



Lead.Connect.

Perceptions and Status of VET

Embedding Building and Engineering VET
Curriculum in Schools – Taking STEM
Apprenticeships “Back to the Future”.

Chris Lehmann

7th February 2023



Introduction

Master Electricians Australia (MEA) is the trade association representing electrical contractors recognised by industry, government and the community as the electrical industry's leading business partner, knowledge source and advocate. Our website is www.masterelectricians.com.au

There is a well-documented shortage of priority skills with the future demand being classified as strong or moderate¹, this is especially true in the STEM trades associated with the Engineering and Construction Industries. These sectors are large employers and are also critical to the digitisation and transformation of the economy in an energy transition future.

The skills shortage is exacerbated by historically falling commencement rates for priority trades, at the same time as declining completions, with approximately 50% of commencing apprentices failing to complete.

During the recent Covid19 pandemic, the government invested heavily in generous wage subsidies for trainees, which resulted in a commencement boom, this was very welcome. However, with the low completion rates it effectively means that 50% of the spend is wasted, and now that the subsidies are being scaled back history would indicate that commencements will drop back to pre-Covid levels, exacerbating the current and projected skills shortage.

In terms of improving the spend of precious taxpayer dollars on VET, there are employment practices and models that markedly increase completions, this paper will examine these and make recommendations based on the most effective solutions.

In this paper we will discuss the causes, the existing landscape including historical context, and propose some options based on the consideration of these factors.

The Current Challenges

Removal of COVID Government Wage Subsidies to Employers for Apprentices.

The Boosting Apprenticeship Commencement (BAC)² initiative of the Morrison Government during the Covid crisis, boosted apprenticeship commencements to the highest levels in almost 20 years. This was achieved by offering a 50% wage subsidy in the first year of the apprenticeship which reduced to 10% in the second year of the apprenticeship and 5% in third year. This move recognised the value of the training spaces provided by an employer during a period of enforced lower productivity, weakening the nexus between the lower productivity

¹ <https://www.nationalskillscommission.gov.au/topics/skills-priority-list>

² <https://www.dese.gov.au/boosting-apprenticeship-commencements>

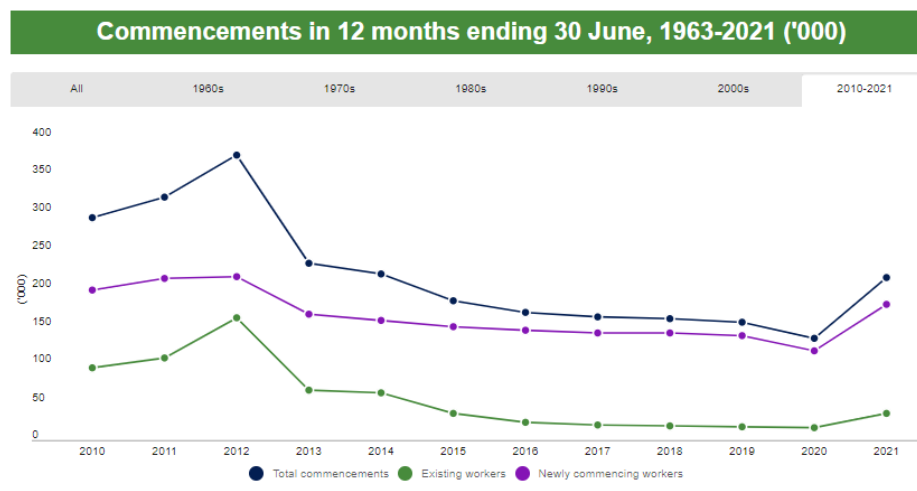
and the risk of taking on an unproductive employee, leading to surge in apprenticeship commencements.

This policy approach is congruent with the taxpayer subsidies of tertiary student places, recognising the investment in the personal and intellectual capital of a student with the promise of a payback in productivity and tax paid by the citizen during their productive life.

MEA believe that this policy was successful because of three reasons.

Firstly, it adequately recognises the societal value of the training spaces provided by employers in the experiential learning environment, in the same way that tertiary qualifications are. Secondly, it supports SME employers who carry the greatest burden in training new apprentices and ensuring the availability of needed skills to the economy. Thirdly, this is the only approach in almost 20 years that has reversed the decline in apprenticeships and traineeships.

MEA is concerned that the dramatic reduction of these subsidies will create a severe downturn in commencements similar to 2012³ when the “First Start Program” was discontinued, and changes to “completion Incentives” were announced. This was followed by a wage case in 2013 that increased apprentice wages by \$100/week, which cemented the trend.⁴



Source NCVER ⁵

³ <https://www.voced.edu.au/vet-knowledge-bank-timeline-australian-vet-policy-initiatives>

⁴ <https://www.actu.org.au/actu-media/archives/2013/apprentice-pay-rise-a-win-for-skills-and-the-economy>

⁵ <https://www.ncver.edu.au/research-and-statistics/infographics/historical-time-series-of-apprenticeships-and-traineeships-in-australia-infographic-1963-to-2021>

Low Completion Rates

According to data from the National Centre for Vocational Education Research (NCVER) ⁶

Top 4 reasons for not finishing an apprenticeship (2008).

1. Did not get on with boss or other people at work
2. Did not like the type of work
3. Other reasons
4. Personal reasons

In 33% of cases, the employment experience is the problem. It isn't the pay or training. When you add another total of 32% associated with reasons such as 'didn't like the job', 'left to do another trade', around 65% of the non-completions can be associated with employment related reasons. If we continue to use the 'direct employment' model in which an apprentice is indentured to a single employer, this may continue. A concerning statistic is that one third of apprentices seemed to choose the wrong apprenticeship.

On 2006 figures 48% apprentices cancel, cumulatively, 30% of cancellations occur within the first year, 13% during 2nd year and a further 5% by the end of the third year.

Although around 75% of non-completers were employed 9 months after they left the apprenticeship, only 25% worked in the field in which they trained.

Committed apprentices (those who rated their likelihood of completing at eight out of ten or more) generally had a favourable workplace experience, and

- had a very good boss
- were treated fairly
- had a social network at work
- were trusted and given responsibility

Best practice employers believed that recruiting appropriate apprentices to begin with was a prime factor behind their high retention rates. They preferred to select people who had done work experience with them, undertaken a prevocational program, or were currently working as a trade assistant.

A significant feature of best practice firms was mentoring, buddy systems and other support mechanisms (Pastoral Care) (Mitchell & Dobbs 2008). In MEA own experience during the 2013 – 2015 Labour Government Apprentice Mentoring and Advising program we saw a retention rate of 70.5% across 569 apprentices in just over a 2-year period, this was a significant increase

⁶ <https://cica.org.au/wp-content/uploads/Understanding-non-completion-2706.pdf>

in retention over the industry average. As noted in the recently published paper, *The GTO Advantage- A value proposition report for Group Training organisations (AAEN, May 2022)*⁷ –

“As well as managing learning outcomes and employment arrangements with Host employers, mentors are managing a broad range of other complex problems beyond the workplace and learning environment which impact directly on working and learning. While the system focus is on training, the reality is that within the GTO context these issues have to be managed and form a significant part of the work of field officers and mentors. These issues can potentially be ignored in policy and practice if the focus is purely on learning. However, to do so, risks ignoring issues that influence the capacity of apprentices and trainees to learn and engage with the work environment. Again, the foundational importance of psychosocial mentoring in achieving the strategic objectives of the apprenticeship and traineeship system appears highly relevant.”

Therefore, we believe that a combination of screening and aptitude testing, wrap around Mentoring / Pastoral Care, where a combined VET in Schools and GTO approach is used provides the best solutions for meaningful improvement in addressing occupational skills shortages and improving completion rates in Australia.

School Curriculum

Insufficient proficiency in maths for commencing STEM trades students is also an identified concern, as recently reported in the Australian⁸

Australian Mathematical Sciences Institute reveals that year 12 enrolments in intermediate or advanced mathematics have crashed from 34.9 per cent in 2008 to 26.8 per cent in 2020. In other concerning sources of information, it has been details that 4 in 10 Maths teachers in Australia are not qualified to teach mathematics.

Professor Marchant called for better quality teaching, noting that up to 40 per cent of maths teachers were not qualified to teach the subject.

“Particularly in junior high school, years seven to 10, many (maths) classes are being taught by teachers that aren’t trained in mathematics,” he said.

“Students need their teachers to be trained in the discipline.

“We need to be working with these teachers, increasing their training and professional development.”

Only 9.2 per cent of year 12 students enrolled in specialist maths in 2020, compared with 11.6 per cent in 2008, the AMSI report shows.

⁷ <https://aennswact.com.au/wp-content/uploads/2022/06/FULL-REPORT.pdf>

⁸ theaustralian.stem-decline

Just 17.6 per cent studied intermediate mathematics in 2020 – down significantly from 23.3 per cent of students in 2008.

Together, the proportion of year 12 students who studied intermediate or advanced mathematics has crashed from 34.9 per cent in 2008 to 26.8 per cent in 2020.

We share these concerns based on industry feedback and, by way of example, the trends observed in the Certificate II in Electrotechnology. We believe the current maths curriculum does not encourage or support a pathway to VET qualifications in the STEM based trades. There is strong industry and RTO feedback that “general” maths in years 11 and 12 is not a sufficient preparation for STEM trades curricula.

As an example, General Maths units are as follows however the limited topic of coverage are

- Unit 1 Description This unit has three topics: ‘Consumer arithmetic’, ‘Algebra and matrices’, and ‘Shape and measurement’.
- Unit 2 This unit has three topics: ‘Univariate data analysis and the statistical investigation process’, ‘Linear equations and their graphs’; and ‘Applications of trigonometry’.
- Unit 3 Description This unit has three topics: ‘Bivariate data analysis’, ‘Growth and decay in sequences’ and ‘Graphs and networks’.
- Unit 4 This unit has three topics: ‘Time series analysis’; ‘Loans, investments and annuities’ and ‘Networks and decision mathematics’.

However when we compare this to Math Methods we see

- Unit 1 Functions and graphs, Trigonometric functions, Counting and probability
- Unit 2 Exponential functions Arithmetic and geometric sequences and series
Introduction to differential calculus
- Unit 3 Further differentiation and applications Integrals Discrete random variables
- Unit 4 The logarithmic function Continuous random variables and the normal distribution Interval estimates for proportions

As an example of the opportunity for trades like Electrotechnology the highlighted subjects are what we believe is needed. The emphasis trades place on algebra, calculus, and transposition of equations in, for instance, the studying of AC (Alternating Current) and DC (Direct Current) theory is imperative. However, Math Methods level in years 11 and 12 are far in advance of

what is needed and is a disincentive for students not wanting to achieve an Australian Tertiary Admission Ranking (ATAR). It's a case of either too little or too much and the curriculum needs to include a more targeted VET pathway.

Existing Infrastructure

Australian Technical Colleges

One of the remaining Australian Technical Colleges, which were established in 2006 after a 2004 Commonwealth Government election commitment, is the Australian Industry Trade College. They have campuses on the Gold Coast, in Redlands, Toowoomba and the Sunshine Coast and soon to open in Ipswich. They report that 93% of year twelves, graduate with an apprenticeship.

The Commonwealth Department's 2006–07 Portfolio Budget Statements stated that the Australian Technical Colleges are:

A partnership between education, training, industry and community organisations in the region and cater for students in Years 11 and 12. Students enter into a School-Based New Apprenticeship in a trade at Certificate III level, which leads to a nationally recognised qualification, in areas of identified skills needs across regional and metropolitan Australia in industries such as metal and engineering, automotive, building and construction, electrotechnology and commercial cookery. They study academic subjects, leading to a Year 12 Certificate and also gain IT, employability and business skills enabling them to be competitive in the world of business.

This model seems to work well. The restriction in future maybe the cost of re-establishing them in this format. Consideration should be given to duplicating the model using other existing infrastructure such as enhanced VET in Schools programs, as canvassed elsewhere in this paper.

Group Training Organisations

Part of a GTO's role, as an employer, is to provide the additional care and ongoing support necessary for apprentices and trainees to successfully complete their training contract, thus maximising completion rates⁹. This type of support is not always easily provided by a direct employer, particularly small to medium enterprise (SME) employers.

GTO apprentices and trainees are younger, more likely to be in the trades, more likely to be new rather than existing workers, and more likely to be Indigenous.

Although there are no comprehensive data on the size of GTO host employers, it is generally accepted that small to medium-size employers make up a significant proportion of all GTO host employers. Accounting for the differing demographic profiles of GTO apprentices and trainees, and for employer size, data reveals that GTO completion rates are substantially higher than for small and medium direct employers. For non-trade apprentices and trainees, GTO completions are higher than the rates for both small and medium, and large direct employers.

Part-time apprentices and trainees and those who had completed a prevocational course had the highest completion rates.

Respondents with improved completion rates attributed their improved rates to:

- weekly site visits with individual apprentices and trainees
- pre-training, such as VET in Schools and prevocational courses
- improved working conditions and support including long-term staff for stability of pastoral care relationships
- cessation of involvement in industries with low retention rates (such as hairdressing and hospitality)
- Those GTOs with declines spoke of losing more people in the first six months of the apprenticeship or traineeship than previously experienced due to:
 - Increasing incidence of mental health issues in apprentices and trainees
 - a crowded marketplace (increasing competition for apprentices and trainees from other employers)
 - increased number of apprentices and trainees from disadvantaged backgrounds
 - for GTOs in rural areas, the impact of drought.

⁹ <https://aennswact.com.au/wp-content/uploads/2022/06/FULL-REPORT.pdf>

TAFE

TAFE has good branding, is geographical dispersed, has good infrastructure but there is an argument to be made that its infrastructure is under- utilised.

TAFE however needs to become more responsive to industry needs and be more flexible than its current 'bricks and mortar' approach to training where the apprentice attends TAFE training in 'blocks'. Employers sometimes cannot afford to be losing their apprentice for weeks at a time especially when they are busy. TAFE, along with all other parties, need to be aware that the employment aspect is the key, training is an important part of that, but the productivity of the apprentice is the main concern of the business.

High School

Since the eighties there has been an increased emphasis on students finishing Year 12 and with this an increased importance placed on attaining tertiary qualifications. This has almost without exception been promoted as more desirable than a career in Vocational fields in general and the Building and Engineering Trades in particular, Trades have been seen as a second-class career option.

Before this time those students who were entering the Trades would traditionally leave school at the end of year 10 and learn on the job. Then, before the age of 20 they were generally fully fledged tradespeople contributing to society, the economy, paying taxes and in a position to start mentoring new apprentices.

In the last 15 years there has been some positive moves in Secondary Education towards streaming students into Tertiary and Vocational fields in years 11 and 12. This has come about partly because of a realization that not every student completing High School has the aptitude and ability to take on tertiary study. Of the cohort of students who are in the VET stream in years 11 and 12 there is a very mixed bag of options available to them. Some can access courses and attain skills that make them job ready (in the areas of commerce, finance, hospitality, hair dressing, etc.) with a Cert 3, Cert 4, or in some cases even a Diploma qualification being attained. Others (those wishing to enter the building and engineering trades) seem to "mark time" for the last two years of school until they can finish and then compete for an indenture for an apprenticeship.

There are several limited opportunities for pre-vocational courses for STEM trades that nominally give a Cert 2 qualification (which is more realistically a Cert 1) but these are not universally available and not provided to a wide variety of different trades. There are also

many “Alternative Pathways” models which have been trialled across different jurisdictions, with a front-loaded study model for the electrical trade, which could be transferable into a secondary school curriculum.

High Schools in the public and private sector currently run limited VET programs in Years 11 & 12 with their main focus and KPI’s being generally focused on achieving high levels of students attaining an ATAR or ATAR equivalent score. Completing a VET course increases the student’s ATAR score compared to how they may perform in traditional subjects. We believe that this is where the greatest level of reform is needed, and that equivalency should be given to the importance of VET streams as there is in countries such as Germany. There is a concrete proposal to address this later in this paper.

As noted earlier in this paper, the Maths curriculum is also not fit for purpose for the STEM trades, and a VET/STEM maths subject should be developed that is more advanced than “general” maths but less involved than the advanced “maths methods” subjects.

Australian Apprenticeship Support Networks (AASN)

Usually, the first port of call for an apprentice, is the AASN is responsible for the signup of the apprentice/trainee. AASN’s connect applicants to vacancies, and it is questionable whether they offer any ongoing support once the signup has been completed. They join a person to a vacancy and get paid to do so. This role could be done by other bodies, such as GTOs, industry associations, unions, and schools with advanced VET in Schools programs.

Suggested Solutions

Enhanced VET stream in schools from the end of Year 8

Traditionally the training packages (generally a Cert 3) for trade qualifications have not been undertaken unless the student was indentured to an employer and had in effect started their apprenticeship. MEA believe that changing this requirement and allowing students in Years 11 and 12 into VET streams at High School to commence these packages would be a game changer for trade qualifications in Australia, potentially leading to higher completion rates, better spend of precious public money on education and greater gender and cultural diversity in building and engineering trades.

The identification of gaps/deficiencies in STEM in schools and in the workforce generally, , would largely be addressed by a change in policy such as this. Building and Engineering trades (electricians, communications technicians, fitter machinists, welders, aviation, instrumentation, etc.) are the practical application of STEM in the economy. It is also a fact that many workers who start their working lives in a trade end up with Tertiary Qualifications and become some of the very best Engineers and Entrepreneurs as they have the complementary practical and technical understanding of real-world challenges.

This would be a “back to the future” approach in some ways, rather than leaving school at Year 10 to start a trade as in days gone by, students would in effect start their trade journey in schools, with a view to having better prospects for employment and job-ready skills at the end of year 12. Another advantage of a meaningful and productive VET in schools’ program is that it will be a better spend of education budgets for state governments and improve employability outcomes for students.

It has already been proven that this job-ready model works in hospitality, retail, commerce, and other sectors using a combination of school resources, TAFE, and private providers. This same model is readily transferable to STEM trades.

On completion of Year 8 and students currently choose a pathway for 9 and 10 and this then carries through to year 11 and 12 i.e. subject selection for Tertiary studies (OP stream) or VET stream. Those students wanting to enter the new building and engineering trades VET stream would select their academic subjects on offer with a slant towards trades.

In the second semester of Year 10 aptitude testing could identify which area of trades students would be best suited for (electrical, building, mechanical, plumbing, communications, etc) and in consultation with students and parents (and the availability of local resources) a training plan could be drawn up for Year 11 and 12.

In Year 12 students could complete the first 2 years of college studies for the chosen trade as well as safety, hand tool skills and a component of work experience. These studies could be undertaken with a mixture of school-based classes, and third-party providers such as TAFEs, private colleges and NFP organizations. Different schools in a catchment area could specialize in different disciplines to prevent duplication of infrastructure

Depending on the mix of local industry, schools could form partnerships with local businesses or GTOs to have employment/indenture opportunities. With college completed and work experience hours students could nominally have 12 months taken from a 4 year apprenticeship, with a trade qualification being achieved 3 years after finishing Year 12.

Benefits

- Employers get pre-qualified apprentices with real skills and more productivity from day 1
- Higher completion rates for apprentices (aptitude is matched to course chosen)
- Better spend of public monies for trade training (less duplication of programs)
- Better utilization of existing school infrastructure and last 2 years of formal state education
- Greater control over resources into areas of skill shortages
- Real measurable outcomes for STEM literacy and application
- The ability to redress gender and cultural inequality in traditional trades
- Evening out the peaks and troughs in skills shortages (reducing labour costs over time)
- Reducing the influence of unions in trade licensing
- Redressing the stigma of trades vs university qualification
- An investment in the “personal infrastructure” of the nation
- A potential productivity gain of up to 3 years in the work life of a citizen (a 6.67% increase of earning and productive capacity over a 45-year work career)

Upgrade of the Electrical Qualification to a Cert 4

A critical qualification within the workforce is the Certificate III in Electrotechnology – the base qualification for the Electrical License.

MEA believe that modernizing the curriculum to reflect current practices, advances in technology and prepare for the challenges ahead (such as have been identified in the Government's Powering Australia Policy), that it is the right time to examine the value of the current qualification that underpins the electrical license.

The question of upgrading the qualification to a Cert 4 has been seen as an Industrial Relations challenge. However, a review of the curriculum to reflect the evolution of the electrical industry and the need for a higher-level electrician to be produced to service a more complex market, we believe that such a review will show clearly that the Cert IV will deliver efficiency, higher educational outputs and meet consumer demand into the future.

MEA is absolutely committed to the retention of the broad-based qualification that underpins the electrical trade. MEA believe that it is in the interests of the community that the qualification should be enhanced, and that it is important that we increase the skills requirements of the trade and do not succumb to the calls to break up the base qualification into discrete areas as has happened in some international jurisdictions.

There is wide acceptance in industry and in the market that the current Cert 3 qualification does not reflect the reality of the evolution of the duties commonly performed by a licensed electrician. This can be best demonstrated by the yawning gap in hours of study and scope of experience between the Cert 2 pre-vocational qualification undertaken as a pre-trade course, and the completion of the Cert 3 which forms the base qualification for the electrical license in every state and territory of the commonwealth. We believe the case to do this is strong enough to be put to AQF.

Incorporated into this training should be additional units on identifying hazards with aging infrastructure. A key safety challenge facing the rollout of new technology, like electric vehicles, home batteries, PV Systems heat pumps and Home Energy Management systems is the additional demand placed on the aging wiring.

The result means that newly graduating electricians will have the same general training and broad-based education however come with additional skills in Renewables, Air-conditioning, Communications, and Instrumentation that are in short supply across multiple parts of the industry and the country. All these currently are an accredited Cert IV course. Obviously, current licensed electricians will continue to be recognised and we see an immediate role for the ERET to take control of formalizing this path for the industry.

We believe that, with the emphasis on energy efficient heating and cooling to complement the goals of carbon reduction and energy efficiency, restricted HVAC should be an elective that is

put into a revised Electrotechnology Skills Package. There is currently a chronic shortage of skills to install the most common type of energy efficient climate control, split-system air conditioning, and restricted HVAC licensing regimes across the country exacerbates this problem.

Currently there is only 5000 refrigeration apprentices indentured across the country with some 63,000 electrical apprentices completing an apprenticeship. Adding restricted HVAC to the electives in the Electrotechnology package would be a quick and safe way to help address this shortage. A restricted electrical license pathway is already available, for refrigeration, plumbing and mechanical trades, and we contend that the skills gap from electrical to refrigeration is less than that of those trades to the restricted electrical license, that enhances workplace flexibility and productivity.

The Cert IV outcome would directly address a growing challenge as consumers move to electrify their household – the so-called “electrification of everything”. Broadening the training of electrical workers ultimately represents a saving to homeowners and business-owners, with skilled electricians able to perform more of the work required.

The timely delivery of such a key reform is dependent upon a dedicated Electrical Industry Skills Cluster.

Increased Funding and Support for Group Training Model.

A recognition that the GTO model of mentoring and pre-employment screening delivers improved completion rates and increases ability of apprentices and trainees to get the “scope” they require. Reports by NCVER have the completion rates for GTOs on par with large employers and well above SME employers¹⁰.

“After accounting for the different demographic profiles of GTO apprentices and trainees and employer size, the study shows that GTO completion rates for all apprentices and trainees are substantially higher than for small and medium direct employers. For trade apprentices and trainees, GTO completions are higher than for small and medium employers. For non-trade apprentices and trainees, GTO completions are higher than the rates for both small and medium, and large direct employers.” (O’Dwyer & Korbell, Completion rates for group training organisations and direct employers: how do they compare?, NCVER, 2019)

Standardised and consistently applied pre-employment screening should be part of this proposal, with pre-employment screening tools used for each occupational area so that they can be part of the process for all applicants, or to use the enhanced VET in Schools model with aptitude screening as part of that process.

Mentoring programs where the GTO can monitor the progress of apprentices and their suitability in workplaces are also a factor in the increased completion performance and this view is supported by research by the NCVER and others¹¹.

GTO’s also lower the risk for SME’s, they do this by removing the responsibility to indenture an apprentice directly, allowing them to take on extra labour as work is available, they also offer a choice of different people to suit the culture of a business, if the apprentice does not fit a particular host they can be sent back to the GTO.

MEA believes that GTO’s with good track records in industry, run on a NFP’s or “for purpose” organisational models, such as employer associations, unions, and local communities are best placed to be successful.

¹⁰ https://apo.org.au/sites/default/files/resource-files/2019-10/apo-nid262886_1.pdf

¹¹ <https://aennswact.com.au/wp-content/uploads/2022/06/FULL-REPORT.pdf>

Increased Funding and Support for Trainers

The catch22 situation for addressing skills shortages, is that there is a skills shortage of trainers. To be able to put into place any of the measures outlined in this paper, we will need to rectify this situation concurrently.

Our industry intelligence tells us that the target “avatar” of a trades-trainer is a trade qualified male, over 45 years old who is looking to get off the tools because of age or condition/injury that makes an active trade job more difficult. These experienced tradespeople have current skills and experience and find the idea of giving back to the trade or industry that has given them a career to be attractive, and to extend their working life with lower physical impactful job.

The current cost to complete a TAE40116 Certificate 4 course is roughly \$4000 - \$5000 currently, MEA is suggesting that this cost be borne by the various industry skills funds in each of the states to rapidly increase the depth of the trainer market in each of the states, possibly supported by some federal funding.

Conclusion

The high proportion of Small to Medium Enterprises (SME's) in MEA's membership is reflective of not just the electrical industry but the Building and Construction sector as well. MEA believe that the suggested solutions that we have proposed, especially the enhanced VET streams in schools, and support for GTOs, will enable SMEs to deliver the critical skills Australia desperately needs.

Just as in the university sector where the taxpayer heavily subsidises courses for taxpayers, the training of key VET skills should be a shared responsibility between the different levels of government and industry. Small Employers who take on 85% of the apprentices in the electrical industry, and who lose them to wider industry once an apprenticeship is complete, are providing the vital “training space” for the completion of the experiential learning that underpins the apprenticeship system. Safety requirements for 1st and 2nd year apprentices are rightly stringent on the levels of supervision needed, this does however mean that the productivity of an apprentice in this period is quite low, and in the price sensitive end of the market that SMEs operate in, this is a large dis-incentive towards taking on apprentices. An expanded VET in Schools' program that better utilises the spend of the public education dollar, improves pathways to careers, is targeted at skills shortages, and delivers a more productive apprentice on day 1 of their job, would be an incentive to employers.

A major skills risk for our sector then, is that approximately 85% of apprentices are employed by SME's making up 98% of all electrical contracting businesses in Australia¹². Bearing this in mind, without taking these price factors around the productivity of 1st and 2nd year apprentices into account when planning a campaign to address skills shortages, there will be direct costs to SMEs, and they already carry a disproportionate burden in comparison to big business in providing the training spaces that are needed to grow our skilled workforce.

MEA believe that a SME-led apprenticeship revolution is also urgently needed to cope with the nation's rapid and irreversible energy transformation, and the ability of GTOs to de-risk the employment of apprentices for SME's could be a force multiplier in achieving the increases in the skills that Australia needs. Small to medium contractors with their ability to deliver the scope and range of work necessary to train licensed electricians, are the incubators of the skills required to meet the skills shortage and disseminate them into the wider industry workforce, often continuing employment in larger businesses delivering projects operating under union Enterprise Bargaining Agreements (EBA's).

Everything we hope to achieve as a high-tech economy needs well qualified people to "do" the work. Countries like Germany and Japan have built their prosperity off the back of their Engineering excellence and trained adaptable workforce, with a VET career having a high community status.

In summary, MEA believe that a combination of employer incentives, screening and aptitude testing, wrap around mentoring, with enhanced pathways of VET in Schools and GTO approaches and alignment of school subjects to better reflect industry need provides the best combination solutions for meaningful improvement in addressing occupational skills shortages and improving completion rates in Australia.

¹² https://www.australianindustrystandards.org.au/wp-content/uploads/2022/07/20220705_Energy_and_Utilities_Industry_Outlook_2022.pdf

References

National Skills Commission Priority List

<https://www.nationalskillscommission.gov.au/topics/skills-priority-list>

NCVER, 2021, Completion and attrition rates for apprentices and trainees 2021

<https://www.ncver.edu.au/research-and-statistics/publications/all-publications/completion-and-attrition-rates-for-apprentices-and-trainees-2021>

Australian Apprentice Employment Network (AAEN), 2022, The GTO Advantage (A value proposition report for GTOs)

<https://aennswact.com.au/wp-content/uploads/2022/06/FULL-REPORT.pdf>

Steven Joyce, 2018, Vocational Education and Training Review, Department of the Prime Minister and Cabinet.

<https://www.pmc.gov.au/domestic-policy/vet-review>

O'Dwyer & Korbell, 2019, *Completion rates for group training organisations and direct employers: how do they compare?*, NCVER,

Joyce Review Submission, Building and Engineering VET Curriculum in Schools. (STEM- The Ground Floor)

www.pmc.gov.au/sites/default/files/VET-review-submissions/21729.pdf

www.pmc.gov.au/sites/default/files/VET-review-submissions/21729%20%20Attachment.pdf