout its history that high standards of individual and collective training ensure that tactical organisations are able to prevail in the face of numerically superior or better equipped enemies. The Australian Army's success has been founded largely on the standard of its training. Army has demonstrated a longstanding commitment to challenging, realistic, effective and safe training. High standards of individual and collective training should continue to be the aspiration of the Australian Army. It is well within the capability of the Army to have 'world's best practice' in this regard.

This chapter examines key issues related to training members of the Australian Army. It commences with a statement on the importance of training in the Army and then examines the extant systems approach to training:

- Individual training.
- The individual to collective training continuum.
- Collective training.
- Training and capability development.
- Army as an RTO.

The chapter concludes with an examination of the need for an Army training strategy and recommendations for Army's future training needs.

The importance of training

Training is a planned process that inculcates and modifies knowledge, skills and attitudes through learning experience to achieve effective performance in an activity or range of activities. Training enables individual soldiers to carry out their assigned roles across the spectrum of military activity, and enables groups of soldiers to work collectively towards a military objective. It ensures that personnel can apply standard solutions to predictable circumstances; that is, they can deal with a familiar problem in a familiar context.[92]

The Army's *Land Warfare Doctrine 7 Training and Education* notes that the heart of Army's training philosophy is being 'brilliant at the basics'. Army's core skills are developed through a training framework that reflects regular practice, self-discipline, strong leadership and good drills. Army's foundation warfighting skills are those which ensure that force elements are able to successfully conduct operations against an adaptive enemy. Foundation warfighting skills are also designed so that individuals and teams possess the requisite flexibility and agility to conduct unforseen tasks or operate in ambiguity – they are the basis for adaptation to any tactical or operational situation.

Systems approach to Defence learning

Army conducts training in accordance with a proven methodology to ensure consistency of approach, common standards and the efficient use of training resources. The process is outcome focused and builds on the initiative and experience of commanders and trainers.

The systems approach to Defence learning consists of processes grouped into five interdependent phases (analysis, design, development, implementation, and evaluation) that constitute a complete and systematic approach to training. These phases are undertaken and assessed within a framework of continuous improvement, and supported by Army lessons. The phases are named for each of the principal activities, but the model is not linear and concurrent activity is the norm. The training model is designed to enable change and improvement. The inputs and outputs of each phase are reviewed, evaluated and revised as necessary. This process allows changes to be made to training as a result of internal or external evaluation, changes in manpower, or operational, materiel or logistic plans.[93]

Individual training

Army's individual training provides personnel with the capacity to perform in peace and war. The intent of individual training is to provide timely, effective and efficient training that contributes to Army's capability in accordance with strategic direction. It is the precursor to an individual's ability to participate in collective training.

Army employs a structured annual training management cycle to determine; the amount of training that must be resourced in future training years, the requirement for supplementation of training establishments and the need for exportation of training to units. In this process, training is prioritised and throughput capacity examined. The resulting training plan is incorporated into the *Army Modernisation Plan*.

Employment specifications

Training is driven in part by all corps and corps employment specifications. The employment specifications for officers and soldiers articulate the functions, skills development, and career development and reflect individual and experiential training delivered through career progression from recruit and all corps promotion training. Employment specifications are maintained by Employment Management Section, Directorate of Workforce Management – Army.

If the employment specifications change, so too should training be reviewed. During the course of the study, it has become apparent that all training centres have concerns about the currency of the content, the key to defining the individual performance outcomes yet they are not being used as they are considered too complex (and overly focused in achieving Defence Force Remuneration Tribunal requirements). These should be to be reviewed as the first step in the Army system approach to Defence learning.

While each of the all corps employment specifications have had amendments since version one being released in 2008/2010, they have been predominantly administrative/policy changes as opposed to the job requirement as is reflected in the amendment certificates. Consequently, a review has commenced of these documents. Completion of the review of the job requirement detailed in these documents in the context of current and future/expected role along with a review of training throughput requirement would aid in confirming whether our training and education is correct both in terms of content and capacity.

The individual to collective training continuum

The Australian Army conducts training across a continuum from individual to collective training. Individual training provides skills, knowledge and attributes that are required to perform specific individual tasks at job standard. It also prepares individuals to take their place in a team. Collective training involves the training of one or more crews, detachments, sub-units, units and formations in the conduct of tactical operations.

The extant Army training continuum aims to ensure a single synchronised and integrated continuum of learning opportunities to prepare individuals, teams and other force elements to contribute to the successful prosecution of the current and future land battle. The Army training continuum aims to provide for the progression of training from force generation to force preparation, allowing for the cyclic management of individuals and force elements as they work up to a contingency tasking and undergo reconstitution post-deployment. The continuum aspires to:

- Enable the generation of agile forces, capable of conducting complex warfighting, against a lethal and adaptive enemy.
- Synchronise the individual and collective training continuum to maximise effectiveness, optimise resources and govern tempo.
- Develop a single training model that covers training from individual through formation level with the aim of developing a high standard of collective capability.
- Optimises and aligns force generation with Army levels and training standards that will be the common metrics to describe capability.
- Maximise opportunities for recognition of prior learning and competence through greater use of modulated courses, enhanced recognition processes and assessment of competence in the collective environments.[94]

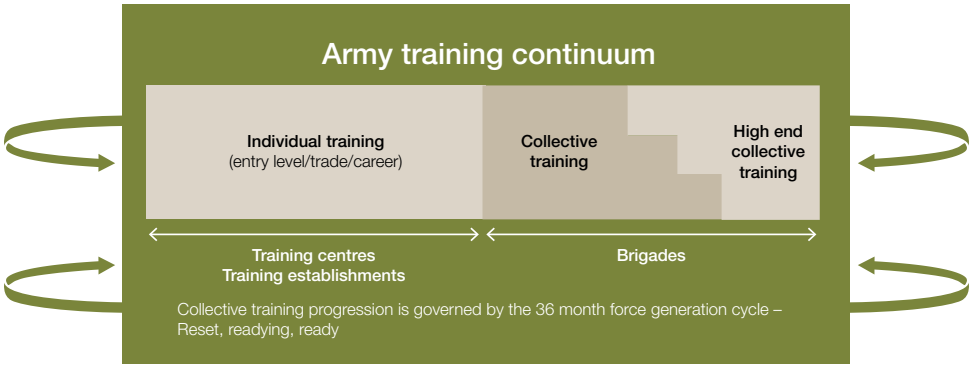

Figure 9. The Army training continuum[95]

Individual and collective training have traditionally been thought of as separate entities. The reforms of *Adaptive Army* in 2008-2009, including the establishment of Forces Command, were designed to address this. The reality is that they have always been elements within a single training continuum, but the Army continues to achieve a balance between the two. It should also be noted that while called an Army training continuum, each functional command possesses their own training continuum.

Collective training

Collective training is focused on enhancing procedural knowledge – confirming and enhancing the *how* and *where* of skills, attitudes and principles for the group. It is acknowledged that some individuals, due to a significant event that creates a worldview altering experience, will receive propositional knowledge within a collective training situation. However, this is not the norm, nor the intent of collective training. Collective training is resource intensive, requiring finances, personnel, training areas and sustainment. Further, it requires investment in planning time to ensure that training occurs at each team size, thereby enabling the next level. Within the current system, Forces Command is responsible for the development and oversight of both the collective and individual training.

Collective training is vital to ensuring Army, as a whole, is able to generate scalable and flexible land power to meet Government contingencies. Collective training cannot occur without successful individual training and education. Therefore, the developed training system must account for the need to balance individual and collective development. Further, it must recognise the significant time and planning required to successfully orchestrate collective training. The system must also account for the required joint training and educational needs.

The development of the collective training framework – the foundation warfighting training management framework – in Forces Command since 2009 has seen a significant improvement in the ability to direct and assess collective standards for Army's conventional regular and reserve units, formations and headquarters. The framework provides direction on the levels of collective training to be achieved by formations, within a three-year force generation cycle.

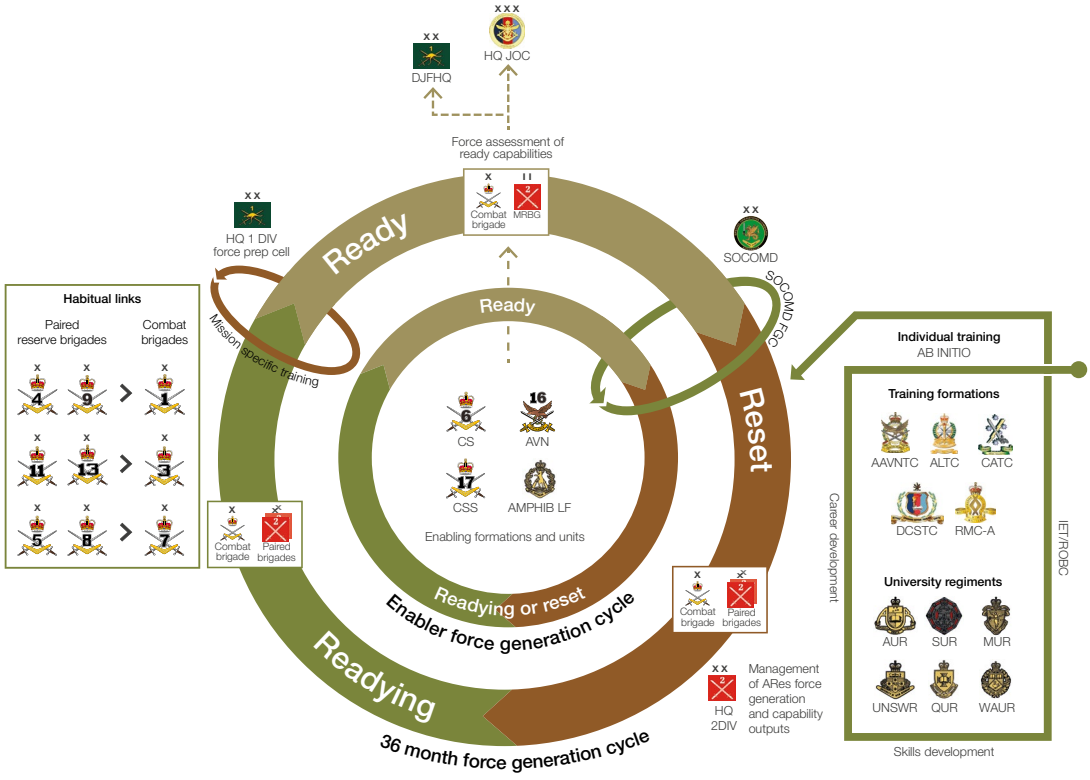

Figure 10. The Forces Command force generation cycle[96]

The introduction of the foundation warfighting training management framework and the establishment of an agreed mission essential task list for the Brigades has allowed a much clearer reciprocal discussion on training outputs between Headquarters Forces Command and Headquarters 1st Division. The outcome should be a clear articulation of the delta between force generation outputs and operational generation (OPGEN) needs. Optimally, force elements are force generated for operations, and there should be no requirement for a separate operational generation function, with the exception of some mission specific training when necessary.

This collective training management framework is centred on the conventional forces resident within Forces Command. To that end, while the foundational approach of building training levels progressively over time is broadly applicable across Army, it does not take into account divisional level operations or the conduct of special operations.

One option might be to further develop the training management framework, so that it becomes an Army level training management framework that incorporates the combat outputs of all three functional commands. This would provide a common baseline for collective and headquarters level training, but also accept and embrace that the differences in approach and output of the three functional commands are a net positive for Army and its institutional culture. Alternatively, Army might consider the consolidation and improvement of the foundation warfighting training management framework within Forces Command, and the provision of a less prescriptive and principles-based training strategy for the Army.

The foundation warfighting training management framework underpins the Forces Command (and potentially Army) education, training and doctrine system by synchronising key individual, collective and joint training events within the force generation cycle. It should do so through the application of a standardised progression of training. A further benefit of instituting the foundation warfighting training management framework is the ability to efficiently allocate and manage Army's resources against clearly defined and directed training requirements.

The training management framework has the potential to act as the framework for the training needs analysis of Army's contribution to the Australian amphibious capability. This would be framed in the development of an amphibious-specific unit progression map to support pre and post agreed mounting point training design.

Training and capability development

To address a shortfall in the integration of training needs in Army capability development, an Army training instruction was introduced to this effect in October 2015.[97] The instruction incorporates the most recent *Defence Capability Handbook* (DCH) of 2014, used new terminology relevant to the systems approach to Defence learning and brought training in line with the First Principles Review 2015. Work is now focused on transitioning to this model. New projects are conforming well to the new Army training instruction. However, projects, or phases of projects, that pre-date the Army training instruction are continuing to present issues.

The School of Artillery possess a new equipment team. This team write new doctrine and training management packages before receipt of new equipment. It then oversees initial training and provides fly away teams for units being issued with new equipment. This approach is being implemented for Land 400 at the School of Armour but should be in wide use at all training institutions.

Army as a Registered Training Organisation (RTO)

The impact of Army as an RTO has been both positive and negative. Being an RTO has allowed Army to articulate and recognise at a national level the skills developed in individuals, and this has reflected positively against recruitment and retention. Army has also benefitted from the governance structures required for RTO maintenance which ensure robust training standards are achieved in training centres.

Despite the benefits, Army implementation of RTO requirements has fostered a number of misconceptions and perceptions including potential overtraining to meet qualification attainment rather than Army capability need. There is a strong view among training centre commandants that the introduction of competency based training (around 1998) coupled with the rise of mapping competencies against civilian qualifications, has led to a culture of chasing civilian qualification, rather than adhering to workplace requirements. This perception has foundation as many of these qualifications required additional training outcomes not reflected in the tasks or roles of the soldiers in the workplace. It would appear that misinterpretation lies at the heart of the problem and that revisions to Army's employment specifications were driven by the inclusion of training-related competencies (which lead to qualifications) rather than workplace capability requirements. Further evidence of misinterpretation is visible when the conditions and standards for qualifications were either misinterpreted or ignored, ultimately leading to a failure to achieve eligibility to issue the qualification.

This perception is supported by fact that Army as an RTO has had up to 247 qualifications on its scope of registration (including accredited course outcomes), which created at least 1,900 combinations for achievable course outcomes resulting in either a qualification or statements of attainment. In recent years, Army's scope of registration has been streamlined to reflect qualifications which are issued either through partnership arrangements with external RTOs (through contracts), or through comprehensive training programs aligned and civilian trades. Consequently, training and employment specifications are becoming more focused on Army required capability outcomes. The continued review of RTO and the Australian Defence Force RTO reform is providing ongoing reduction of Army held qualifications and an alignment with external best practice, yet more needs to be done to ensure that Army's perceptions align with reality.

Another weakness as a result of the implementation of competency based training and assessment has been the gradual decline in the development of underpinning cognitive skills and behavioural attributes. These skills and attributes supported

successful skills transference and reduced skills fade in the workplace. Prior to the implementation of competency based training and assessment practices, Army's approach to the development of skills and knowledge was a hybrid training and education solution. It provided not only the skills training, but also ensured that personnel were able to situate their learning in order to expand upon their knowledge to adapt to changes in environment, doctrine or equipment. Under the current system, this scaffolding of learning and development of foundational knowledge which supports adaption is not visible. Thus, knowledge and skills retention over the longer term is not always evident. An example of this is training supporting the use of a piece of equipment. Often soldiers will receive baseline training rather than gap or familiarisation training for a modified piece of equipment. This reversion to baseline training is anchored by a number of assumptions including skills fade versus equipment complexity, lack of confidence in user skill sets and knowledge, and inappropriate or incomplete knowledge which focusing on the operation rather than the employment of the equipment.

Strategy for training

To enhance training synchronisation and alignment with human capacity development Army should consider training strategies for individual and collective training. The individual training strategy should be linked to the development of the *human capacity strategy* and might provide Army level principles and guidance for all commands, and specific to command documents such as the training management framework and the land combat training system[98] would be informed by it.

The *Land Combat Training System Paper* was published in December 2015. It is designed to support decision makers by providing a land training system as a framework for investment. It seeks to integrate, modernise and optimise Army's training assets into a construct that will prepare Army training for the challenges of the next 20 years. The land combat training system also outlines a strategy to develop a system of training systems in the land environment; linking together training areas, simulation systems and an adversary system. It is an approach that provides a foundation for Army strategic planning, especially for simulation and training areas management. It aims to enhance the conduct of challenging, realistic, effective and safe training in a training environment capable of reflecting the spectrum of conflict. Part of this should be a well articulated training adversary. Extant adversary doctrine is out of date and not widely used. The development of an endorsed adversary system for employment by all Army training activities is recommended.

There is also utility in adopting a campaign approach to significant exercises such as the extant land series, sea series, Exercise Hamel and ABCA activities. Exercise Hamel in particular offers the opportunity to provide a common activity for the three functional commands to generate a unified combat output. Importantly, if Army were look out five to ten years in planning these exercises, it offers the chance to set longer term capability development outcomes in collective training – for Army, joint and coalition (ABCA) operations.

The development of a rolling five year campaign, (potentially part of an overarching training strategy), would also permit Army to better steer the development of joint land capability in the medium term. This is timely given the release of the 2015 Chief of Defence Force Directive giving joint collective training authority to the Chief of Joint Operations. Aligning large Army exercises with Air Force and Navy, and introducing more joint collective training outcomes should be an outcome of this alignment.

Recommendations – Army training

Recommendation 22

The training management framework should be redeveloped. In doing so it should better incorporate simulation and amphibious operations. Optionally it could become an Army level training management framework that includes the output of individual corps and all corps training, and incorporates the combat outputs of all three functional commands.

Recommendation 23

Army should support the ongoing review of an RTO affiliation in Defence.

Recommendation 24

Army should develop an individual training strategy (nested under the *human capacity strategy*), which provides principles and guidance on Army training and incorporates aspects of the land combat training system and an updated adversary system across live, virtual and constructive domains.

Recommendation 25

A campaign plan should be developed to synchronise collective training (including land series, sea series, Exercise Hamel, ABCA) outcomes in the five to 10 year timeframe.

Recommendation 26

The land combat training system provides a foundation for Army strategic planning for integrating simulation, a standard adversary framework and training area management. As such, it should inform Army Headquarters investment in these areas.

Part 6: Doctrine

The formulation of doctrine is a journey that must be ongoing and intellectually rigorous—always seeking to identify constants and variables in conflict—and taking account of both technological and political change.[99]

Introduction

Doctrine is the body of thought on the nature, role and conduct of warfare. This body of thought contains the fundamental principles by which the Army guides its actions in support of national objectives. These principles are not immutable. They are based on experience and reasoned extrapolation to provide guidance for the present and future conduct of operations. Military doctrine is distilled from the history of countless raids, battles, campaigns and wars and, in particular, from the lessons derived from victories, defeats and stalemates.[100]

This chapter examines key issues related to doctrine development and use in the Australian Army. It commences with a statement on the importance of doctrine and then examines the following:

- A short history of Army doctrine.
- The relationship between doctrine and professional mastery.
- The Army's current approach to doctrine.
- Examination of an evolved approach to doctrine development and employment.

The chapter concludes with an examination of doctrine input into capability development and the future of the Army Knowledge Group (which oversees doctrine development), as well as recommendations for Army's future doctrine needs.

The importance of doctrine

Effective and modern military doctrine is the interaction of three elements: the enduring, the practical and the predictive. The enduring tenets are based on the time-honoured principles of war; the practical component interprets the nature of modern warfare; and the predictive component looks into the future to identify how military force development might be integrated with emerging technology.[101]

Doctrine must be applied intelligently rather than unthinkingly. While much of doctrine is enduring, it must be periodically reviewed and, where necessary, modified and refined to ensure continuing relevance. The Army's doctrine helps planners and commanders approach stressful, dangerous, chaotic and unfamiliar situations with a clarity of thought based on rigorous analysis, and comprehensive knowledge of hard-won lessons from human history and national military experience. Doctrine also provides an analytical framework and consistent way of thinking about military issues and conducting individual and team actions across all ranks, and all levels of conflict.[102]

Australian Army doctrine

In his study of Army's doctrine, Dr Michael Evans notes that from the end of the Second World War through to the end of Australia's involvement in the Vietnam War in 1972, Australian Army doctrine development was *haphazard and lacked central direction*. Despite a range of operations in Korea, Malaya, Borneo and Vietnam in the 1950s and 1960s, the Army did not develop an indigenous or systematic approach to doctrine. Instead, doctrine was largely borrowed from the British with a leavening of American ideas.[103]

In the early 1960s, American Pentomic battle group doctrine was briefly important in influencing the adoption of the Australian Pentropic division. Tropical warfare divisions and brigades were restructured into battle groups in a tactical and doctrinal experiment that did not suit Australian conditions. By 1964, the Army had reverted to a traditional British-style tropical warfare divisional organisation.[104] In 1965, a new doctrinal series, the *Division in Battle* (DIB), including the important pamphlet *Counter-Revolutionary Warfare*, emerged on the eve of the Army's long deployment in Vietnam. The Australian Army emerged from Vietnam in 1972 as a highly professional force.[105] However, it was also a tactical-level Army, with little experience of developing doctrine for independent operations.[106]

From the mid-1970s to the mid-1990s, the Australian Army learnt much about the doctrinal implications of defence of Australia, but as Evans has described it was less successful in anticipating and adapting to new trends outside this framework. In the 1970s and the first half of the 1980s, the Australian Army developed and promulgated valuable operational doctrine. However, by the early 1990s, doctrine largely cohered around low-level operations in northern Australia. Both the focus on joint operations and low-level warfare were reinforced by strategic guidance documents that emerged between 1990 and 1994.[107]

By 1996, defence policy embraced the need for a broader definition of Australian strategic interests that reflected a better interaction of defence with foreign policy. In October 1998, the new Chief of Army, Lieutenant General Frank Hickling, announced that the Army would embrace a maritime concept of strategy.[108] This was a significant change from the Defence of Australia approach and notwithstanding the impacts of contemporary counterinsurgency operations in the Middle East and Afghanistan much of Army's body of doctrine has been driven by this since.

Doctrine and professional mastery

Developing professional mastery in Army's individuals and teams will not occur only within a prescriptive and rules-based framework. It requires individuals to make sound judgements based on understanding developed through not just comprehensive training but more importantly education and experience. While Army has developed outstanding junior leaders through out its history, the demands of future operations are perhaps unprecedented and will, therefore, require an enhanced approach. The key to this approach is summed up in changing the focus from 'what to think' to 'how to think'.

A working knowledge of doctrine – 'doctrine sound not doctrine bound' is key to developing professional mastery. At its very core, doctrine represents an institution's beliefs and is the result of a process of knowledge acquisition and development.[109] The knowledge contained within doctrine is the product of examination and interpretation. Doctrine also helps preserve and reinforce the concept of *fighting power* through the articulation of accumulated experience, corporate memory and extant practice. Doctrine captures how Army's thinking changes over time and should form the corporate record of Army's response to new technologies, structures and challenges.

Despite the overwhelming benefits of doctrine, the study team has gained the view that it is used in training institutions but little beyond that. Reading doctrine is not a personal priority for officers and soldiers external to training centres. Formations and units and, therefore, individuals are not formally tasked to review and/or validate doctrine during exercises. Successive Exercise Hamel after action reviews and Combat Training Centre trends reports have highlighted the ignorance of, or unwillingness to apply, doctrine in large parts of our combat force.[110]

Army's current approach to doctrine

Philosophical

Philosophical doctrine shapes the trained mind. Army has only the one philosophical publication, which explains the fundamental principles behind the employment of land forces in military operations. This publication is *Land Warfare Doctrine 1: The Fundamentals of Land Power*. It describes the tenets under which land forces operate in a joint environment in the Australian context as well as the conditions which determine the Government's options for the employment of land forces and describes possible future environments under which the Army may operate.

Land warfare doctrine

Application level doctrine trains the mind and explains how philosophical principles are applied in the conduct of land operations. It describes how the Army conducts operations and how combat functions are coordinated to achieve the mission. It is interesting to note that in 1999, the topics covered in the current suite of application-level doctrine sat at the philosophical level. This is an interesting change towards more practical (or tactical) thinking, but does highlight a shift from shaping to training the mind. Whether this change intentionally influenced Army to focus less on ideas and concepts and more towards the procedural space is undetermined. But, it might represent a turning point towards Army losing sight of the value of doctrine and become just a mechanism for compliance.

Land warfare procedures

Procedural level publications encompass publications that include techniques, procedures and drills in the detail necessary to ensure effectiveness and interoperability in training and operations. They specifically detail 'how' Army achieves the required outcomes articulated in *Land Warfare Doctrine* publications. They generally describe the individual and collective set of platform-specific and sub-unit drills, military techniques and procedures fundamental to ensuring every soldier's performance is consistent with the rest of the team. Land warfare procedures can be general or specific to corps or function: *Land Warfare Procedures - General and Land Warfare Procedures Special* publications are all corps procedural publications.. There are currently around 250 of these publications.

Doctrine development

Doctrine is developed from extant knowledge complemented with proven new approaches, lessons learnt and other trends. The Army doctrine model in Defence Instruction (Army) 20-101 *Army Doctrine* outlines the process by which doctrine is analysed, developed, produced and reviewed. The model and management process, including the method for proposing new or amending extant publications, is review, analyse, develop and produce.[111] The sponsorship for most of Army's applied and procedural level doctrine publications resides within Forces Command. Director General Training oversees the designation of sponsorship and priorities for doctrine development and provides guidance to Army Knowledge Group on Army doctrine priorities.

Presently the Army Knowledge Group plans on refreshing each publication on a five-year cycle. As such, this requires nearly 50 publications per year to commence review. This process relies on sponsors and generally takes between three to five years. Because a large proportion of doctrine sponsorship rests with training establishments, and the review/rewrite functions are often secondary to training delivery, annual review benchmarks are rarely achieved. In 2014-15, it aimed to review 65 publications; a total of 15 were completed.

Technical control boundaries with regard to doctrine creation and review are governed by Defence Instruction (Army) 20-101 *Management of Army Doctrine*.[112] The involvement of brigades in development of doctrine is minimal. There is little incentive to do so, and as a result the doctrine produced is not contemporary and not read by those who need it the most.[113] Consequently the link between operators and doctrine developers has been significantly weakened.

However, the recent development of the draft intelligence, surveillance and reconnaissance publication involved a mutually agreed, highly collaborative and cooperative approach with the Defence Force School of Intelligence and Headquarters 6th Brigade, also working with the commandant of the Defence Combat Support Training Centre and Army Headquarters' Director of Intelligence, Surveillance and Reconnaissance. Army Knowledge Group's involvement was to provide the project management function through its senior out-posted Doctrine and Lessons Officer based in Canungra.

This approach may provide an appropriate model moving into the future, including some disaggregation of Land Doctrine Wing workforce into commands.[9] The establishment of out-posted Land Doctrine Centre personnel at each functional command might better connect users and developers in the doctrine process. This would permit doctrine review tasks being directed for commands in their annual task orders. In particular, the employment of reset brigades for doctrine development (similar to SOP development by readying brigades) should be investigated using the functional command Army Knowledge Group personnel in support as tiger teams.

Technology

ICT offers a range of options for the development, management and dissemination of doctrine. The key developments in ICT that impact on doctrine include:

- Advanced collaborative tools.
- Better ICT access to enable discoverability (push, pull and prod).
- Real time access to knowledge and information on networks.
- Proven display technologies (both content and device).
- Increasingly intelligent systems.
- More powerful and intuitive search engines.

Army has not yet adequately exploited the available power of ICT in the development and management of doctrine. New types of hardware offer opportunities for access to doctrine. The most notable of these are the portable computing devices such as tablets and smart phones. The convergence of a number of technologies into these devices makes them both powerful and versatile. Such devices could make doctrine ubiquitously available (if declassified) and ensure it is current. Coupled with smart document technologies, it would allow the user to contextualise the doctrine in accordance with their individual and team requirements, but retain overall integrity of the knowledge base.

An evolved approach to doctrine development and use

During the course of the study, multiple interviews were conducted and lessons from exercises including Hamel and Combat Training Centres were reviewed. A range of challenges (and perceptions) were identified in this process.

Doctrinal agility

In recent years, the ability of Army doctrine to keep pace with change and demands has diminished. A key failing of the current system is its inability to deliver responsive, contemporary doctrine, with much of this due to the production cycle and the general lack of input outside training institutions. This has the effect of reinforcing doctrine's lack of utility in the minds of users beyond the schoolhouse.

Doctrinal innovation, where it does take place, occurs at a slow pace. At present, the review and rewriting and endorsement of doctrinal publications takes between three to five years. This lack of priority in investing in Army doctrine is not a hallmark of an adaptive, learning Army. The lag in producing contemporary doctrine is unacceptable. Army's investigations into future security challenges highlight the fact that modern technology provides adversaries with significant agility and lethality. Defeating such adversaries will require Army to ensure that is people are more knowledgeable and broadly developed in order to innovate and adapt to rapidly changing circumstances.

Army has attempted to review its approach to doctrine development and priorities previously. In 2007, the *Future of Doctrine*, an innovative knowledge management project was endorsed by the Army Capability Management Committee. However, it failed to gain traction despite considerable resources committed and funding expended. The *Future of Doctrine* proof of concept focussed on the testing of potential doctrines that were sufficiently agile to meet the demands of a rapidly changing environment. This required a significant change to Army's approach to doctrine development and delivery. Detailed project plans and schedules were developed and many of the documents produced remain available through the Centre for Army Lessons. The *Future of Doctrine* project was set against the backdrop of the Army's simultaneous commitments in Afghanistan, Iraq, East Timor and Solomon Islands and a focus on operation generation lessons and it is easy to understand why this project failed.

Accessibility

Doctrine is difficult to access due to its location on the Defence Restricted Network and is no longer readily available in hard copy.[115] This is particularly an issue for those with limited Defence Restricted Network access (such as the Army reserve) and is an impediment to nascent 2nd Division experiments with distributed learning.[116] Current metadata is poorly configured and managed, leading to poor relevance-based results when queried in a search engine. The use of PDF as a data format does not enhance reader experience.[117] The US Army posts much of their doctrine on the internet[118] as does the UK on its Joint Doctrine and Concepts Centre site.[119] The US Marine Corps doctrine is classified 'Approved for Public Release' but requires a US military identification card to access it online.[120]

Readability

Doctrine is difficult to read. It contains extensive front matter and the layout and lexicon employed are not conducive to reading. It is not professionally edited other than for formatting. Not everyone can write doctrine and the disaggregation of writers only contributes to a body of work that is neither consistent or appropriate for the audience. Consideration must be given to the selection of suitable personnel who can articulate consistently the ideas, concepts and application of doctrine across the hierarchy. Competent writers are not necessarily subject matter experts and to separate the two roles in development may actually assist with the achievement of writing deadlines.

Lessons linkage

At present, the Army Lessons Network operates a number of lessons related boards and the Army Lessons Work Group across Army Headquarters, Forces Command, Headquarters 1st Division and Special Operations Command, all identify and capture lessons arising from the immediate, short, medium and long learning loops. Lessons arising from the immediate learning typically flow directly through to unit SOPs and tactics, techniques and procedures (TTPs) while lessons learned from the medium learning loop are incorporated into Army doctrine and training.

However, Army's contemporary doctrine hierarchy now incorporates both the TTP and SOP layers in addition to the more traditional philosophical and application layers of doctrine. Rationalisation of the number of lessons boards should enable Army to disentangle unit procedures from philosophical concepts leading to an overall reduction in the size of the doctrine library.

Hierarchy

The current doctrine hierarchy Army's doctrine library is organised by battle space operating systems into three layers; philosophical, application (that includes general publications [i.e. all-corps] and special publications [i.e. corps specific]), and safety. Under this hierarchy doctrine sponsors can create doctrine notes to be eventually incorporated into one or more doctrine publications. Over the past 10 years, TTPs and SOPs have also become part of the hierarchy whereby doctrine sponsors have increasingly relied upon the Land Doctrine Centre to facilitate the writing and production of these documents, the exemplar being the combat brigade SOPs.[121]

As a consequence, the doctrine library is quite large. While there has been a consolidation from 370 to 285 publications, there is still room for further consolidation – particularly if Army reduces duplication with joint doctrinal[122] publications. The size of individual publications has grown. An exemplar is the latest combat brigade SOPs. At 2,422 pages, it is now larger than the *Complete Works of Shakespeare* (the 2015 edition sits around 1,340 pages).[123]

The review of doctrine is a time consuming process and it is not clear that subject matter experts with contemporary knowledge are always engaged. Exacerbating this, doctrine review is not currently linked to major exercises in terms of review or validation[124].

Some of the all-corps and corps specific publications now contain blended content covering the application layer, TTPs and SOPs leading to speculation the library is bloated and contains irrelevant content. Army Knowledge Group is best positioned to focus on the management of capstone doctrine while more agile documents such as TTP and SOP are managed by sponsors, formations and units. It is recommended that Army should determine those publications the Army Knowledge Group should manage (which likely to be approximately 40) and those that should be managed by sponsors, formations and units. Further, a 'fast loop' process for the review and re-issue of higher level doctrine (where the need arises) is required so that doctrinal innovation and reinvigoration occurs at a pace that allows it to influence training, education and capability development.

Doctrine and capability development

The study has revealed that doctrine development and delivery is anecdotally occurring late in the capability systems life cycle (CSLC) with many new capabilities reaching initial operating capability (IOC) and final operating capability (FOC) without a solid doctrine base to underpin the new capability. As a result, a temporal disconnect is being created between the pre-first pass decision approval process and the capability delivered at IOC. Army's current learn-by-doing philosophy potentially undermines the timely development of doctrine resulting in new capabilities being employed in ways that differ to the basis on which funding was originally approved subjecting Army to potential government criticism. Delivery of draft doctrine earlier in the CSLC (i.e. during Phase 1 and certainly pre-IOC) would strengthen significantly the linkage between pre-first pass approvals, concept of operations (CONOPS), concept of employment (CONEMP) and usage.

The future of Army Knowledge Group

The organisation responsible for coordinating the development and distribution of Army doctrine is the Land Doctrine Centre. It is a component of the Army Knowledge Group. At present the Army Knowledge Group either produces and/or coordinates a number of outputs for Army and Forces Command from within Forces Command. This has led to organisational ambiguity regarding Army Knowledge Group's sphere of influence particularly with regard to the development, implementation and execution of Army's strategies for collective and individual simulation, lessons, doctrine and learning packages.

The Army Knowledge Group's current location in regional Victoria also limits its access to a contemporary experientially-based workforce leading to wider concerns about the timeliness and relevance of some its outputs. It is physically disconnected from joint and other service doctrine developers. Army should consider the disposition of Army Knowledge Group, particularly the Land Doctrine Centre, so that it is located in a more geographically suitable location for accessing quality workforce and linking in with other service and joint doctrine organisations.

Recommendations – Doctrine

Recommendation 27

Army should institute a program of doctrinal reform and reinvigoration, which includes declassification of as much doctrine as possible to facilitate online access for blended learning in Army. Army should determine which publications the Army Knowledge Group is to manage and those which should be managed by formations, training establishments and units. Army would benefit from better cross referencing across doctrine publications and the development of a 'fast loop' process for the review and re-issue of higher level doctrine so that doctrinal innovation and reinvigoration occurs at a pace that allows it to influence training, education and capability development.

Recommendation 28

The Land Doctrine Centre should reformat the draft intelligence, surveillance and reconnaissance doctrine (to be validated on Exercise Hamel 16) in 2016 as a test bed for developing a standard reader friendly doctrinal format.

Recommendation 29

Establish out-posted Land Doctrine Centre personnel at each functional command so they are better connected into the doctrine process. This would permit doctrine review tasks being directed for commands in their annual task orders from this year. In particular, the employment of reset brigades for doctrine development (similar to SOP development by readying brigades) should be investigated using the functional command Army Knowledge Group personnel in support as tiger teams.

Recommendation 30

Insert doctrine development into the project development process to ensure doctrine-led training is in place before arrival of new equipment.

Recommendation 31

Re-orient the Army Knowledge Group as an Army-level technical controller of Army doctrine and lessons and provide clear priorities, standard for development process, structure, format and authorities for development of doctrine. As part of this, review the command and control, authorities and location of Army Knowledge Group.

Part 7: What should the system look like?

Introduction

While Army's principle aim remains to win the joint land battle, some have argued that Army's outputs are increasingly focussed on sub-strategic aims (see Rupert Smith's *Utility of Force*). Armies not only apply force not to seize ground, but to defeat an enemy's *agency* or *narrative* of influence. In effect, Clausewitz's clash of wills remains a defining feature of war. Therefore, Army may need to refocus future education, training and doctrine on the capacity to win the clash of wills inherent in conflict, within a joint and interagency environment.

The focus therefore needs to be on defeating the enemy's will, the art of conducting physical, and increasingly psychological manoeuvre; to attack motivation and cohesion – leveraging Clausewitz's true trinity at the highest level. With the decline of our technological edge, a **cognitive edge** must be developed; we must know more, think faster, act smarter and apply appropriate force with surgical precision. Arguably we must break the obsession of digitisation – which assumes more information may increase cogitation – and instead redefine 'modernisation' towards human capacity. This ensures military capability is relevant and suited to the modern world. To achieve this capacity, training, education and doctrine must align as a single system.

A system for education, training and doctrine

The system, based on these drivers for change, provides a framework for the interaction of its parts – or its functions – towards its goal. In the case of training, education and doctrine, the goal is to build human capability that both drives, and is a part of, joint land capability. Developing this human capacity achieves professional mastery and enhances fighting power. As such, the system fuses policy, training and education within the vision of Army's future capability needs and operational framework. This allows Army to identify the types of people it requires into the future, including the benchmarks of not only physical, but also intellectual and personal qualities. It then ensures Army can **inculcate** these people into its institution, giving them a sense of belonging that is built into esteem and self-actualisation.[125]

This provides a foundation that allows the **development of mastery** – both technical and professional. With this mastery, the knowledge of the profession of arms, Army's human capability – its people – can integrate platforms and sustainment to form the physical aspect of fighting power. Executing these functions achieves Army's operating framework and future vision, and provides the capacity to adapt to strategic change. At the core of this system is the enhancement of professional mastery.

Professional mastery can be defined as a series of facets, or pillars, that underpin the military discipline. These pillars provide themes for training, education and study that build to enhance human capacity, and are grouped into three sets: **mastering battle**, **mastering moral**, and **mastering war**. The first of these pillars is *physical mastery*, creating mastery "of the body" that includes both physical fitness and resilience. Building on this is the second pillar: *technical and tactical mastery*. Both technical and tactical skills and knowledge are intrinsically linked, and mastering these areas ensures individuals and the collective are brilliant at the basics. *Psychological and cognitive mastery* forms the third pillar, providing understanding of the cognitive aspect of war and warfare. Focusing on cognitive bias, complexity theory, communications theory and the heuristic; this pillar finalises the mastery of the battle, and is reinforced by the forth facet – *mastery of the context of military history*.

Mastering the moral aspect of the profession starts with understanding history. Military history for Army is much like a case law for a lawyer. It provides the required context, width and depth to understand past ways and means in the absence of physical war experiences. Linking to this is *mastery of leadership and ethics*,

the fifth pillar of professional mastery, that seeks to understand leadership theory, historical examples, change management, and the ethics of decision making. Furthermore, leadership mastery must be fused with cultural studies to generate wider viewpoints for command, and strengthen an understanding of diversity and ethical considerations. Although these two pillars provide a strong professional grounding, they do not grow Army's strategic understanding. This is achieved through the final set of two pillars that focusing on mastering war.

The sixth pillar develops understanding of joint domains. With its themes of operational theory, campaign planning, and air/land/sea power, *mastery of operational art* sets the conditions for the seventh and last pillar: *mastery of strategic thinking*. Australia's position in the world order requires its officers to understand strategic concepts far earlier in their careers than other Western militaries. By considering themes like Australia's Defence organisation, the strategic context and environment, and strategic thinking – including theories of victory – Army grows its strategic nous and ensures its personnel are masters of their profession. Furthermore, these pillars of mastery are mutually-supporting; a lattice of human capacity traits which, if developed together, allow the soldier and officer to achieve mastery of the profession of arms as a whole, building human capacity.

However, the manifestation of a successful system that develops this professional mastery through the seven pillars depends on the policies, procedures and the structures to enable its execution. This requires a systems model that highlights the links between joint land capability, the pillars of mastery, and the organisation that executes training, education and doctrine development.

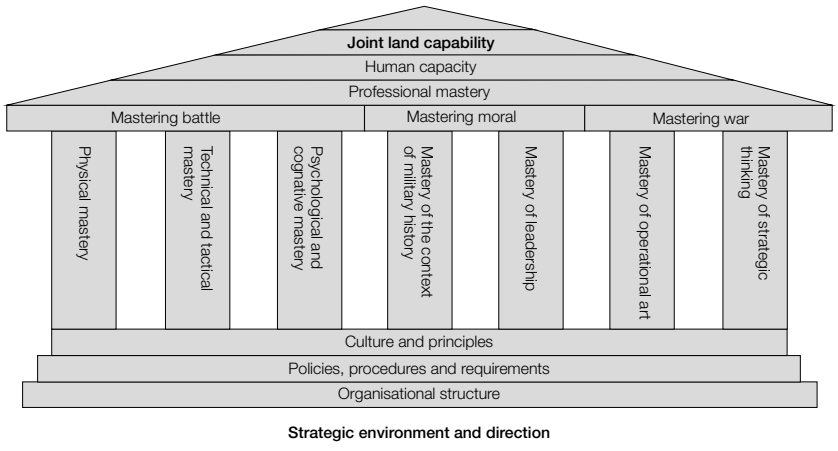

Figure 11. The human capacity system

The model adopts a broad ends, ways, means structure – forming an analogy of an "institution". The ways are the institution's columns – the pillars of mastery – and are defined by a description of the ends: human capability as a part of joint land capability. In addition, the pillars are supported by a foundation – the means of principles, policy, procedures and organisation. Principles and institutional culture shapes understanding within the pillars of mastery. These principles can be expressed and extended through policies and procedures, which in turn are linked to needs.

These needs are monitored, adjusted and executed by the organisational structure – providing the command, training, education and doctrine of the system. However, these structures can only command and adjust the policies through an understanding of the strategic environment and guidance. It is these strategic considerations that form the bedrock of the system's model. It is this environment that must be understood by the organisation, expressed in policy and reflected in culture to ensure the pillars of mastery create the required ends: human capability as a part of joint land capability. This approach forms both a systems and physical institution of professional mastery that enhances human capacity.

This framework must spawn action, executed by the organisation, in the form of a *human capacity strategy*. The model must become a strategy that articulates the strategic aim, describes the pillars of mastery as line of effort with supporting objectives, that apportions resources and tasks institutions accordingly. The formulation of this *human capacity strategy* must therefore be the first priority.

An Army system

An Army education, training and doctrine system should provide a framework for the interaction of its parts within a broader joint and Defence environment. In the case of training, education and doctrine, the goal is to build human capacity that drives Army's capability, achieving individual and collective professional mastery. As such, the system should fuse policy, training and education within the vision of Army's future capability needs and operational framework. This would allow Army to identify the types of people it requires into the future, including the benchmarks of physical, intellectual and personal qualities.

This proposed system ensures Army can inordinate these people into its institution, giving them a sense of belonging that is built into esteem and self-actualisation.[126] This provides a foundation that allows the development of mastery – both technical

and professional. With this mastery – the knowledge of the profession of arms – Army's human capacity – its people – can integrate platforms and sustainment to form the physical aspect of fighting power. This achieves Army's operating framework and future vision, and provides the capacity to adapt to change. The manifestation of this system is its policies, procedures and the structures to enable its execution.

The Australian Army should possess a world's best practice education, training and doctrine system. It must provide strategic direction to guide the development of its people through education, training, experience and social learning. It must provide a trajectory that ensures the level of Army's individual and team professional mastery is intellectually and physically capable of dealing with anticipated future threats and equally responding to surprise to meet warfighting and other operational needs – in a joint or coalition environment – demanded by the Australian government.

Part 8: Implementing change

The Australian Army has undertaken numerous reviews of itself in the modern era. It has a mixed record on implementing change. The areas where change was most successful is when there has been a clear and compelling rationale for that change, and the change has been the beneficiary of advocacy, leadership and resourcing by Army's senior leadership beyond the short term.

There are many guides to the successful implementation of organisational change. Business and academic literature has a niche for this area that is overflowing with books, reports and studies. But perhaps the most relevant guide for us is a short 1983 piece called *To Change an Army*.[127] In this, retired General Don Starry examines how the US Army reformed itself after Vietnam. It contains five key lessons which are relevant to implementing the changes proposed in this report:

- An institutional mechanism to identify the need for change, to draw up parameters for change and to describe clearly what has to be done and how that differs from what is done now.
- There must be a spokesman, for change. Whoever or whatever it may be, the spokesman must build a consensus that will give the new ideas, and the need to adopt them, a wider audience of converts and believers.
- There must be continuity among the architects of change so that consistency of effort is brought to bear on the process.
- Someone at or near the top of the institution must be willing to hear out arguments for change, agree to the need, embrace the new operational concepts and become at least a supporter, if not a champion, of the cause for change.
- Changes proposed must be subjected to trials. The relevance must be convincingly demonstrated to a wide audience, and necessary modifications must be made as a result of such review outcomes.[128]

Priorities

It is proposed that three priorities be applied to the recommendations of this report:

1. Priority one – these aim to generate momentum for change in Army's education, training and doctrine. Priority one tasks should be completed by the end of 2016.
2. Priority two – these tasks comprise the larger and more complex tasks that will build on the momentum generated in 2016. Completion of these should be expected by the end of 2017.
3. Priority three – these tasks are longer duration and tasks. They should be completed by the end of 2018.

Priority one tasks 2016

The following tasks should be undertaken in 2016:

Recommendation 1. Army should develop a *human capacity strategy*.

Recommendation 2. Continue to refine the extant directed training requirement process.

Recommendation 5. Innovation resources should be more focussed on training and education.

Recommendation 8. Army should streamline its various lessons meetings into a single Army Lessons Board.

Recommendation 10. Army should develop a simulation policy that can inform and enable the cost effective delivery of simulation in training.

Recommendation 11. Army should streamline authorities of training commanders.

Recommendation 12. As part of the extant unit establishment review series, Army should consider whether the strategic policy and tactical execution functions for training and education in Army should be concentrated within a single command, or whether separating these functions is more appropriate.

Recommendation 13. Senior leadership must openly advocate for and invest in an Army professional military approach. This can be achieved by recognition opportunities within units and continued investment in tertiary education options.

Recommendation 23. Army should support the review of an RTO affiliation in Defence.

Recommendation 25. A campaign plan is developed to synchronise collective training (including land series, sea series, Exercise Hamel, ABCA).

Recommendation 27. Army should institute a program of doctrinal reform and reinvigoration.

Recommendation 28. The Land Doctrine Centre use the draft intelligence, surveillance and reconnaissance doctrine as a test bed for new formatting.

Priority two tasks 2017

The following tasks should be undertaken in 2017:

Recommendation 3. Continue revision of the all corps officer and soldier training continuums.

Recommendation 4. Consider the balance of command and influence in leader development in the Army's training, education and doctrine system.

Recommendation 6. A greater level of focus should be placed on sharing lessons between training schools, and collaborative innovation between schools and operational brigades.

Recommendation 14. As part of the review of the all corps officer training continuum, Army should consider whether the Combat Officers Advanced Course and/or Logistics Officers Advanced Courses might be evolved to be a selective.

Recommendation 15. Army should institute an officer and enlisted professional development framework.

Recommendation 16. Army should build an online resource for self-study and the conduct of ongoing unit professional military education.

Recommendation 17. Army should issue Chief of Army professional development priorities.

Recommendation 18. Army education, training and doctrine system should possess an appropriate balance of land and joint training and education outcomes.

Recommendation 19. Army should confirm its need for STEM qualifications.

Recommendation 20. Army should develop a strategy for broad employment of blended learning, and an investment plan to support it.

Recommendation 22. The training management framework should be updated, and optionally become an Army level training management framework.

Recommendation 24. Army should develop an individual training strategy (nested under the *human capacity strategy*), which provides guidance on Army training and incorporates aspects of the land combat training system and an updated adversary system across live, virtual and constructive domains.

Recommendation 30. Insert doctrine development into the project development process to ensure doctrine-led training is in place before arrival of new equipment.

Recommendation 31. Re-orient the Army Knowledge Group as an Army-level technical controller of Army doctrine and lessons.

Priority three tasks 2018

The following tasks will be undertaken in 2018:

Recommendation 7. The Army research and development plan should be amended so that more effort placed on future learning methodologies and technologies.

Recommendation 9. Army should consider including training postings as a mandatory element in the officer career management continuum.

Recommendation 21. Army should consider the establishment of an Army College to focus on improving Army personnel in the discipline of the profession of arms.

Recommendation 26. The land combat training system provides a foundation for Army strategic planning for integrating simulation, the standard adversary framework and training area management. It should inform Army Headquarters investment in these areas.

Recommendation 29. Establish out-posted Land Doctrine Centre personnel at each functional command so they are better connected into the doctrine process.

Implementation

Director General Training is proposed as lead for all tasks with the exception of the development of the *human capacity strategy*. A short implementation directive, for Chief of Army endorsement, will be provided by the end of May 2016 to guide implementation. This will include more detailed implementation matrices with the prioritised tasks for 2016-2018.

Tasks will be executed 'business as usual' by Director General Training, and will be included in extant mechanisms such as the Forces Command perations order and task orders. Task progress and completion will be tracked and reported in the *Forces Command Modernisation Campaign Plan*. Finally, quarterly updates are to be provided to CASAC and ARCMC on progress.

Risks

In transitioning to the proposed knowledge domain Army should seek to minimise risk associated with the project. These risks include cultural risk; implementation risk; and technical risk.

Cultural risk

Mitigating cultural risk is a complex task. Some of the recommendations involve a significant change to Army's culture (such as distributed learning, giving more prominence to professional education and incentivising self-study). The degree of change means that there is cultural risk. This can be mitigated through clear communication to the Army of the rationale for changes being implemented, and ongoing advocacy and resourcing of changes by Army's leadership over several Chief of Army command cycles. It will also require key leaders not in the Army senior leadership group to become - and remain - advocates for the new approaches.

Implementation risk

The implementation of the recommendations of this report will carry risk. While cultural risk is discussed above, it is proposed that the five Starry rules be used to guide implementation and reduce implementation risk. The table below describes this approach.

Theme	Starry rule	Proposed Army approach
Institutional mechanism for change	An institutional mechanism to identify the need for change, to draw up parameters for change and to describe clearly what has to be done and how that differs from what has been done before.	A clear rationale for change must be developed, using in part the findings of this report. This rationale is then employed in a simple, strategic communications plan with Army, and other institutions. Further, centralised control but decentralised implementation should be the mechanism for change.
Advocacy for change	Someone at or near the top of the institution must be willing to hear out arguments for change, agree to the need, embrace the new operational concepts and become at least a supporter, if not a champion, of the cause for change.	The Chief of Army and all senior leaders must be visible and vocal in the justification for change, and be transparent in what changes will occur. However, the timing of when the Chief of Army 'goes public' with the changes will be vital. The chosen structure should be a robust as possible, and a broad range of stakeholders and commentators shaped, before unveiling to ensure that it is not compromised. The value of continuity in advocacy, and provision of resources to the restructuring, should not be underestimated.
Spokesperson for change	There must be a spokeperson for change. The spokesperson can be a person, one of the mavericks; an institution such as a staff college; or a staff agency. Whoever or whatever it may be, the spokesperson must build a consensus that will give the new ideas, and the need to adopt them, a wider audience of converts and believers.	All members of the Army Senior Leadership Group must be visible and vocal in the justification for change, and be transparent in explaining changes will occur. Central to this advocacy will be a well-developed strategic communications plan. Every member of the Army senior leadership must have a designated role in this with designated messages. Strategic communications will be important in implementing the recommendations for this plan. A strategic communications plan should be developed and implemented in cooperation by Army Headquarters. The development of this should start now by identifying all interested stakeholders and commentators and the commencement of message development aimed at them.

Theme	Starry rule	Proposed Army approach
Continuity	There must be continuity among the architects of change so that consistency of effort is brought to bear on the process.	While continuity in Army's senior leadership is outside the scope of this report, senior Army personnel involved in implementing this plan should be left in place for two to three years. Army's senior leadership must hold those chosen to lead this change to account. It requires regular updates and back-briefing, as well as refined guidance from Chief of Army where necessary.
Trials	Changes proposed must be subjected to trials. The relevance must be convincingly demonstrated to a wide audience.	Conducting trials demonstrates to Army's people that they continue to have input and 'a say' in the ongoing changes in the education, training and doctrine system. The trials with blended learning in Forces Command and the proposed all corps Captains course are part of the trial process.

Technical risk

Minimisation of technical risk will be important, particularly as many of the recommendations in the report involve information technology solutions. The focus of risk mitigation efforts should be on: first, the conduct of trials (such as the ongoing work on blended learning); and second, close liaison with the Chief Information Officer Group.

Conclusion

> *War is neither a science nor a craft, but rather an incredibly complex endeavour which challenges men and women to the core of their souls. It is… the most demanding intellectually and morally. The cost of slovenly thinking at every level of war can translate into the deaths of innumerable men and women, most of whom deserve better from their leaders.*[129]

The Army training education and doctrine system, in its current form is not 'broken', nor is it positioned as a system to exploit advanced learning techniques and delivery to enable the organisation to retain its human capacity edge over the next two decades. Collective training is generally strong, but there is weakness in doctrine and education and a value imbalance between all three.

An Army system must adapt to the new generation of soldiers in its ranks and to the new methods of learning and leverage technology to create a more agile and relevant doctrine system. Importantly, the system must be governed by a command and control structure that can effectively deliver optimal human capacity through equal investment and policy guidance for education, training and doctrine. The Army risks losing its edge over our potential adversaries if the system is not modified accordingly.

As this paper has identified, the Army system has challenges. It should provide enhanced direction and advocacy for education, training and doctrine, as well as a synchronising mechanism for personnel policy, management and ongoing learning. Doctrine is not widely read or used outside of the training centres, and remains difficult to access. There is a lack of consciousness of the importance of professional education in many members of the Army, and consequently it has a lower 'value proposition' for most members. Individual training and education are in good shape for current needs, but there is little future orientation to anticipate what our education and training needs might be in the future.

An explicit system, which provides top down strategic direction and then is executed using mission command from schools, training centres, units and individual initiative, will provide Army with the best chance to ensure it is appropriately oriented for future operational commitments. With strategic direction, commanders empowered with appropriate authorities and resources, and the right level of connectivity and feedback mechanisms described in this part of the study, Army can achieve a more streamlined and transparent achievement of human capacity development.

A system – the ways and means of Army's education, training and doctrine – must be agile enough to enable the Army's desired strategic ends – which should be described in a *human capacity strategy*. It needs sufficient flexibility and buffers to absorb strategic change, and adapt to the needs of a changing workforce. As such, the implementation of this study should ensure Army is able to think about its future training and education needs and then ensure that its education, training and doctrine system is appropriately oriented for the demands of the next two decades.

Annexes:

A. Options for the command and control of Army education, training and doctrine.

B. Innovative approaches to learning delivery.

C. Professional military development program.

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Annex A

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Options for the command and control of Army education, training and doctrine

Appendix	Option
1	Option 1: No change
2	Option 2: Change to staff
3	Option 3.1: Training and Doctrine Formation in FORCOMD (1)
4	Option 3.2: Training and Doctrine Formation in FORCOMD (2)
5	Option 4: New Training and Doctrine Command

Appendix 1 to Annex A

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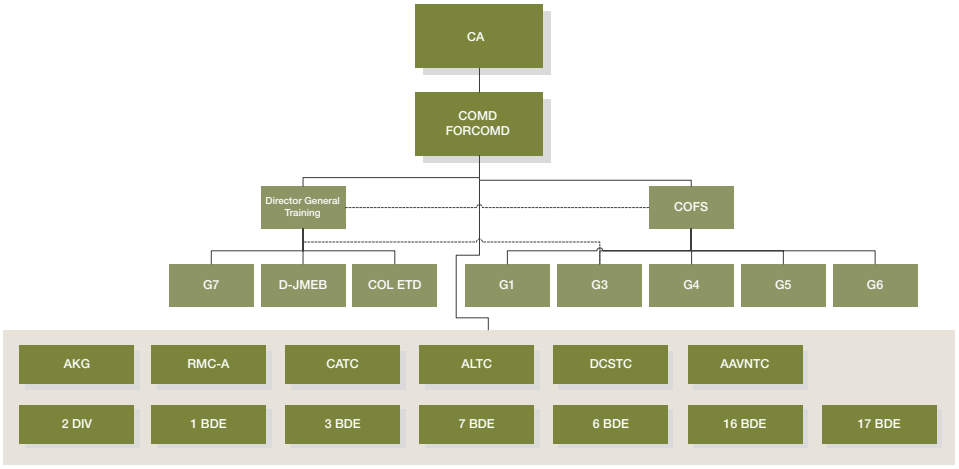
Option 1: No change

Description

Effect current authorities within extant structure, staff and resource allocations. Staff command and control remains as is, and no resources other than a small travel budget is allocated to Director General Training. This allows Director general Training to remain 'free floating' within Army.

But while effecting wider change is possible by replacing an appointment holder, without changes to the broader structure and context, changes effected by individuals may not be enduring beyond the tenure of that individual.

Structure



Advantages	Disadvantages
Free of the daily administrative responsibilities of all other Army Brigadiers. Free of any resource management responsibilities, unlike all other Army senior officers. No Director General Training command responsibilities for training establishments and centres. Quick and easy to implement. Known and understood system. Low implementation risk. Cost neutral.	Technical control only. No responsibility for Principal Staff Officer branches and therefore competing for staff effort. Dependant on good will in all initiatives – capacity to direct or provide resources. No staff means limited connectivity into daily information flows through Army. No dedicated staff that are able to provide response time and weighting to priorities. No resource allocation to incentivise innovation or weight priorities. May not achieve Chief of Army intent to revolutionise Army's training and education. Opportunity cost of failing to implement a more effective structure. Misalignment with ABCA practices.

Overall option assessment

It is the least likely to be able to effect strategic direction for Army education, training and doctrine. It is highly likely to retain unity of individual – collective training continuum in Forces Command. It is least likely to provide enhanced capacity to oversee individual training, doctrine and education system. It is least likely to have the capacity to coordinate with other commands as well as joint entities. It is the most likely to be able to be resourced within Forces Command. It is most likely to have minimal change management impact. It is the least likely to meet Chief of Army intent for overseeing change to Army education, training and doctrine.

Appendix 2 to Annex A

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Option 2: Change to staff

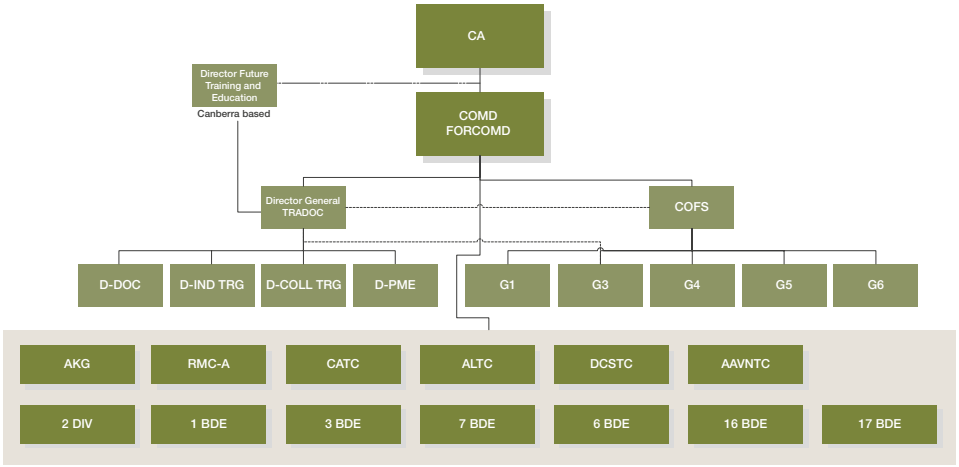
Description

Director General Training assumes the new set of functions. Director General training is renamed *Director General Training and Doctrine (DG TRADOC)*.

The Headquarters Forces Command functions of the G7, G37, ETD, AKG and JMEB are consolidated into three functional branches: Individual training including directed training requirements and implementation of initiatives and studies for individual training recommended in the Director General Training study. Collective training, including the training management framework and Exercise Hamel, and implementation of other collective training initiatives and studies recommended in the Director General Training study are executed in this headquarters branch.

A small section of staff under an 06 officer (new position) is allocated to Director General Training as a future training and education (and is located Canberra). It would be focussed on leading development of Army level initiatives from the Director General Training study such as input into the *human capacity strategy*, development of Army priorities for professional military education, development of the online self-study and unit professional military education portal. DG TRADOC to be allocated a centralised budget to fund the Army training, education and doctrine needs. Staff to be largely reallocated from within extant Forces Command resources with the exception of the new 06 position.

Structure



Advantages	Disadvantages
No command responsibilities for training establishments and centres. Establishment of the new 06 section in Canberra and re-naming of Director General Training to Director General Training and Doctrine provides a level of impact and demonstration of Army investment in education, training and doctrine. Very good capacity to weight staff effort around priorities and be responsive to subordinate and superior requirements. Good capacity to weight prioritisation of resources. Able to achieve Chief of Army intent to revolutionise Army's training and education. Location of small team in Canberra significantly enhanced capacity to inform strategic guidance and programs. Minimal impact on the readiness and support functions of the Command. Provides a foundation for future organisational change if required, including options 3 and 4.	Headquarters Forces Command cultural change – this is a slight change in process for the staff. Requires a new 06 position for the Future Training and Education Section in Canberra. Requires office space in Canberra. Medium change in extant resourcing process in Headquarters Forces Command. May be seen as additional bureaucratic imposition on the training and education organisation.

Overall option assessment

This option is likely to be able to enable effective development and implementation of strategic direction for Army education, training and doctrine. It is likely to retain unity of individual – collective training continuum in Forces Command and provide an enhanced capacity to oversee individual training, doctrine and education system. It is likely that it can be resourced within Forces Command. It has a low change management impact on the command. It is likely that it meets Chief of Army intent for overseeing change to Army education, training and doctrine. This option provides a good foundation for subsequent structural change if needed.

Appendix 3 to Annex A

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Option 3.1: Training and Doctrine Formation in FORCOMD (1)

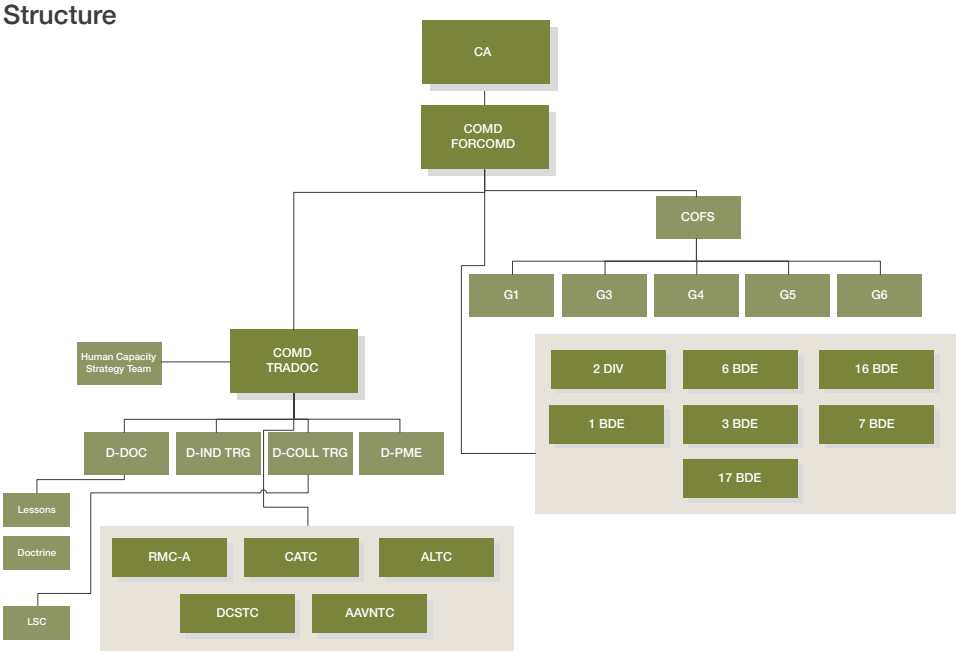
Description

Director General Training re-named Director General Training and Doctrine (or Commander Training and Doctrine) and allocated a budget under Commander Forces Command allocation.

Extant staff of Headquarters Forces Command G7, JMEB, AKG, G37 as well as ETD allocated to the Director General Training and Doctrine as the formation staff. These staff are re-aligned around Directors for Individual and Collective Training, Military Education, Army Knowledge Group and a future education and training function. There will also need to be consideration of additional in-year training management, operations and personnel as part of the establishment of a new formation headquarters

Commandant RMC and Commandants of Training Centres allocated operational control to Director General Training and Doctrine.

Structure



Advantages	Disadvantages
Reduced span of command for training centres in Forces Command. Enables a more unified training policy. Establishment of the new command, the 06 section in Canberra and re-naming of Director General Training to Director General Training and Doctrine provides a high level of impact and demonstration of Army investment in education, training and doctrine. Good capacity to weight staff effort around priorities and be responsive to subordinate and superior requirements. Able to achieve Chief of Army intent to revolutionise Army's training and education. Good capacity to weight prioritisation of resources.	Splits the functions of training between headquarters. First model to implement significant structural change with associated implementation risk. Increased change management effect. Will result in changes in how the Forces Command G3 operates, especially NPS development and in-year training management processes. Will require additional staff to establish a formation headquarters. Potential increase in bureaucratic layers between Commander Forces Command and training centre commanders. Would require personalities of same rank to work together cooperatively. Potential degradation in the ability of Headquarters Forces Command to synchronise collective training with the Brigades. Breaks the link between training centre commandants and Commander Forces Command. Incident management processes in Forces Command need to be amended.

Overall option assessment

This option is likely to enable effective strategic direction for Army education, training and doctrine. It is likely to retain unity of individual – collective training continuum in Forces Command and is highly likely to provide enhanced capacity to oversee individual training, doctrine and education system. This option is unlikely to be fully resourced from within Forces Command given the requirements for manning a formation headquarters, and it would have a significant change management impact. It is however highly likely that it meets the Chief of Army intent for overseeing change to Army education, training and doctrine and would make a significant statement about Army's commitment to training, education and doctrine. This option may be a subsequent objective, built upon option 2, if further structural change is required after the current unit establishment review.

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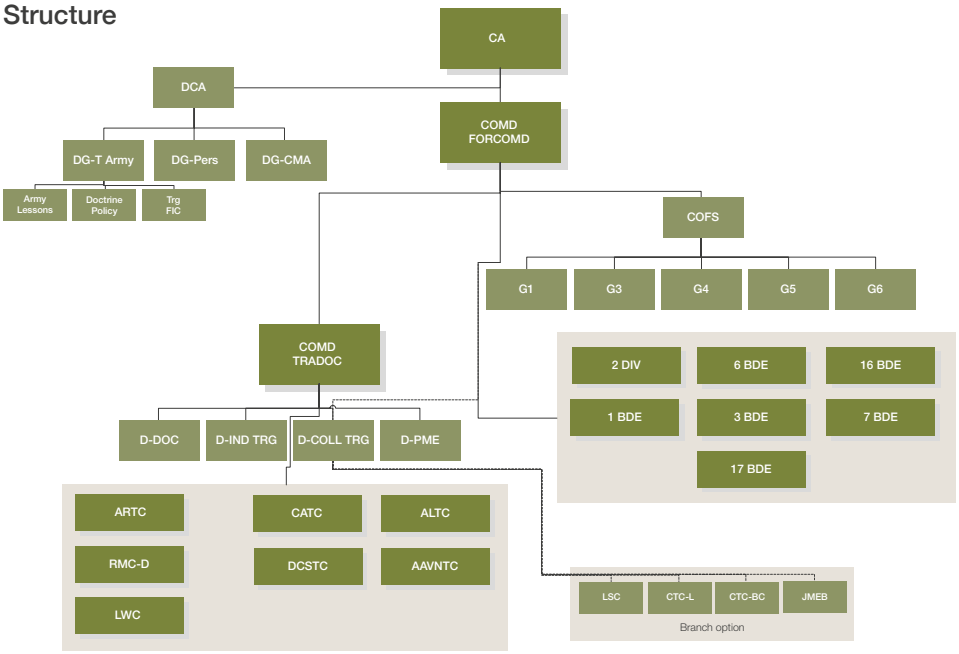
Option 3.2: Training and Doctrine Formation in FORCOMD (2)

Description

Director General Training (or Commandant RMC-Army) re-named Director General Training and Doctrine and allocated a budget. The G7, JMEB, ETD and G37 staff are re-aligned around Directors for Individual and Collective Training, and Military Education. There will also need to be consideration of additional in-year training management, operations and personnel as part of the establishment of a new formation HQ.

Commandants of Training Centres allocated operational control to Director General Training and Doctrine. Additionally, RMC-D, Land Warfare Centre and Army Recruit Training Centre allocated to Director General Training and Doctrine to form a training formation with seven training centre span of command. Commandant RMC re-roled as the Director General Army Training in Army Headquarters, supported by the Army Knowledge Group and the future education and training section.

Structure



Advantages	Disadvantages
Reduced span of command for training centres in Forces Command. Enables a more unified training policy. Good capacity to weight staff effort around priorities and be responsive to subordinate and superior requirements. Establishment of the new command, the 07 position in Canberra and re-naming of Director General Training to Director General Training and Doctrine provides a high level of impact and demonstration of Army investment in education, training and doctrine. Good capacity to weight prioritisation of resources. Creates an Army strategic G7 function. Able to achieve Chief of Army intent to revolutionise Army's training and education. Establishes strong linkages for training and education in the strategic centre.	Splits the functions of training between headquarters. Will result in changes in how the Forces Command G3 operates, especially NPS development and in-year training management processes. Will require additional staff to establish a formation headquarters. Significant structural change with associated implementation risk (big muscle movements). Increased change management effect. Breaks the link between training centre commandants and Commander Forces Command. Potential increase in bureaucratic layers. Loss of doctrine and lessons function at Forces Command if grouped with Army G7. Potential degradation in the ability to synchronise collective training with the brigades. Large span of command for Training and Doctrine organisation, with training governance requirements add to the span of command.

Overall option assessment

This option would be able to produce strategic direction for Army education, training and doctrine through an Army level G7 node for training, education and doctrine policy. It is likely to retain unity of individual – collective training execution in Forces Command through the training formation. It is highly likely to provide enhanced capacity to oversee individual training, doctrine and education system while also having the capacity to coordinate with other commands as well as joint entities. It is likely that this option may not be able to be resourced from within Forces Command given the requirements for two training and education nodes and a formation headquarters. This option has a significant change management impact. It is however likely to meet Chief of Army intent for overseeing change to Army education, training and doctrine. This option would make a significant statement about Army's commitment to training, education and doctrine. Option 3.2 may be viewed as a subsequent objective, built upon option 2, if further structural change is required after the current unit establishment review.

Appendix 5 to Annex A

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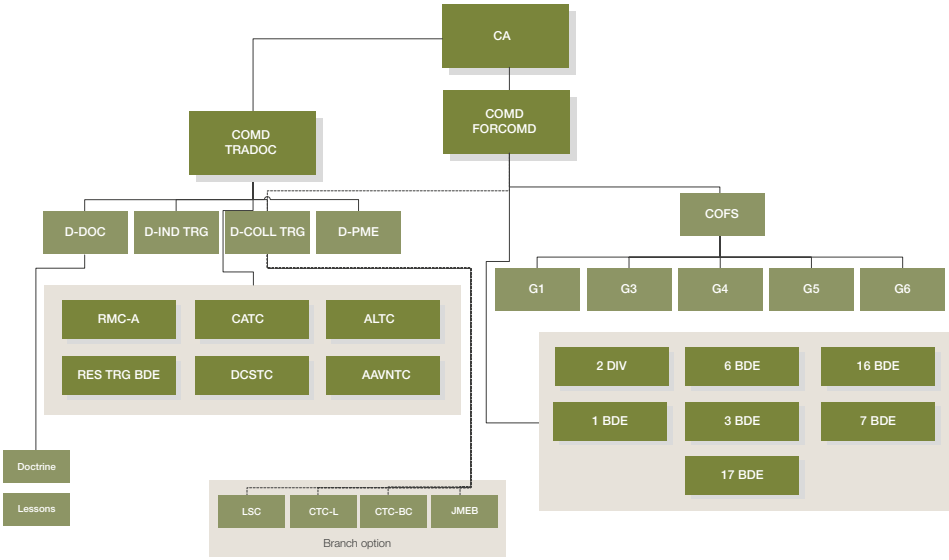
Option 4: New Training and Doctrine Command

Description

Formation of a new one/two star functional command in Army with its core function being training and education. Commandant RMC and commandants of training centres allocate operational control to Director General Training and Doctrine. Forces command retains brigades and the 2nd Division.

The training brigade in the new 2nd Division model chops to Director General Training and Doctrine. There will need to be additional in-year training management, operations and personnel as part of the establishment of a new functional command headquarters.

Structure



Advantages	Disadvantages
Training, education and doctrine functions effectively combined and coordinated. Structural alignment with ABCA partners. Focussed, centralised structure. Officer responsible for training, education and training 'at the table' in CASAC. Better unity in regular / reserve training. Very good capacity to weight staff effort around priorities and be responsive to subordinate and superior requirements. Very good capacity to weight prioritisation of resources. Able to achieve Chief of Army intent to revolutionise Army's training and education.	Significantly changes Army's financial planning and APS allocation. Perception in Canberra by Defence may be negative – another two star headquarters. Returns to old land and training command paradigm in a different era and strategic situation – may not be seen as progressive. Will need additional personnel for the functional command headquarters. Most significant implementation risk as it imposes the largest structural change. May need an additional two star to effectively implement (but not necessary). Separates from the unified approach of human capacity management. Significantly increased difficulty of non-platform support coordination. Requires the development of another command level resource management capability at a time of neutral / reducing APS capability. Degrades unity of effort between individual and collective training. Would need to re-assess where Army lessons reside if Army Knowledge Group has this role.

Overall option assessment

This option is likely to effectively provide strategic direction for Army education, training and doctrine. It does not retain unity of the extant individual – collective training continuum in Forces Command and it will have a significant impact on the extant process of non-platform support resourcing. It is the most likely option to provide enhanced capacity to oversee individual training, doctrine and education in a single command although this is offset by the increased tension in non-platform support coordination. Option 4 makes the most significant statement about Army's commitment to training, education and doctrine but also does it potentially at the highest cost in manpower and resources. It is the least likely option that can be resourced within Forces Command and has the most significant change management impact.

Annex B

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Innovative approaches to training and education

Background

The internationally recognised *New Media Consortium (NMC) Horizon Report: 2015 Higher Education Edition* identified the following key technology and trends that are very likely to drive technology planning and decision making in education[130]:

- Learning technologies.
- Digital strategies.
- Internet technologies.
- Social media technologies.
- Visualisation technologies.

Learning technologies

The trend in higher education is towards increased blended learning. According to the PEW Research Centre, 60% of digital stakeholders within education agreed that by 2020, "there will be mass adoption of teleconferencing and distance learning to leverage expert resources … a transition to 'hybrid' classes that combine online learning components with less-frequent on-campus in-person class meetings".[131] The concept is being treated seriously in higher education and the Australian Trade Commission sees that education systems around the world are on the brink of major transformation.[132] The trends that will drive this change will be:

- Synchronous communication.
- MOOCs.
- Flipped classrooms.
- Learning analytics.

Synchronous communication in online learning

Traditionally, blended learning has been strongly associated with asynchronous training. Asynchronous blended learning allows a trainee to learn anyplace, anytime. For example, a pre-course DVD package with trainees emailing assessments and activities to the DS and contributing to discussion boards. Asynchronous communication is most useful for topics and issues that require the student to engage in deep contemplative and reflective thought, but not for learning that requires collaboration or frequent feedback.[133]

Advances in technology, specifically in the increase in bandwidth, have opened new possibilities in online learning. Synchronous blended learning takes place in real time, often including a video lecture followed by audio discussion. Through synchronous blended learning, students are able to: listen to each others' voices, conversational tones, and emotional expression; correct misconceptions; engage spontaneously; get more personal and real-time attention; share differing perspectives; and, develop a sense of community.[134]

Massively open online courses (MOOCs)

Since the 1990s, MOOCs have offered web-based learning on a large scale and with open access, facilitating learning for unlimited audiences at no cost or minimal charge.[135] The level of access is unprecedented and in a relatively short time (even by technology standards), has drawn the attention of senior leadership in higher education, challenging longstanding models and premises.[136]

Some concerns exist over variation in quality and attrition rates and the number of motivated individuals seeking their own learning solutions far outweighs the few workforce organisations that are using MOOCs for professional development.[137] Another common criticism of MOOCs is that, outside a few select universities offering credit towards courses, they are mostly unaccredited. However, this may change over the next five to 10 years. According to a 2013 Flexible Learning Advisory Group working report, '…there are significant motivations to consider the application of MOOCs to VET in Australia, including the potential to engage learners through low or no-cost, highly effective, targeted blended learning'.[138]

Until wide-spread Australian accreditation for MOOCs becomes a reality, it is in the area of unaccredited professional development and lifelong learning that the technology offers the most promise. Some prominent global MOOC platforms are Udemy, Coursea and edX. Udemy is a marketplace open to any instructor to host a course at any skill level. Coursera, the MOOC platform with the most users, has global partners with 85 institutions of higher education and offers university-

level learning material free of charge. edX is a small non-profit MOOC created by Harvard and MIT that offers courses from a variety of institutions. Australian platforms include EduOne and Open2Study.

MOOCs sit alongside many traditional content providers, such as Lynda and Skillsoft. MOOCs are a resource for professional development and lifelong learning. It may be that the global growth of MOOCs slowly pushes online education to the stage that it is ubiquitous with learning. Even if large organisations ignore this opportunity, it is likely employees over time will source educational content for themselves (some are already doing so). However, organisations can exploit the unprecedented wealth of educational content available now by taking proactive measures and encouraging a learning environment in which MOOCs are commonly known and used. For many, it is difficult to know what to study and find the right course from the seemingly endless options available online. However, Annex A depicts a concept diagram of how Army could offer an endorsed suite of free to low cost MOOCs that have been selected for their quality and relevance to performance needs.

Flipped classrooms

In a traditional instructor-centred classroom, the trainer delivers lectures during class and gives trainees tasks to be completed after class. However, lectures provide trainees with little opportunity to actively engage in their learning by asking questions or interacting with the content. In a flipped classroom, passive learning activities, such as unidirectional lectures, are pushed to outside class hours.[139] The trainer delivers lectures before class in the form of pre-recorded videos or podcasts and spends class time on learning activities that involve collaboration and interaction.

Not only does this require students to take responsibility for their own learning, but it frees up valuable class time for inquiry based tasks and greater interaction between trainers and trainees.[140] Since the first well-documented example in a Colorado high school in 2007, the use of flipped classrooms has grown rapidly. A survey of US higher education instructors found that 29% used flipped classrooms and a further 27% plan to use it in within a year.[141] In its infancy, there is little research to conclusively determine whether this approach improves learning.[142] However, anecdotal evidence and the zeal in which educators are adopting the approach suggest it is beneficial.

Flipping the classroom employs easy-to-use, readily accessible technology. Instructors can record presentations and create podcasts with no more than: an audio editor, such as Audacity; a screen capture suite, such as Camtasia;

and, MS PowerPoint. None of these technologies require more than 40 minutes training for instructors to become competent using the software. Theory lessons could transition from predominantly knowledge delivery (death-by-PowerPoint) to collaborative learning and meaningful experiences.

Learning analytics

Educational technologies allow trainers to capture and store trainee interactions with their online learning activities. This data can then be 'mined' and analysed to identify patterns of learning behaviour that can provide insights into education practice[143] and inform pedagogy and policy within education.[144] With learning analytics (as depicted in Figure 2), data can be put to immediate use by instructors and instructional designers. With this detailed, question by question data, learning analytics can recommend content and assessment appropriate to the individual in a similar way to how YouTube and Netflix make recommendations based on personal use and the data of thousands of others.

Data also provides policy makers and administrators with key indicators for improvement. For example, if trainees at location A are on average attaining higher results than at location B, then developers could analyse the discrepancy aiming to replicate the success of location A.

Digital strategies

Bring your own device (BYOD)

BYOD is a technological trend in education as well as the corporate world. This trend recognises that preferences about technology are very much personal, and that individuals learn and work most effectively when allowed the freedom to choose their own device. Allowing employees to bring their own devices can notably increase workplace efficiency. For example, since implementing formal BYOD policies in 2009, Intel has reported up to 5 million hours of annual productivity gains, a statistic that is compelling many other companies to consider BYOD.[145]

BYOD policies have been shown to reduce overall spending on technology. They are also increasing in popularity because they reflect the contemporary lifestyle and way of working. A 2013 Cisco Partner Network Study found that BYOD practices are becoming more common across industries, particularly in education; over 95% of educators surveyed responded that they use their own device for work purposes.[146] BYOD is common practice across schools, with the NSW Department of Education and Communities providing specific guidance outlining on its implementation and significance for learning.[147]

Games and gamification

Games and the gamification of learning can provide a fresh approach to assist in making learning more engaging. Traditional methods of learning are losing favour. Outdated page-turning software is boring for people who have grown up playing video games and are accustomed to more interactive learning experiences. Gamification can be defined as the use of game-based mechanisms, aesthetics and game-thinking to engage people, motivate action, promote learning, and solve problems.[148] Educational games have proven to foster engagement in critical thinking, creative problem solving and teamwork. It is widely recognised that games can be successful in motivating learners and changing their behaviour.[149]

Recent years have seen an increase in the availability of free educational platforms, such as Kahoot. Kahoot is a game-based classroom response system for schools, universities and businesses.[150] It allows for the introduction and formative assessment of subjects through quizzes, collaboration and presentation of content. The inclusion of interactive learning activities in immersive learning environments provides learners with valuable experiences through which to process information into knowledge. Learners can share that knowledge and act on it to solve challenges, and through this will develop into agile and adaptive leaders with the skills necessary for the profession of arms in the 21st century.[151]

One of the strengths of gamification is that it enables learning through play. Participants 'learn by doing' in the game, having a sense of physical and psychological 'presence'. Expertise in a field is normally gained from practice and experience, typically on the job and often accumulated over years. In a situation where a person needs to apply troubleshooting, analysis and decision-making skills in the workplace, gamification can accelerate the attainment of expertise in those skills. Games provide an excellent way for learners to put theory into practice. Well-constructed game-based scenarios can effectively compress several years of experience into a much smaller amount of learning time. In a Department of Defence example, Gott and Lesgold (2000) showed that 25 hours of scenario-based simulation, related to diagnosing electrical faults in aircraft, raised the expertise of two-year trained technicians to a level exhibited by technicians with 10 years of experience[152].

Social media technologies

Social media for learning (SocMedEd)

While social media is well-known for personal (sharing photos etc) and professional use (LinkedIn, corporate PR), it is also a tool for learning. SocMedEd has the potential to significantly improve collaborative learning[153] and enables trainees to engage in ongoing communication in the process of learning.[154]

Collective intelligence and collaboration through wikis

Collective intelligence is knowledge repository of content that has been refined through the contributions of thousands of authors.[155] A good example of this is Wikipedia. Wikis address the key themes for successful collaboration: knowledge of each other's roles, communication skills development, willingness to work together, trust and mutual respect for each other's capabilities.[156] Contributing to wikis is now a common activity and assessment practice within higher education and is a standard feature of most LMS platforms. Stable user-friendly software is critical and has been shown to be a determining factor, if not the primary factor, in the success of a wiki as an educative tool.[157] As such, makeshift solutions such as documents with track changes or an ad-hoc SharePoint site are unlikely to deliver a successful 'wiki experience' for trainees and instructors.

Visualisation technologies

Augmented reality is the fusion of digital information with either live streaming video or the viewer's real environment. Augmented reality can provide rich contextual learning for individuals learning a skill. Currently, virtual and augmented reality applications are used for training in fields as diverse as trades, military and medicine. This technology is often perceived to be in the visual domain, although it actually includes the other senses as well such as sound or GPS data.

The layering of information over 3D space produces a new experience of the world, sometimes referred to as 'blended reality', and is fuelling the broader migration of computing from the desktop to the mobile device, bringing with it new opportunities for learning. While the most common uses of augmented reality so far have been in the consumer sector, new uses seem to emerge almost daily, as tools for creating new applications become even easier to use. A key characteristic of augmented reality is its ability to respond to user input, which confers significant potential for learning and assessment; with it, learners can construct new understanding

based on interactions with virtual objects that bring underlying data to life.[158] For example complex processes or objects too large or too small to be manipulated can be brought into a learner's personal space at a scale and in a form easy to understand and work with.

Annex C

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Professional military development program

There are several methods for ensuring the continued development of professionals once they have achieved a specific level of mastery. Many civilian professional bodies programs that require individuals to undertake an industry mandated minimum number of hours. These programs are directive in nature, mandating the amount of hours to achieve and the level of hours different activities represent, but not dictating specific courses, subjects or themes. Other than stating professional development activities must be within the discipline of the profession, there are no prescribed activities or events.

To assist individuals, institutions often certify externally and internally provided activities, and provide a discipline-specific library of courses, programs, educational experiences and other reference material to allow individuals to pull from different sources. Finally, institutions maintain a quality assurance system for their development programs. This is often executed through audits of individual's professional development. One example of such a program is the Institute of Engineers – *Australia Continuing Professional Development Program*.[159]

Although there are over 10 different professional institutes/colleges within Australia, the Institute of Engineers Australia (IEAust) provides a useful analogy to the professional military. The Institute is a tiered system catering for Certified Practicing Engineers (CPEng) – who are professional engineers certified as experts; professional engineers who have completed a formal education (Bachelor of Engineering); technologists with formal education in a specific sub-discipline (Bachelor of Technology, or Advanced Diplomas); and technical experts with training and experience (Certificates to Diplomas). This structure also includes Master Tradesmen and Master Builders, who straddle the technician/technologist area.

Although the structure does not assume a CPEngr is a professional master, it recognises that they are an expert within their discipline, and must maintain and further that to remain certified. The military linkages here would be to military officers of the rank of Major who form "certified practitioners" that are experts in the profession; Lieutenant to Captain (subaltern), who align with professional engineers –

specialising within their corps and developing their broader military education base; Warrant Officers forming the technologist; and senior non-commissioned officers as technicians. Using this analogy, it is possible to consider how a professional development program could work within the Army system.

The key target of any professional development program is the professional: maintaining expertise and growing new experts. Within IEAust, this is the engineer, specifically the Certified Practicing Engineer. For Army, this would be the Major rank and beyond within the command, leadership and management stream. However, within the CPEng construct, an individual must demonstrate a level of professional development prior to being 'admitted' to the level of certified professional.

The same is true in the Army context. Although the subaltern continues to grow in the mastery of arms, they must start their individual professional development program prior to entering the 'certified practitioner' rank of Major. This suggests that they must demonstrate both the capacity to undertake 'push' training and education, as well as developing the capacity to 'pull' professional development to further themselves. Given the current subaltern model is Major and sub-unit command promotion boards occur around sixth year, such individual professional development should commence at fourth year Captain to allow the two-year cycle to commence, as well as develop that 'drive' for professional expert that civilian professional development programs inculcated within their members.[160] However, as seen in professional institutes, this individual development must be auditable to confirm it has occurred.[161]

Using the IEAust system as a guide, a concept for a P*rofessional Military Development Program* (PMDP) can be developed. This uses the same standard of 150 hours every two years, giving officers flexibility over a posting period (i.e., allowing an officer, warrant officer or NCO to step back during a ready year, and undertake more in a reset or headquarters posting). This initial baseline has been adjusted from the IEAust model to account for the higher liberal arts/social sciences aspect of the profession of arms. Much like the civilian professional systems, an Army development program would have to be auditable and accountable. Much like its civilian counterparts, this would see:

- A system that is self-managed and completed by individuals.
- Uses simple summary sheets for self-management (similar to IEAust).
- Individuals would have to keep a rolling two years "proof" (such as on PMKeys) to demonstrates their two-year cycle including participation in:
    - Self-study programs.
    - Unit officer and NCO professional development activities including TEWTs.
    - Participation in external development activities such as conferences, seminars and representational activities (such as Anzac Day speeches at schools).
    - Writing and publishing on professional topics.
    - Attendance on formal courses.
- Army would conduct random and targeted audits:
    - Random by commanding officers, brigade/branch commanders.
    - Quality assurance by a Director General Training Audit Team that 'calls for' a percentage of summary sheets and proof per year.
    - Targeted auditing as part of promotion boards for sub-unit command, Major, Staff College, Colonel and Major General (note – this does not include Major to Lieutenant Colonel, and Colonel to Brigadier).

To assist personnel in their choice of professional development, types of professional activities must be identified, and their 'equivalent hours' established.[162] Within the military context, this could be achieved by establishing a series of activities with military relevance, and their total hours equivalency. Each activity should further an individual's professional mastery, and provide support to increasing Army's wider professional capacity.

Although this approach is currently officer centric, it provides a possible model that could be considered for the warrant officer ranks if appropriate. However, to ensure this model works, it requires a professional military education component that develops the 'formal education' component of subalterns up to the required level of 'professional expert'. Without this foundation, it is not possible to execute a self-management professional development program.

End notes

1 Quote from telephone discussion with LTGEN Hickling (retd), 25 Jan 16.

2 Dr Mike Evans, email to author, 2016.

3 Evidence of this includes the Army's robust modernisation agenda and its ongoing horizon scanning and future concepts development. Some exemplar publications include the 2009 *Future Land Operating Concept*, the 2014 *Future Land Warfare Report* and the 2014 *Army Modernisation Update*.

4 Australian Army, *Land Warfare Doctrine 1: The Fundamentals of Land Power*, 2014, p. 28-29.

5 Department of Defence, *Defence White Paper*, 2016, Chapter 2: Strategic Outlook, p. 39-64.

6 These are currently described in Chief of Army Directive 39/14, *Army Officer Career Management Strategy*, 30 September 2014.

7 The Australian Command and Staff College is developing its package as a 'flexible offering' where the content of the course is available to all who wish to access it, not just the small percentage of officers who are selected to attend the residential staff college.

8 MAJGEN Hassett subsequently served as CGS (LTGEN), and was the first Chief of the Defence Force Staff (CDFS) in 1976 in the implementation of the Tange reforms to the organisation of the Defence group of departments.

9 In implementation of the reorganization, the Directorate of Army Training was placed in Personnel Branch.

10 *Australian Defence: Report on the Reorganisation of the Defence Group of Departments*, Arthur Tange, Commonwealth of Australia, 1973, quoted in Palazzo pp 314 - 318.

11 The Validate phase of the 1976 Systems Approach is in contrast to the Evaluate phase of the Systems Approach to Defence Learning (SADL) in 2016. In ATI 1-8/15 the phases are Analyse, Design, Develop, Implement and Evaluate. The purpose of the Evaluate phase is "…to confirm how well it has prepared learners for the workplace, and whether the original capability requirement has been met. The purpose of the Evaluate phase is to determine whether the performance problem has been solved and whether training has been assimilated in the workplace."

12 Palazzo, A., The Australian Army: A History of its Organisation 1901 – 2001, Oxford University Press, 2001, p. 327.

13 Palazzo, A., The Australian Army: A History of its Organisation 1901 – 2001, Oxford University Press, 2001, p. 330.

14 Palazzo, A., The Australian Army: A History of its Organisation 1901 – 2001, Oxford University Press, 2001, pp 336 – 340.

15 Palazzo, A., The Australian Army: A History of its Organisation 1901–2001, Oxford University Press, 2001, p 348.

16 Ayers and Gration p 38.

17 Palazzo pp348-350.

18 Following the creation of the Ready Reserve Scheme, and the implementation of this Scheme in 6 Brigade, the Scheme was cancelled in 1997. The Brigade did not start to recover Regular manning until the late 90s/early 00s.

19 This report did not find evidence of bullying or harassment in training however it did note that Defence had some way to go before a culture that firmly opposed these existed. Department of Defence, *Final Report of the Learning Culture Review*, July 2016, p. v.

20 Department of Defence, *Defence White Paper*, 2016.

21 Australian Army, *Future Land Warfare Report*, 2014.

22 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/348164/20140821_DCDC_GST_5_Web_Secured.pdf.

23 A range of forecasts on future trends are available at: http://www.dni.gov/index.php/about/organization/national-intelligence-council-nic-publications.

24 Australian Army, *Future Land Warfare Report*, 2014, p. 18.

25 Commonwealth of Australia, *Intergenerational Report 2015*, released 5 March 2015.

26 Australian Army, *Army Strategic Workforce Plan 2013-2021*, February 2013.

27 Strauss–Howe generational theory, 1991.

28 Workforce data on separation rates/retention issues have continued to be consistent at least over the past 15-20 years suggesting that motivations are similar and despite changing skills, aptitude scores remain much the same.

29 Kahneman, D., *Thinking Fast and Slow*, Farrar, Straus and Giroux, 2013.

30 Johnson, L., Adams Becker, S., Estrada, V., and Freeman, A. (2015). *NMC Horizon Report: 2015 Higher Education Edition*. Austin, Texas: The New Media Consortium, 2015.

31 This document provides Forces Command's approach to collective training over a three-year force generation cycle for Brigades. It includes standards for collective organisations and headquarters up to Brigade level (ATL 7), but is not yet an Army level document. HQ Forces Command, *Foundation Warfare Fighting Training Management Framework*, 2 Dec 14.

32 Army no longer teaches year 11 and 12 to its soldiers and RSMs no longer do undertake the staff college course. Officers who enter the stage of their careers where they will undertake strategic and operational level roles will lack formal education opportunities for up to a decade, between ACSC and CDSS, arguably when its needed most.

33 Although "System of Systems" is a tautology given the definition of a system, the phrase has been accepted within the conceptual repertoire of Army and Defence. Therefore, the phrase is useful to explain the concept.

34 Some areas of the Human Performance AMLE is considering mechanical, biological and/or cybernetic additions to the human that will directly increase capability.

35 Knowledge is used here in its lay definition, being '…acquaintance with facts, truths, or principles, as from study or investigation; general erudition.' (Macquarie Dictionary) This includes skills and attitudes as part of "facts, truths, or principles".

36 The Army Research and Development Plan contains a line of effort on Human Performance with a single short term task that asks: *How can Army doctrine and training continuum be improved to incorporate recommended training systems and technologies?* http://www.army.gov.au/~/media/Files/Our%20future/ArmyRDPlan15.pdf.

37 The most current version is the *Future Land Warfare Report*, 2014. A detailed training needs analysis was completed after the issue of Adaptive Campaigning concept – it however never progressed from the training needs analysis stage.

38 The Land Warfare Centre provided a brief on this on 17 Feb 16.

39 This process is governed by two key documents: 1. DI(A) PERS 70-9 Management of Army's Individual Training Requirements; and 2. Army Training Instruction 1-5/2014, Directed Training Requirement In Year Management, dated 23 Feb 15.

40 In developing a professional development strategy, Army needs to profile the variety of generalist jobs across all ranks and commands (and the non-Army group) to determine what

are the requisite skills, knowledge and behaviours as the baseline for these positions.

41 CA Directive 07/09 *Army Officer Career Pathway Strategy*, of 27 Feb 09 provides career development direction.

42 Australian Army, LWD 0-2, Leadership, 2013.

43 Australian Army, LWD 0-2, Leadership, 2013.

44 The Land Warfare Centre and DCSTC are both trialling Moodle and other approaches to online delivery of learning outcomes.

45 An example of this is the Battle Laboratory established by the 1st Combat Signals Support Regiment in 2015. Another example worthy of support is the junior officer initiative to establish an Australian version of the US-originated Defense Entrepreneurs Forum in 2016.

46 For a more detailed examination, see Denning, P., and Higgins, S., 'Being in Uncertainty: Cultivating New Sensibility in Military Education', *Innovative Learning: A Key to National Security*, The Army Press, Kansas, 2015, p. 139.

47 Chief of Army Directive 28/15, *Army Personnel Establishment Plan*, 17 December 2015, Annex A.

48 Chief of Army Directive 47/13, *Army Soldier Enhanced Career Management Strategy*, 1 October 2013. Chief of Army Directive 39/14, *Army Officer Career Management Strategy*, 30 September 2014.

49 The RTO standards state that any civilian unit of competency is to be delivered by TAE Cert IV trained instructors and assessors- noting that the instructor qualification itself has to be delivered by diploma qualified instructors. There is an implementation plan being developed to ensure Army has enough Diploma qualified staff to provide Cert Iv in the smaller numbers required (as well as a review of contractual arrangements which would address this need). The new continuum does not include any civilian units of competence until the Chief instructor, Senior instructor or Training Authority levels.

50 LWD 7-0 *Training and Education*, 25 Feb 2015, Chap 2.

51 The role of simulation in training was examined in detail in the *Regular Officer Development Committee*, May 1978.

52 Data provided by School of Armour, March 2016.

53 Briefing to DGT during visit to Land Warfare Centre, 17 Feb 16.

54 The enhancement of Army's simulation capability is not necessarily a sequential process, where all elements must first attain a specified level of capability (defined in the Campaign Plan as a Generation) before moving to a higher level. These generations are: Generation 0 – current simulation capability. Army's current simulation capability is described as Generation 0. These systems cannot support large-scale Army, joint and coalition activities without significant resources and effort; Generation 1 – Foundations. Generation 1 focuses on improving the fundamentals for future interoperability. The foundations include policy, personnel, facilities, training, networks, terrain standards and data underpin future interoperability. Increasingly, Army can link into joint and combined simulation capabilities. This Generation is characterised by increased use of simulation for Force Modernisation planning; increased use of simulation for training; and, the use of simulation for operations; Generation 2 – Developing Simulation Capability. This focuses on developing foundations, establishing initial interoperability capacity and the procurement of higher fidelity systems. Congruent systems are integrated and routinely used to support training and capability development activities. A candidate project to demonstrate Army's Generation 2 capabilities could be based on integrating the School of Infantry's direct fire weapon training simulation system and the indirect fire weapon training simulation system into an upgraded Battle Simulation Site as part of an Army Training Level 3 (Combined Arms) training activity; Generation 3 - Integrated Simulation Capability. Generation 3 provides a mature basis for the Army simulation capability. In Generation 3, Army has a core of integrated live, virtual and constructive simulations that consistently reduce the cost of training activities while increasing Army's war fighting capability.

55 Examples of this include the UK Defence People and Training Strategy 2014; and the US Army *Human Dimension Strategy*, 2015.

56 Outlined in LWD 1, *Fundamentals of Land Power*, 2014, p 27.

57 Australian Army, *Research and Development Plan*, Human Performance AMLE.

58 This is evident by the improvement of collective training outcomes across Army which have shifted the focus of unit training programs which have in the past focused on the development of individual skills towards more activities focus on the Road to Hamel and Exercise HAMEL.

59 LWD 7-0 *Training and Education*, 25 Feb 2015.

60 In LWD 7-0 *Training and Education*, Training is defined as '…a planned process to inculcate and modify knowledge, skills and attitudes through learning experience to achieve effective performance in an activity or range of activities. …Training enables individual soldiers to carry out their assigned roles across the spectrum of military activity, and enables groups of soldiers to work collectively towards a military objective'; and education is defined as '…Education develops thinking processes that allow trained individuals to make connections between their training and the situations in which they find themselves in order to apply the best COA to the situation.' Meanwhile, the *Macquarie Dictionary* defines training as: 'The development in oneself or another of certain skills, habits, and attitudes'; and education as '…the act or process of educating; the imparting or acquisition of knowledge, skill, etc; systematic instruction or training.'

61 There are additional knowledge types; however, these two are the key for cognition and the discussion of training and education.

62 That being the catalyst to force human mental models to be tested and challenged.

63 Australian Army, *LWD 7-0 Training and Education, Land Warfare Doctrine* Series, Land Doctrine Centre, Puckapunyal, para 11.

64 Bosio, '*Want the Edge*?' Land Power Forum, undated.

65 Australian Army, *Land Warfare Doctrine 1: The Fundamentals of Land Power*, 2014.

66 A good examination of the issue is at Schmidtchen, D and De Somer, G. See *Professional Mastery: The Human Dimension of Warfighting Capability for the Army-After-Next*, Land Warfare Studies Working Paper, Canberra, 1999. This work is referred to in the 2014 edition of Land Warfare Doctrine 1.

67 Professional mastery binds the intellectual and moral components of fighting power and is critical to generating fighting power and thus warfighting capability. The focus of professional mastery is on people: every soldier must adapt given the changing character of war. Professional mastery is the mechanism by which Army can produce soldiers and teams that respond positively to change, especially when confronted with problems, challenges and ambiguous contexts. Australian Army, *Land Warfare Doctrine 1: The Fundamentals of Land Power*, 2014, p. 52.

68 This issue is examined in the *Regular Officer Development Committee*, May 1978 and in particular it describes the personal responsibility that officers hold for their professional development.

69 Australian Army, I'm an Australian Soldier, 2014.

70 Australian Army, *Army Modernisation Update*, 2014.

71 This construct is similar to that used in developing digital literacy by Deakin University. See http://www.deakin.edu.au/library/teach/digital-literacy/elements-of-digital-literacy.

72 Chief of Army Directive 03/15, Chief of Army Guidance – Australian Army Graduates of the Australian Command and Staff College, 25 February 2015.

73 Australian Government, Office of the Chief Scientist, *Science, technology, engineering and mathematics in the National Interest: A Strategic Approach*, July 2013.

74 See Australian Council of Learned Academies, STEM: Country Comparisons, 2013, P. 18.

75 Chief of Army Directive 39/14, Army Officer Career Management Strategy, 30 September 2014, p. 4.

76 See input from head Land Systems, 7 March 2016.

77 Chief of Army Directive 39/14, Army Officer Career Management Strategy, 30 September 2014, p. 4.

78 J.F.C. Fuller is quoted here in Doughty, R., and Wells, L. (Eds), Innovative Learning: A Key to National Security, The Army Press, Kansas, 2015, p. 13.

79 The issue of developing a committed learning environment is examined in detail by Meinhart, R., 'Insights for a Committed Learning Environment', *Innovative Learning: A Key to National Security*, The Army Press, Kansas, 2015, pp. 13-30.

80 LWD 7–*Training and Education*, 25 Feb 2015, Chap 3, para 12.

81 See http://www.benning.army.mil/mssp/ for this very comprehensive approach to providing online resources for soldiers and officers to continue their professional development in their own time.

82 While LWD 7 – *Training and Education* discusses the issue of personal development in Chapter 4, there is no emphasis on personal responsibility in the ongoing development of individual professional mastery.

83 Defence Combat Support Training Centre, Information Brief on the Current Status of the Forces Command E-School (Moodle), February 2016.

84 Conversation with Air Commodore Margot Forster, Commandant Australian Command and Staff College, 18 March 2016.

85 This is based on a detailed brief provided by Commandant Land Warfare Centre, dated 26 Feb 16.

86 For more on this see: Mok, H.N. 2014, "Teaching Tip: The Flipped Classroom", Journal of Information Systems Education, vol. 25, no. 1, pp. 7-11; and Headquarters Forces Command, Brief on Educational Technologies, May 2015.

87 For more on integration of social media into learning delivery, see Okoro, E. 2012, "Integrating Social Media Technologies In Higher Education: Costs-Benefits Analysis", Journal of International Education Research, vol. 8, no. 3, pp. 255.

88 2nd Commando Regiment and 2nd Cavalry Regiment are just two examples of this.

89 A college is normally a goal-oriented institution. They are affiliated to specific fields of study or discipline. Examples of this exist in Australian and British Universities, where colleges are groupings of schools under a field of study (eg ANU has the Asia-Pacific College of Diplomacy – focused on the Asia-Pacific – and consisting of School of Asia Pacific Affairs, International Relations, Strategic and Defence Studies Centre, etc); or professional institutions where colleges denote the disciplines in the profession (eg, Institute of Engineers has a Civil College, Mechanical College, etc).

90 The US Army has recently launched Army University (ArmyU) at – http://armyu.army.mil/. ArmyU is charged with directly integrating 70+ separate U.S. Army Training and Doctrine Command (TRADOC) internal school programs under one university system while also synchronizing instruction with more than 100 additional TRADOC institutions.

91 Australian Army, *Land Warfare Doctrine 1: The Fundamentals of Land Power*, 2014, p. 29.

92 LWD 7 –*Training and Education*, 25 Feb 2015, Chap 1.

93 LWD 7 –*Training and Education*, 25 Feb 2015, Chap 2.

94 This is described in Australian Army, Army Training Instruction 1-1/2014 – *Army Training Continuum*.

95 Forces Command, *Foundation Warfare Training Management Framework*, 2014, p. 13.

96 Forces Command, *Foundation Warfare Training Management Framework*, 2014, p. 21.

97 Australian Army, Army Training Instruction 1 – 9: *Developing Training for New Capabilities*, 26 Oct 2015.

98 The Land Combat Training System Paper was published in December 2015. It is designed to support decision makers by providing a land training system as a framework for investment. It seeks to integrate, modernise and optimise Army's training assets into a construct that will prepare Army training for the challenges of the next 20 years.

99 Evans, M., *Forward from the Past: The Development of Australian Army Doctrine*, 1972-Present, Land Warfare Studies Centre, Study Paper 301, September 1999, p. 80.

100 Australian Defence Force, *Foundations of Australian Military Doctrine*, 2002, Chapter 1.

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105 The most important doctrinal impact of Vietnam was the influence of combined arms warfare through the use of helicopters, close air support, artillery fire and armour.

106 Evans, M., Forward from the Past: The Development of Australian Army Doctrine, 1972-Present, Land Warfare Studies Centre, Study Paper 301, September 1999, p. 6-7. See also Welburn, M.,The Development of Australian Army Doctrine, 1945–1964, Canberra Papers on Strategy and Defence No. 108, Strategic and Defence Studies Centre, Australian National University, Canberra, 1994; Blaxland, J., Organising an Army: The Australian Experience, 1957–1965, Canberra Papers on Strategy and Defence, No. 50, Strategic and Defence Studies Centre, Australian National University, Canberra, 1989; Bushby, R.,'Educating An Army': Australian Army Doctrinal Development and the Operational Experience in South Vietnam, 1965–72, Canberra Papers on Strategy and Defence No. 126, Strategic and Defence Studies Centre, Australian National University, Canberra, 1998.

107 Evans, M., *Forward from the Past: The Development of Australian Army Doctrine, 1972-Present*, Land Warfare Studies Centre, Study Paper 301, September 1999, p. 36.

108 Lieutenant General Frank Hickling, Chief of Army, 'Address to Senior Officers', Chief of Army Exercise, Russell Offices, Canberra, 22 October 1998.

109 Jackson, A., *The Roots of Military Doctrine*, CSI Press, 2013, p. 7.

110 The challenges described here were covered in the CASAC paper of March 2016.

111 See DI(A) 20-101 Army Doctrine, Annex B.

112 DI(A) 20-101 *Management of Army Doctrine*, dated October 2014.

113 This has also been an observation of the Exercise Hamel Senior Observer, Major General Krause.

114 This was proposed also by Commander 1st Division during an interview in Brisbane on 16 Feb 16.

115 See http://intranet.defence.gov.au/armyweb/sites/Doctrine-Online/ComWeb.asp?page=235351.

116 Interview with Commander 2nd Division, Brisbane, 16 Feb 16.

117 This issue was raised in multiple interviews and surveys with school instructors and senior officers. It is particularly an issue for the Army Reserve.

118 US Army doctrine online can be found at: http://armypubs.army.mil/doctrine/. US Marine Corps

doctrine is online at: https://www.doctrine.usmc.mil/.

119 The Joint Doctrine and Concepts Centre (JDCC): https://www.gov.uk/government/groups/development-concepts-and-doctrine-centre.

120 Moore, S., *USMC Approach To Professional Military Education*, Briefing for Director General Training, 11 March 2016.

121 This current hierarchy might be improved through re-organisation around the ABCA's capability groups i.e. Command, Sense, Act, Shield, and Sustain. At this point no decision has been taken to re-organise of the library due to potentially adverse flow-on effects into approved training packages.

122 The ADF Joint Doctrine Library online indicates there are several publications (particularly in planning) that may be duplicative. See http://drnet.defence.gov.au/VCDF/JointDoctrineLibrary/pages/Welcome.aspx.

123 Available at: http://www.amazon.com/Oxford-Shakespeare-Complete-Works-2nd/dp/0199267170/ref=sr_1_1?ie=UTF8&qid=1456823848&sr=8-1&keywords=shakespeare+complete+works.

124 DGT has directed that the nascent ISR doctrine will be validated on Exercise Hamel 16.

125 This leverages Maslow's Hierarchy of needs. Given that society generally provides survival and security (levels 1 and 2), Army can provide a sense of belonging, enabling people to strive for esteem and self-actualisation.

126 This leverages Maslow's Hierarchy of needs. Given that society generally provides survival and security (levels 1 and 2), Army can provide a sense of belonging, enabling people to strive for esteem and self-actualisation.

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