

Submission to Productivity Commission

Subject: Response to Interim Report 'Building a skilled and adaptive workforce'

From: Dr Ian Cornford

Date: 15 September, 2025

Dear Productivity Commissioners,

Thank you for the opportunity to respond to your Interim Report 'Building a skilled and adaptable workforce'.

This submission is focused upon the effectiveness of Australian business leaders and managers, and the quality of existing vocational education and training (VET) provision through Competency Based Training (CBT) and Registered Training Organisations (RTOs).

Together these constitute the fundamental, interrelated elements integral to the building of workforce capacity. Their quality is of great importance in building a workforce capable of successfully implementing the newer artificial intelligence (AI) and generative artificial intelligence (GenAI) technologies.

These technologies hold great promise as problem solving tools in a wide range of contexts. However, any failure by business leaders, managers and workers to develop the higher order cognitive skills required for effective usage, may result in adverse outcomes, eg loss of market to more successful competitors, serious problems in production, etc.

Although the Interim Report is focused upon building a skilled and adaptable workforce, which suggests some degree of current inadequacy, the present efficiency of Australian business leaders and managers and quality of current VET training are largely assumed to be unproblematic in moving forward. Unfortunately there is considerable empirical research evidence that challenges these assumptions.

Unless future policy directly addresses the problems of less than effective Australian business leadership and management, the inability of CBT to develop the requisite higher order thinking and problem-solving skills, along with the failures of RTOs in quality assurance, the worthy objectives of building a skilled and adaptive workforce cannot be achieved and a huge amount of taxpayers' money will be wasted. Further, and perhaps more importantly, this will have undesirable flow-on effects with loss of competitiveness internationally that will adversely affect everyone in Australia.

AI: The Catalyst for Major Changes in Work

AI and GenAI are forms of technology with enormous potential to transform work and society. AI has not suddenly emerged from nowhere. Google, that most of us have been using for years, involves many of the principles of AI: AI has simply taken the applications to more sophisticated levels. As such, it is part of the ongoing technological revolution stemming from wider computer applications that commenced in the late 1980s.

The computer revolution essentially changed the nature of skills and knowledge (Zuboff, 1988), requiring development of more sophisticated cognitive skill elements, even with physical performance skills. However, Australian governments, policy makers, and business leaders have been too slow to recognise the changes and challenges, especially the need to increase the quality of education at all levels, from primary to tertiary education. Rapid changes in technology and the need for adaptation, with the concept of half-lives of knowledge integral to understanding the issues, have resulted in widespread recognition of the need for lifelong learning. Despite this, there has been no effective lifelong policy implementation by Australian governments, or more generally improvement in the quality general education that needs to be the foundation for lifelong learning skills (see Cornford, 2009).

Related, and equally important, but almost **totally ignored in the past by Australian governments and policy makers, have been the challenges inherent in the need for educating a much greater proportion of the population than ever before to higher levels and higher quality in a technologically challenging environment**. The current federal government's target for a higher proportion of tertiary educated workers does at least start to acknowledge this need.

It should be noted that it has been the failure to maintain quality standards for the vast majority in primary, secondary, and tertiary education, especially VET and university education, that is the source of many current problems with productivity. The capacity and skills of Australian business leaders, managers and workers have been affected through these failures. For far too long Anglo governments have focused on quantity over quality (see Wolf, 2002). Specific quality issues with key sections of the population directly involved in work and production will be considered below.

AI: The Challenges for Effective Application

AI, particularly GenAI, appears to have considerable potential as a tool in assisting problem solving across many contexts. Effective application of it, however, will necessitate a more highly skilled and knowledgeable general population and workforce, the latter including the full range of workers from executive, higher levels of enterprise management through to lower levels. Business leaders and managers, as much as lower-level workers, will need to be proficient, 'on top of their game' in their respective occupational areas to be capable of meeting the challenges that AI poses.

The effectiveness of AI depends on the quality of the data forming the underpinning knowledge bases, the quality of the algorithms performing search and synthesis functions for questions asked, and, critically, the capacity of users to establish the reliability and validity, and potential, real world effectiveness of the output produced. Very serious challenges to Australian users will revolve around the quality and appropriateness of electronic data from American sources, whence most large, more technologically sophisticated suppliers will be located for the foreseeable future. American President Trump and his government officials' ongoing attacks upon the very nature of knowledge, particularly truth and empirical research findings from universities, eg efficacy of vaccinations, and policies and principles of equitable social organisation, will ensure that American sourced basic content data in many areas will be in conflict with Australian laws and values, quite apart from problems of basic factual inaccuracies.

Effective utilisation of AI, as with all forms of technology, requires a clear understanding of the strengths and weaknesses inherent in the technology itself, and the ability to engage in critical evaluation before, during and after its employment. It also requires ability to implement effective problem-solving and correction where needed at each of these stages. Central to all of this will be, at the lowest level, checking for factual accuracy and then critical assessment of the logic, analysis and adequacy of arguments presented in AI generated problem solution statements. While easy to identify as needed, these cognitive, higher order, critical thinking and problems solving skills can be difficult to develop widely and reliably through formal education, and constitute in effect the 'holy grail' of education, particularly at tertiary levels.

The complexity of what is involved is perhaps most easily understood through Bloom's 1956 Taxonomy of Educational Objectives. A practical summary of learning objectives needed to attain superior cognitive functioning, Bloom lists, from simple to complex in hierarchical order: Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation. (Note: Knowledge is in fact storage in memory of basic facts, eg names for objects.)

All effective learning is based upon the sound foundations of prior learning and Bloom's Taxonomy highlights the hierarchical and cumulative nature explicitly. Attainment of higher order cognitive skills is made hellishly difficult where educational standards are weak at all sector levels through an entire education system. Prior Productivity Commission Reports have highlighted the problems in school education sectors and the need for empirical research to serve as the foundation for improvements.

It should be self-evident that empirical research and scientific method, that have formed the basis for major human advancements since the Renaissance, must serve as the basis for all policy needs analysis, formulation, delivery and subsequent policy adjustments, and subsequent evaluation of effectiveness, given the billions of taxpayers' money involved. The empirical evidence presented in subsequent sections below, concerning the relatively poor quality of Australian business leaders and managers, who play a pivotal role in education and training of workforces and of productivity, and the quality of VET itself, is deeply confronting but cannot be ignored any further by politicians, bureaucrats and policy makers, no matter how embarrassing. The attainment of the potential of GenAI cannot and will not be met if less than effective business practices and inadequate VET training are allowed to persist.

The Quality of Business Leadership and Management in Australia: An Evaluation

Business in Australia provides the framework for economic functioning. It is self-evidently of immense importance, and its influence extends well beyond business activities into education via the curricula in secondary and tertiary education, eg university Job-ready Graduates Package and Work Integrated Learning policies, with this most apparent in VET that trains most adolescents and adults for employment in Australia.

Knight (2012, p.22) has perhaps best summarised the importance of employers in VET: 'Employers are central to the effectiveness of Australia's apprenticeship and trainee system. The quality of learning depends to a great extent on the instruction, experience and supervision provided in the workplace as part of the on-the-job content component of the training. Employers also determine the number of apprentices and trainees who commence, since each contract of training depends on an employer making a paid job available for an apprentice or traineeship.'

To this could be added that employers, through specialist professional organisations, have a huge influence upon the skill objectives stipulated in VET training packages that form the basis for VET qualifications across Australia. They have been instrumental in supporting the introduction and continuance of Competency Based Training (CBT), which has removed underpinning theory to focus almost exclusively upon performance outcomes. In short, their influence upon the content, outcomes and teaching/learning approaches employed is immense, with training outcomes, and ultimately the quality of the Australian workforce, dependent upon their levels of expertise since governments have totally acceded to their wishes.

There are some Australian business enterprises that are certainly of world class. The majority certainly aren't. The consistent findings of major reports into the quality of Australian business leadership and management are that it is not of a high standard.

There have been three major reports over the past 35 years that have identified significant quality problems with Australian business and industry. The first, The Australian Mission on Management Skills Report (1991), spear-headed the reform agenda of the Hawke-Keating governments. Key findings from that report were that Australian business managers and leaders performed much more poorly, and were more poorly educated, compared with overseas counterparts who often had degrees. In many cases it was found that tradespeople on the shop floor possessed higher qualifications than their managers.

The findings of the relative ineffectiveness of Australian business leadership and management were so unsettling that a further committee of inquiry was quickly established to push further. This resulted in The Industry Task Force on Leadership and Management Skills Report (1995), 'Enterprising Nation: Renewing Australia's Managers to Meet the Challenge of the Asia-Pacific Century', known generally as the Karpin Report after the chair. Years later, it finally reported in 1995, having had to commission additional research studies. It reported the same findings as the earlier report, but with recommendations for improvement through upskilling of management via development of enterprise skills, along with the need for development of lifelong learning.

The Study of Australian Leadership Report, 'Leadership at Work: Do Australian leaders have what it takes?', released in 2016 two decades after the Karpin Report, revealed the same problems with Australian business performance and leadership. These problems remain despite the serious attempts to up-skill business leadership and management through degree qualifications over the previous 25 years.

The World Competitiveness Reports from the World Economic Forum through the 1990s and beyond consistently echoed these same findings. That none of the major problems with management have been resolved is reflected in much more recent reports. The most recent World Competitiveness Report for 2024 (see Keane & Dyer, 2024), echoes all the others, with Australian business leaders and managers still regarded as substandard, with Keane and Dyer pointing out that the damning judgements reflected those of their Australian management peers.

Beyond these formal evaluations of the effectiveness of Australian leaders, there are a range of other indicators that cast doubt on their capacity to manage their enterprises in accordance with best practices and improve productivity more generally, and implement successful change management processes to meet the challenges inherent in AI.

The Hayne Royal Commission (2017), even with deliberately limited time to report and terms of reference, found major governance problems in the Australian banking sector. Since then, ongoing reports on money laundering and other related scandals plague the high-profile banking industry that supposedly attracts some of the most talented. More recently (July 2024) the Senate Inquiry into ASIC highlighted the relatively high levels of criminal behaviour in the business and the financial sectors, and the lack of stringent regulation and policing. Scandals over underpayment of staff by large and small enterprises are regularly reported in the print media and range from the university sector to the supermarket giants. The far too frequent inappropriate treatment and exploitation of workers on special work visas from neighbouring Pacific countries (Pacific Australia Labour Mobility Scheme - PALM) raise legal and moral issues.

A key indicator of quality leadership and successful business performance is investment in research and development, including employee development. Australian companies and governments fall well short on these measures by international standards and have done so for an exceedingly long time, right back to the early 1990s. GERD for Australia in the 2024-25 period was 1.68% compared with the OECD average of 2.7% (Australian Parliamentary Library, R&D and innovation in Australia, 2024 update, 12 February 2025).

To put all this into a proper historical perspective, business attitudes and practices are still a major problem after 35 years of intermittent prodding by (chiefly Labor) federal governments. The leaders may have acquired formal degrees but there is little evidence that practical leadership and management capacity has improved, as judged either by investment in development and research, or performance more generally.

There are lessons to be learned from the UK experience for Australian policy makers. The UK government worked more persistently with business to improve business leadership over the decade of the 1990s, compared to Australia. But by 2002, Alison Wolf (p.99), in assessing the problems encountered in the UK in trying to upskill businesses, and improve the quality of training for the future in a world of modern technologies, stated: 'Business might therefore seem to be the problem, not part of the solution.' Wolf later also identified as a major problem the complacency of business groups that were happy to just plod along and survive, not at all concerned about more efficient operational practices and national economic performance.

Given their poor track record, one of the great mysteries of VET policy is why the Hawke-Keating governments, with clear evidence confronting them of the ineffectiveness of Australian businesses in managing their own affairs, would then allow them to dictate VET policy. The answer appears to lie in intoxication with the neoliberal ideology, and especially the supposed 'need' for virtually unfettered business action. There may well have been the belief that VET costs were being passed from the taxpayer to business, the chief beneficiaries of the VET system, but the strong evidence of resistance by business, to engage in quality training and bear related costs, should have soon shattered any such illusions.

Business wanted short, cheap (for them) qualifications, resulting in the implementation of CBT. Circa 1992 when faced with a small levy on those not engaging in training, business claimed that only they could deliver the training required. But when it came to company investment in training, they promptly deserted the field for external provision by Registered Training Organisations (RTOs) and subsidies by the government. RTOs have been the bane of any government seriously trying to ensure training quality ever since. And then of course there is the really intriguing question of why, if CBT was so good, that it has not been seriously applied to business leader and management training and widely in Human Resource Management assessments.

The Quality of VET Skills Inculcated Under the CBT System

There is a very curious absence of any substantial assessment of the effectiveness of the so-called VET revolution (beginning circa 1992) and especially of CBT policy, the central mechanism for driving change. Given the great importance attached to CBT, that was supposed to revolutionise VET and solve any number of training and economic problems of the early 1990s, it would be thought that there would be a wish to identify and celebrate the successes, but there is nothing of real substance. What also has never been released is the total cost to taxpayers, resulting from the massive change to the VET systems with the introduction of CBT and criterion referenced assessment from the extant normative referenced approach. And this is despite the obsession with costs in that period. Given no major reports into the effectiveness of CBT after major policy change, it is necessary to turn to other substantial indicators to evaluate CBT policy effectiveness.

One key business sector and a major contributor to the economy is building construction. It is currently an area of immense public interest and importance on account of a major housing crisis. Productivity in the area is now recognised as well below par. The CEO of the Master Builders Australia very recently noted that completion times for 'detached houses have blown out from between six and nine months to between 12 months and 15 months, while high rise apartments now take four years, up from three.' (Thomson, 6-7 September 2025, p17) This is occurring in an era where modular construction and off-site assembly of structural components should result in shorter completion times if workers are skilled. More disturbing, however, is the quality issue where there are clear indicators of poor quality products, skill standards, quality assurance, and regulation that all connect ultimately to ineffective training and certification.

There have been complaints about the numbers and seriousness of defects evident in dwelling construction extending back over not just many years, but decades now, and across all states. The reality is that some 85% of apartments constructed since 2000 have building defects (Castle, 2016), with 39% of NSW new apartment buildings in 2021 being found to have serious defects (Chandler, 2021, p33). These problems persist to the present, and it should be noted that the starting date for reporting the high rate of serious building defects coincides with graduation of numbers of tradespeople through the new CBT system.

The failure to ensure proper inspection and certification processes unhampered by corruption and self-interest is also involved. However, the defects exist because of inferior performance by workers and site managers who did not have the appropriate skills at high enough standards to ensure the initial work is of sound quality and fit for purpose. The root causes of the problems are ineffective skill training, poor standards and ineffective regulation, including rigorous testing and certification to maintain standards in a vital area.

As an indicator of the extent of poor-quality training, the NSW Building Commissioner, David Chandler, even had to shut down a commercial building site in Newcastle because of safety concerns. To unpack the meaning of this further, it indicates that the construction workers on this site were so deficient in basic skills and knowledge they

failed to ensure safety for themselves in erection of scaffolding, etc. This is deeply disturbing and indicative of the depths of poor-quality training. Every training package, the basis for VET CBT certification, is supposed to have mandatory elements in occupational health and safety, with this trade area lending itself to a CBT approach. While this is only one industrial area and one example, the level of Australian industrial accidents is far too high, a general indicator of inadequate training in basic safety measures for trainees, and their employers who have never been required to engaged in obligatory training programs to ensure workplace safety.

The source of CBT, despite contrary claims by Guthrie (2009), is the US military where it was developed during WW2 to deal with mass mobilisation training. It has its antecedents in earlier, time and motion, Taylorist, 'scientific efficiency' studies.

The ultimate test of training efficacy is real life performance over multiple occasions with the armed forces of the US and Israel providing a stringent, objective comparison. The American military's record in major conflicts indicates that it has been woeful over a very long period. This is since WW2, when the Russians then did an enormous amount of the heavy lifting in conquering Germany by taking Berlin, and American power was arguably at its peak. The Korean War was at best a draw, with the world is dealing with that to this very day via the rogue state of North Korea. After that there was the debacle of Vietnam, the mess created in Iraq, and the ultimate recent humiliation in Afghanistan. Given this record of failure, the adoption of CBT as the basis for training in Australia is hugely questionable, if success through quality performance is the desired outcome.

In contrast with poor record of the American military forces, the Israeli Defence Forces are some of the most lethal and successful in the history of modern warfare. While motivation is an important factor underlying this success, their approaches to training are completely different. In contrast with American training, that is satisfied with attainment of a competent level of performance, Israeli military personnel are trained with an expectation of continuous improvement through aspiration to gain the professional, knowledge, skills and expertise to fulfill their position. This approach is based very clearly on skill learning and stages in the development of expertise (see Appendix).

Major Problems Stemming Directly From CBT

CBT was adopted by the Australian federal and state governments in 1990 to revolutionise the VET system and achieve nation-wide reform to improve productivity and increase skill levels. CBT, in theory, involves clear, precise statements of observable performance outcomes with set standards enabling easy, accurate assessment. It has had a great attraction for politicians, bureaucrats, businesspeople and policy makers who know little or nothing about the complexities and practicalities of skill learning and teaching in multiple specialist areas, assessment and certification, or standards and quality assurance, but are seduced by promised time and cost savings.

Employers are exceptionally important in VET training on account of them being the creators of the jobs and providing on the job training. But the botched implementation of CBT and poor communications alienated many employers and made them vulnerable to shyster RTO organisations essential for training, assessment and certification of VET outcomes.

Large business organisations fared better than small or medium sized ones, because they had better lines of communication to official government sources, and many had human resource development departments engaged in training. Small and medium businesses, that make up about 99% of companies and amount for approximately 50% of apprentice places, were left totally confused about their obligations to their trainees and apprentices. Quick profits for persuasive but fraudulent training companies occurred swiftly, with ill-informed students and employers usually the victims after being thrown into the purported education 'market'. Loupis (2018) provides the best account of the many substandard, scandalous practices that flowed inevitably in a system that had few effective quality checks.

Driven by cost and time reductions, CBT, as practised in Australia, fragments knowledge by only training in the elements that employers want, and does not build to a higher level understanding of the many elements in a trade or professional area and their interconnection. This resulted from the major shift from lengthy, more complete apprenticeship training. In turn, traineeships were a further watering down of apprenticeships, with even lesser coverage of comprehensive skill and knowledge requirements. Because there is little or no interest in underpinning theory, but only in identified performance, the result is largely 'monkey see - monkey do' learning. It is missing the underpinning, broader theory and conceptual elements necessary for superior skill development and effective problem solving, as well as development of higher level cognitive skills that will be essential for effective employment of AI.

The dumping down of many trade and professional qualifications to traineeship status and Certificate I, II, and III levels has destroyed much of the professional pride that permeated the specialist trades cultures. It made enrolment in university study, for which many students are not ideally suited, a much more attractive proposition

given that involves higher level qualifications, status and earnings. This deskilling of many trades and professions, and associated loss of status and wages in an earlier period, provide a partial explanation of the cause of present skill shortages in key trade and professional areas.

A major underlying problem is there is no curriculum as such in Australian CBT. Curriculum is the professionally developed, formal basis for teaching recognised as vital for education at primary, secondary and university levels. Good examples of curriculum outline the aims and objectives of the subject and course, the content, and suggestions for teaching and assessment. Proper curriculum documents help ensure consistency in content coverage, teaching methods and assessment across multiple settings, and thus establish the basis for consistent standards and quality assurance.

Training packages have been developed to effectively replace curriculum in CBT, although they do not have the characteristics of effective curriculum. What are required in a training package are: units of competence which specify standards of performance in the workplace; assessment requirements; qualifications aligned to the Australian Qualification Framework (AQF); and credit arrangements. In the early days of implementation, trainers refused to train unless there was a developed package to provide guidance. Packages however are not necessarily standard within the one trade or professional area, with innovation encouraged to meet employer needs. The absence of effective curriculum alone helps explain why teachers continued to experience problems with implementation of CBT more than a decade after its introduction for all nationally recognised VET qualifications (Guthrie, 2009, p.27).

Erica Smith, by her own admission is a leading VET academic and supporter of CBT, and government-preferred researcher and consultant for over 25 years. Prompted by appearance as an expert witness in a CBT related court case, in 2019 she presented a paper at a national Australian Vocational Education and Training Research Association (AVETRA) conference and admitted that the VET system lacked any mechanism to ensure consistency of teaching or skill standards. This was because it was designed to have nothing more than skill standards and had no curriculum (Smith, 2019).

These problems, moreover, Smith acknowledged, were occasioned by having shut VET teachers, and experts in VET and learning, out of all policy developments and ignoring their feedback from the introduction of CBT and in subsequent decades. Australian CBT's inherent characteristics, Smith now argued, are such as to encourage roting and fraud, of which more is detailed below.

There are a number interesting aspects to this set of revelations from formerly one of CBT's most vocal supporters and cheer leaders. These fundamental and systemic problems, now clearly acknowledged by Smith nearly thirty years after the introduction of CBT, were known and consistently raised by seriously concerned academic VET specialists and VET practitioners in journals, VET conference papers, Senate inquiries, etc, from the commencement of CBT implementation in the early 1990s. But such was the hubris, blind adherence to neoliberal ideology, and certainty by Australian governments, bureaucrats and the business sector that they alone knew what was required, that trade specialist VET practitioners with directly relevant, real-world experience in teaching, accreditation and trade practices, and the VET academic experts who worked with them, were shut out.

Substantial guidance for VET reform and policy making in 1990 existed in the form of Fitts' Skill Learning Theory, involving specific stages in skill learning, Dreyfus and Dreyfus' Stages in the Development of Expertise, and Bandura's Social Learning Theory, that focused upon how we learn from models (see Appendix below). There was absolutely no empirical evidence from comparative studies that supported the policy makers' enthusiasm for chiefly workplace learning or belief that it was in any way superior to the existing mix of formal training and workplace practice. There is certainly evidence that empirical research that challenged CBT orthodoxies and wishful thinking with empirical evidence was totally ignored (see Cornford 2000, Mills & Cornford, 2002, both publications made available to a senate inquiry into quality of VET, then Guthrie, 2009). Taken together, all this would appear to lead to the conclusion that what politicians, employers, bureaucrats and policy makers really wanted was to reduce time spent in training, deskill to lower levels and thus reduce costs to employers, regardless of the longer terms costs to Australian society of de-skilling and damage to professional and trade standards.

In real world training, the problems inherent in CBT, particularly lack of proper curriculum and quality assurance processes, were then magnified through package delivery by RTOs that were largely established as profit-driven enterprises.

RTOs and Delivery of CBT: Persistent Quality Problems

Nationally recognised CBT programs are delivered, assessed and credentialed through RTOs, which may be TAFE based but are more likely to be private enterprise, profit driven companies.

There has been substantial, consistent evidence of problems associated with RTOs and the quality of training provided since their introduction for delivery of CBT. The 2000 and 2003 Senate inquiries into VET were largely focused upon poor quality of training outcomes, as was a Business Council of Australia Report in 2004. In 2005, such was the level of extreme dissatisfaction from all stake holders – training organisations, employers, VET educators, students, etc - John Howard was forced to disband the Australian National Training Authority (ANTA). This state-federal body had been established for development and implementation of VET policy and particularly CBT. After some minor fiddling with the CBT assessment processes around 2005, but with essential ideology unchanged, this system has continued to the present day again despite awareness of consistent, ongoing quality of training and credentialing problems.

Indicative of the extent of problems, when quality control of RTOs was a major, national crisis in 2015, a press release by Daniel Andrews, Premier of Victoria, announced that more than 10,000 students had had their qualifications cancelled and their funding eligibility restored, for such reasons as the qualifications were gained from non-existent courses. Such is the laxity of accountability and laws governing companies, however, poor providers can phoenix and resurface with another company registration once the period of greater scrutiny by state authorities is relaxed, or they could reappear in another state.

Gillard's VET fee voucher system, and the federal government's assumption of debts for diploma qualifications circa 2012, unleashed RTO corruption on a scale not previously seen. The Australian National Audit Office (ANAO) in 2016 found that the scandals cost the Australian taxpayer \$2.2 billion, although some other estimates go much higher to well over \$5.5 billion. Court cases attempting to recoup fraudulently obtained fees persisted for nearly a decade after the events. Gillard's mess, and other well known, earlier problems with fraudulent RTOs, should have indicated to any sensible minister or bureaucrat that proper regulation and management of the RTO system, central to standards and credentialing of VET training, was highly problematic if not impossible to achieve.

The problems and scandals involving corrupt RTOs and substandard or non-existent training persist right to very this day, and are present in areas vital to the current federal government's agenda. Ferguson and Gillett (ABC 7/7/2025) continue to reveal major scandals involving the childcare sector, with this latest yet again linked to efforts to game the system for permanent residency and work in Australia. Indicative of the extent and seriousness of the problems, they note: 'Last year the national vocational regulator ASQA revoked more than 24,000 certificates, including nearly 2,000 in childcare, after finding four private colleges had issued fraudulent paperwork.'

The requirements for teaching and assessing CBT packages is only a Certificate IV in Training and Assessment. This replaced the degree qualification required for TAFE teacher permanency in NSW, the best practices state, with at least five years industrial experience, and frequently trade tests to assess proficiency also required. There was much substandard training involved in this Cert IV qualification in the earlier period when the qualification could be attained through a weekend and advanced standing (see Loupis, 2018). Despite much effort to tighten the standards and requirements, the common problem remains of training in specialty areas by someone with a Cert IV qualification, but without extensive practical industrial experience in the specialty. This creates obvious problems with the quality of skills taught, and validity and reliability of assessment. What is particularly frustrating about these deliberately lowered qualifications for teaching and assessment, is that in practical terms the quality of the teacher/assessor is the single most important element in quality assurance and control processes. Guthrie (2009) recognised that the Cert IV was inadequate as a basic qualification, but nothing has been done since to rectify this problem.

The duration, persistence, and extent of all these scandals pose serious questions about the genuineness of intent and capability of governments to deal with them in the context of concerns for enhanced productivity and economic performance. The current federal government has worked hard to restore TAFE systems because they offer the best way of establishing and maintaining standards, and through this quality control. But the limited track record of success by ASQA indicates that a complete reversion to state TAFE provision is necessary to overcome the inherent problems, with business corruption undermining the RTO system, and apparently the ASQA having little ability to decisively curtail this. A complete change away from CBT, with its anti-intellectual biases, and from the RTO system, incapable of ensuring quality teaching and quality control with qualifications produced, offers the only hope of establishing a quality VET system capable of meeting the higher order cognitive skills necessary for use of AI. Further, all of this is also necessary for establishing an effective basis for much desired lifelong learning capabilities, and a skilled and adaptable workforce.

Where Do We Stand At Present In Terms Of Productivity Challenges And The Introduction of AI: A Summary

1 Australia faces a productivity problem while also facing challenges inherent in the inevitable introduction of the new AI technologies that require higher order cognitive and problem-solving skills.

2 The depending to the world trade order by Trump and his government are likely to add as yet unknown challenges to the productivity problems as well as effective management and economic functioning of enterprises. As a starter in problem identification, American sourced AI resources that are likely to be widely available, because of Trump's influence are likely to contain hugely problematic facts and solutions seriously in conflict with Australian laws and values.

3 The dumbing down of VET qualifications, and removal of substantial underpinning theory through CBT, have resulted in a VET training system incapable of inculcating the higher order cognitive and problem-solving skills required for effective use of AI. A concomitant problem is the large numbers of trades and professional workers whose inadequate, past CBT training will necessitate a massive in-service/post training effort to up-skill them to manage AI applications.

4 The VET systems in Australia are inherently flawed through CBT, which has no proper curriculum underpinnings to ensure consistent standards in teaching and assessment, while the RTOs essential for teaching, assessment and certification are consistently plagued by rotting and other scandals, with the apparent inability of the regulatory body ASQA to resolve compliance and quality issues.

5 Australian business leaders and managers, essential to the proper functioning of the VET systems and workplace training, have been consistently rated as below par in investigations into their quality and effectiveness over 35 years. Consequently, there are serious questions about their ability to implement GenAI effectively for their own use and make sound decisions about the change management processes necessary for the introduction of AI to their enterprises.

6 From the 1950s, when employers took on apprentices and workers largely at their own cost to further their businesses, we have moved to major taxpayer funded subsidies for businesses for training, for which they are the major beneficiaries. To quote Knight (2012, p.18):

'As far as NCVER can ascertain, Australia is the only country to pay incentives on a large scale to employers of apprentices and trainees. Furthermore, many employers are eligible for payroll tax exemptions and other state government subsidies. The economic rationale for the incentives is that they will offset wage and other costs and encourage employers to make more training places available. However, there is considerable evidence to challenge this assumption...'

7 Serious skill shortages, and complaints by employers about this persist, along with complaints about adequacy and standards of training. These problems could be easily remedied by medium and large enterprises taking on more apprentices and trainees and ensuring effective training to meet the cultural needs of their enterprises. There is preference not to do this but leave it to other employers to do so or rely on immigration.

8 Only 50% of apprentices complete their training with many quitting because of workplace conflicts and poor training, with low levels of pay in an era of inflation contributing also to this. There are slightly higher completion rates by trainees, but the shorter courses are probably the reason for this. There are no employer experience or qualification requirements to take on an apprentice or trainee, nor any real checks to ensure that apprentices and trainees receive proper training on the job and are not just cheap, government subsidised labour.

The summary of problems above reveals that the present situation is untenable: wholesale changes to VET policies and the education of Australian workers and business leaders and managers are required.

A comparison of statements for developing economic policy and around productivity problems in the late 1980s, with the present ones, is illuminating. There were exactly the same calls for major improvements in skills and productivity. But then there was a more realistic assessment of the ineffectiveness of Australian business and industry and an explicit recognition that the sector needed to change. In each case the need for changes in skills reflect disruption to more traditional approaches by computer technology applications.

That most major problems have not changed in over more than 35 years points to ineffective government policy, and the need to address the real issues rather than politically easier ones. There will be massive challenges for politicians and bureaucrats in unscrambling the mess, re-instituting effective training and credentialing, and above all having employers reshoulder their central role in employment and workplace training that they once so vociferously demanded.

Some Important Education Issues Around 'Building a skilled and adaptable Workforce'

To this point in this submission, I have worked within the policy framework adopted by the Productivity Commission to critically evaluate existing VET policies against the challenges and needs inherent in widescale adoption of the new GenAI technology. However, I think that is a risk that some of the same mistakes that were made with changes to VET in the early 1990s are being repeated.

As important as economic theory may be in offering policy guidance, it has nothing to say about education and learning per se, or to help understanding how skills are developed or how problem solving and adaptive behaviour are learned. Changes to behaviour, higher level skill functioning, and ultimately enhanced productivity, are all brought about by quality education and learning. Further, regarding productivity, ultimately you cannot get more out than you put in by way of foundational general and later specialist education.

It is important to recognise that it is not possible to solve what are essentially educational problems through policy grounded in economic theory, especially not neoliberalism. This was tried with the massive changes to VET provision in the early 1990s and has been a serious failure. The summaries of practical theories related to skill learning in the Appendix reveal that the policies and frameworks that were adopted then are diametrically opposed to higher level skill development and truly expert professional performance.

The brief summaries in the Appendix provide insights into what is needed in terms of policy encouraging skilling, but there is need to briefly consider what is involved in being adaptive in educational terms. This involves identification of problems, and the ability to learn to modify existing past learning as well as recognise knowledge gaps to move ahead. In this, the learning base developed through extensive prior schooling becomes all important, as do problem identification and problem-solving abilities.

Lifelong learning self-evidently is central to the adaption processes. A major problem is the lack of a proper lifelong learning policy in Australia and the lower than optimal level of Australian school education performance as measured by key international comparative indices. These results have not improved significantly over very many years. Pages 28-36 in my article evaluating lifelong learning policy in Australia (Cornford, 2009) provide a depressingly accurate picture of current educational problems through the different sectors, even though written 17 years ago.

My arguments in that 2009 article about the need to specifically teach 'learning to learn' skills to enable effective learning through the lifespan seemingly have seemingly been ignored. This is despite the fact that the outcomes of significantly enhanced learning performance at the HSC, over a number of years after introduction of such a program to a Sydney high school, was reported to a Productivity Commission inquiry (2023, Cornford Submission 150, 21 October, 2022, pp.8-9).

In terms of adaptation, once a substantial foundation of knowledge has been established what also need to be taught, in a more focused ways than is currently the case, are problem-solving skills and how to achieve better transfer of learning. Transfer of learning, that involves using information learned in one situation to other situations, is inevitably involved in problem solving, and more recent research (eg Jackson, Fleming and Rowe, 2019) indicates that greater success can be attained by paying more attention to securing this in higher education programs, rather than assuming that it happens automatically. What perhaps is of overarching importance is ensuring that both teachers and students are made consciously aware of the specific learning issues involved, and the challenges in achieving outcomes. Teachers and trainers also of course need to be trained in ways to ensure success.

Lifelong learning, transfer and problem solving all occur in workplaces where the workplace cultures are important in facilitating or hindering their development (see Yelon's MASS model for transfer in Cornford, 2002, pp.89-92, and Wurzburg's model for lifelong learning in Cornford, 2009, pp.23-4). Business leaders have a very important role to play in the establishment of workplace cultures, and if they want to achieve superior productivity outcomes they need to know about these aspects of learning and performance, and work specifically to achieve them.

Presently the prevalence of the RTOs in training mean business leaders and managers are largely distanced from training initiatives. There is also the attitudinal problem inculcated by capitalism, and especially its supercharged form, neoliberalism, that sees profit making as important beyond all else, without any consideration of national, ie whole of society, good. This narrowness of focus needs to be broadened through government encouragement to see the important role played in training by employers, with this linking back through many levels of the education system. In doing this, governments also need to provide some of the tools to help achieve more skilled management through the whole of the enterprise. Information on adoption of GenAI would provide the opportunity to do this. Only then, through improvement of both management and workers skills, will productivity itself be improved.

Some Suggested Approaches to Solving the Problems

The advent of GenAI provides the opportunity to engage in a large-scale in-service, upskilling program for Australian business leaders and managers with the federal government providing information compiled by experts and researchers. This can be designed to assist with the personal use of GenAI and make suggestions for best practice change management to implement the technology in their organisations.

This should serve as the good-will connection point for serious discussion about the failures of the neoliberal experiment and the important role of business leaders and managers in solving part of the training problems by taking on more trainees and apprentices. This is to their own benefit, but will require a major adjustment in thinking. The history of the mistakes and missteps in the CBT and RTO implementation processes points to neither governments nor business being blameless, and the presentation of this history should clear the way for some really honest discussion about increasing VET training quality and the necessary upskilling for all workers - from the CEO to the average worker - to adapt to Gen AI.

There are also good reasons why higher level management should be involved in some oversight of training processes. This enables greater contact and understanding of the current operations within the organisation. The research literature suggests more effective management overall from engagement in these processes. The need for greater CEO and manager involvement in developing workplace cultures that facilitate the almost universally desired problem solving skills, and more creativity through transfer, along with lifelong learning, that undergird these desired skills, is necessary too. The rationale for this is set out in the previous section. All managers need to be made aware of what is involved in problem solving and adaptation so there is depth of understanding to guide culture change in the workplace, with this particularly pertinent with the introduction of GenAI.

The Interim Report invites suggestions on ways to assist small and medium enterprises (SMEs) improve training outcomes. Fitts' Skill Learning Theory and the Dreyfus and Dreyfus Stages in the Development of Expertise (see Appendix) provide basic but essential information on the stages that individuals go through in skill learning and developing expertise. These theories expressed in appropriate ways could constitute an important set of guidelines to assist in the processes of actual training, and to help understand how individuals learn through practice and feedback. This information could profitably be provided to large organisations also in conjunction with more information about problem solving, etc.

More importantly, however, these theories on skill learning and the development of expertise need to serve as basis for a major overhaul of VET CBT courses and RTOs. CBT courses cannot provide the cognitive higher order thinking and problem-solving skills required for successful implementation of AI and GenAI. The RTOs have proven to be too prone to fraud and incapable of maintaining quality assurance and control, hence they must be replaced by TAFE colleges that had a proven track record before they were largely dismantled.

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Appendix

Fitts' Skill Learning Theory, Stages in the Development of Expertise and Bandura's Social/Social-Cognitive Theory: Brief Summaries

Programs, curriculum in VET and other education sectors, and administrative and regulatory structures need to be aligned with credible theories that provide guidance in quality skill development. Two such theories of immense importance to VET and the university sector are Fitts' Skill Learning Theory and the Dreyfus and Dreyfus' Stages in the Development of Expertise. Also of great importance is understanding of Bandura's Social Learning Theory which emphasises the importance of models - and their quality - with a very considerable amount of human learning occurring directly from models.

I have not provided extensive referencing in this following section as the references are to be found in the following two chapters written by me. These text chapters were designed for the education and training of teachers, and other professionals with a need for this knowledge. One chapter is entitled Skill Learning and The Development of Expertise (Cornford, 2008a), and the other Social Learning (Cornford, 2008b). They emerged from my long

professional involvement in the teaching of vocational educators in TAFE, the military forces and business and industry. Although originally published some years ago now, the information is still current. The failure to carry out substantive, long-term research studies examining cognitive changes in stages in the development of expertise has resulted in minimal new developments in the field. These chapters have been republished by two different international publishers since initial Australian publication and are still currently available online.

Fitts' Skill learning theory emerged chiefly from many observations by educators and trainers of learning in intensive skill learning courses during and after WW2. These involved various specialist areas, and both physical and cognitive skills. In this theory there are three distinct, identifiable stages that in practice may overlap when individuals are learning complex skills and skills in combination.

The first is the Cognitive Stage. In this stage individuals gain some idea of the overall nature of the skill and how it is performed. They then are taught/gain awareness of the distinct parts or elements, the logical sequencing or connection between the parts, and other possibly important factors such as the time elements, eg time required for glue to set before the next step, along with basic notions of good and bad performance in skill production.

The second stage is the Practice-Fixation Stage. In this stage, which is usually extensive, through practice and all-important feedback the individual refines the skill to produce a quality performance. Although Fitts was not conversant with modern cognitive psychology, what happens is that a schema or mental model is developed and further refined in long term memory through this practice-feedback process, with the practice necessary to embed every part and the whole in long-term memory. This schema or mental model serves to guide performance and assist in error detection at the next stage.

The third stage is the Autonomous Stage. Fitts, it should be noted, chose the descriptor of 'autonomous' over 'automatic', as it suggests more obviously agency, control and monitoring by the individual. At this stage the skill performance flows effortlessly, without the need for conscious monitoring. This frees the conscious, limited capacity, short-term working memory to concentrate on other things, such as anticipating problems. What also occurs at this stage is self-regulation, where subconscious awareness allows very quick error detection where there is deviation from the schema or mental model. This stage explains how most people can chew gum, walk and carry on a conversation, with three distinct skills being performed at the same time.

All individual skills are learned through these three stages. Where an already learned skill is similar to a new one, this may assist acquisition of the newer skill more quickly as some elements already exist in memory and the skill repertoire.

Dreyfus and Dreyfus are responsible for identifying Stages in the Development of Expertise. These stages are where the individual gradually develops more complex understanding and effective professional performance, as clusters of skills are learned, integrated and improved through practice and work experience. The stages are Novice, Advanced Beginner, Competent (different in meaning from competence as in CBT), Proficient and Expert. Each stage has different characteristics, and it is only at the last two that problem solving and creative development become most clearly evident.

These stages have important implications for lesson/session planning to pitch content and explanation at the right level of understanding and performance. They have implications for coaching and providing feedback at more experienced levels, and also for tempering employer expectations to reasonable levels.

Albert Bandura's Social Learning or Social/Cognitive Theory is based on extensive empirical research. His Observational Learning Model explains how individuals learn through observing a model, make selections of what they consider useful to them, and then practise and consolidate the skills and all aspects of the behaviour or cognition, language use, unwritten social codes of practice, etc. into long term memory so it can be easily reproduced. It illuminates how important model characteristic can be in facilitating learning, and how important, unwritten social codes of behaviour are learned. Bandura's change of name for the theory probably resulted in the theory not being as well-known as it should be, as it is a very sophisticated theory with serious implications for teaching and learning across all education sectors.

Bandura's theory links in with Fitts' in that it highlights the importance of the quality of the model who is the source of learning. It also has seriously important implications for upskilling and improving productivity as it emphasises both the importance of exposure to superior skill models, and the learning processes in acquiring and consolidating skills through practice. Without the exposure to superior models, it is difficult for individuals to conceptualise, let alone move towards achieving superior performance levels, ie higher skill standards.

