

## Building a skilled and adaptable workforce

- Improve school student outcomes with the best available tools and resources
- Support the workforce through a flexible post-secondary education and training sector
- Balance service availability and quality through fit-for-purpose occupational entry regulations

## **Improving School Student Outcomes**

### **School Leadership in STEM subjects and Primary & Secondary Education**

School leadership is the key to improving school student outcomes. The selection of suitably Science Technology, English and Mathematics (STEM) qualified school principals, at both primary and secondary schools, is a necessary first step. Currently such qualified school principals are in a minority as “humanities” dominant and perpetuate the selection of school principals within Australian schools. Whilst State central education departments may deny that this dominance as principals are well educated, I would disagree. Also STEM curricula will inevitably change within the next few years and a greater professional understanding of the demands of teaching these subjects needs knowledgeable leadership.

Knowledge of STEM subjects will inevitably be needed in the future of careers involving rapidly developing information technology, science, health, engineering and education, all of which will require knowledge of artificial intelligence (AI) involved within these challenging occupations. I set out below some practical

actions that could be taken by both Federal and State Governments to improve funding and management of both primary and secondary school education in the ten years.

1. Fund primary school education at an increased level. Primary education develops student behaviour and their ability to study independently. Financial support by State governments should also be directed to primary school parents, including before and after school support.
2. Amend the number of high school years to ensure full coverage of basic curriculums to ensure full education of students up to leaving aged 15 after taking an external examination. This could effectively increase teacher numbers for these years as it will reduce high school from 5 to 4 years. It will also encourage business to employ more apprentices if for no other reason than they are cheaper at the age of 15 rather than older
3. Advanced high school education should be provided only to those students who achieve good results in year 5 in STEM and other subjects. Higher qualified teachers would be better employed teaching Yrs 6 & 7.
4. Fund the continuing professional education of primary and secondary school teachers with emphasis on improving and obtaining their STEM qualifications. This is particularly important for primary school teachers.

5. Establish annual external examinations e.g. by universities, to determine individual primary and secondary school performance in STEM subjects. Internal exams simply test what has been, not should have been taught. Naplan is not providing analysed STEM results.
6. The results of such examinations should be reflected in senior teachers and leaders' remuneration (refer below), subject to KPI review by independent school inspectors.
7. Renegotiate teachers' remuneration in order to introduce scaled levels based on STEM professional qualification examinations and 360degree performance reviews. This would encourage more teachers to return to the schools, including those currently made redundant after a review of head office numbers.
8. Senior teachers and leaders' remuneration should include a percentage performance bonus component based on "independent external" 360degree performance reviews. Not by peer review as occurs within State educational systems.
9. Reduce the administrative workload of schools and their teachers by reviewing all current processes and eliminating time consuming, beaurocratic bumf, and long winded disciplinary processes that should be carried out by external human resources personnel.

10. Establish local area school committees with executive powers, especially in regional and rural areas, to oversight of their schools' performances, funding and other requirements.

The influence of the Teachers Federation in NSW education has not in my opinion, been as beneficial as it could be to the teaching profession. The profession needs to show itself to be a "profession" in the education of the nation's future generation. The perception is that it needs to behave more like a professional body and less like a trade union.

### **Artificial Intelligence will Assist Student Outcomes in the Future**

The School of Education at La Trobe University (Which I have adapted) recommendations:

1. The Australian Government prioritises digital literacy training that incorporates AI literacy for pre-service teachers and for professional development of teachers, and targets funding at universities to deliver evidence-based courses (including short courses/microcredentials) for this purpose.
2. The Australian Government implements system-level support to provide educators with support in their local context and time to authentically integrate Generative AI opportunities into teaching practice.
3. The Australian Government anticipates the copyright issues raised through Generative AI and generates an appropriate policy response to manage the potential impacts of these on educators, students and learning environments.
4. The Australian Government develops and works with teacher educators, Higher Education and First Nations communities to develop policy to mitigate the culturally diverse populations, through these tools.

5. Federal and State Governments to support the development of research centres to investigate the challenges of emerging technologies such as Generative AI on education systems, teaching and learning practices.
6. Federal and State Governments to support assessment reform in the school curriculum to take a strengths-based approach that both acknowledges the potential applications of Generative AI, and its future integrations, and the development of teachers and students to equip them to discern non-productive uses of AI.

The Tech Council of Australia also recommends support be continued of the development of a national principles-based framework by Australia's Education Ministers to support schools in the safe and effective use of AI. They also recommend a whole-of-government approach to ensure that GenAI use in the education system, and AI use more broadly, is coordinated and aligned with other policy development processes.

## **Education of primary school children provides the foundations for STEM learning**

The Grattan Institute in a review of Education made the following Recommendations:

Education leaders, and independent sector leaders should take the following steps to boost primary school maths achievement.

Recommendations that the federal government should lead on or contribute to are marked with an asterisk.

1. Raise expectations · Commit to a long-term aspiration of 90 per cent proficiency in NAPLAN numeracy, with an interim target of a 15-percentage point increase over 10 years.
  2. Provide better guidance · Commission detailed, national guidance on what effective maths teaching entails. · Review existing guidance – including written guidance, advice provided by departmental or Catholic education staff, and professional learning content – to ensure it is coherent and aligns to the evidence base.
  3. Arm schools with high-quality curriculum materials, catch-up interventions, and assessments.
- Establish an independent quality assurer to review the quality of external curriculum materials used by schools to ensure schools can confidently select evidence-informed resources that will support effective teaching and learning.

- Commission rigorous research to evaluate the impact on learning of maths catch up intervention programs and digital maths applications to help schools invest in resources that demonstrably lift maths learning.
- Commission rigorous research to determine the validity and reliability of maths assessments so schools can accurately track student progress and identify who needs additional support.

#### 4. Improve teaching quality.

- Monitor reforms to initial teacher education are implemented, and update guidance on effective maths.
- Develop credentials on how best to teach primary maths and lead maths improvement.
- Establish Maths Hubs based in outstanding schools, funding them to work with local schools to lift practice.
- Create an expert career path for specialist Primary Maths Master Teachers.
- Encourage primary schools to employ dedicated maths teachers where appropriate.

#### 5. Tighten monitoring and oversight

- Mandate a national early year's screening tool to identify students at risk of falling behind in maths.
- Strengthen school reviews to include a more rigorous examination of instructional quality in mathematics.

## **Support the workforce through a flexible post-secondary education and training sector**

A university degree leads to much better employment prospects for graduates than for no university graduates. Yet it is interesting that full-time employment for Science and Mathematics graduates is low and computing and information systems is lower than other degree qualified graduates. This suggests that perhaps these areas may reflect the low level of Australia's original research and development is insufficient. Health services and support also shows an under appreciation of the nursing and age care workers that is reflected in underpayment in this largely government-controlled area of the community.

## **Australia's Universities Field of Education**

Whilst there are a number of reports and statistics available for Universities entry levels, I could not find specific statistics for STEM HSC qualifications entry levels for combined Australian universities. However, I did find some information which gives an indication that STEM levels should be targeted for funding by Federal and State governments. I set out some general comments on this topic.

Nationally, the most popular broad field of tertiary courses (in terms of the number of applications for university places) is the Medical and Legal fields. This was followed by Society and Culture applicants and Management and Commerce. Fields of education that recorded strongest growth in applications in were Health, followed by Agriculture, Environmental and Related Studies, Information Technology, Engineering and Related Technologies, and Society and Culture. On the other hand, fields of education that experienced the largest declines in applications were Management and Commerce, followed by Creative Arts, Natural and Physical Sciences and Education.

Perhaps a more meaningful statistic provided to the Federal Education Department would provide an indication of whether universities are meeting outcome targets of the number of graduates from each course classification, such as engineering and information technology needed for Australia's future developments and economy. Funding of universities should perhaps be linked to these outcomes.

## **Australian University Contributions to skills and adaptability**

Australian universities need to change their educational focus to STEM entry qualified courses.

1: Current contributions of universities to produce Technological capable graduates and take stock of existing ways that Australia's economy and productivity works and benefits from their work outcomes.

2. a) Universities and Industries should work together to better meet national priorities in the future. Governments should develop new ways to fund university places and programs, Broadening the scope of sponsorship for students to study at a university, then work for Sponsoring Industries. Offer internships and roles that may give rise to recruiting international students, so that students from our allied countries could apply, boosting the critical mass of technologically qualified workers.

b) Industries should partner with universities to create pathway programs that would facilitate undergraduate study by high school entrants, as well as by current personnel looking to get their first degree, who don't meet the eligibility criteria for university entrance. Consider mechanisms to boost research partnerships between Industry bodies and regional universities.

3. What Industries could do to help universities help them:

a) Work with universities to create and facilitate an Industry-university coordination mechanism, which may, in time, also include other areas of Government.

b) Undertake a broad and inclusive workforce analysis that would: – elevate the analysis of present and future workforce demand



- Industrial Sectors to an order of priority – a workforce pillar – in the development of any new technical capability and sustainment proposals.
- Establish better linkages between what Industry needs and what the suppliers of teaching can provide, by including universities and TAFE in the process of analysis.
- Extend workforce planning principles to those areas of Industry which are not program related. This potentially extends skills demand to areas beyond STEM and into scientific research and AI and robotics development, including, but not limited to sustainability studies.

## **Balance service availability and quality through fit-for-purpose occupational entry regulations**

### **Immigration of Skilled Migrants**

Set out below is the skilled migration program planning levels which lacks the specificity needed to target identified skills that should be given priority, except a mention of align to longer-term infrastructure, housing and services planning

### **Multi-year planning model for migration**

From 2025–26, the Migration Program will move to a multi-year planning model, extending the Program planning horizon to four years from the current twelve month cycle.

Extending the outlook of Australia's Migration Program will enable migration planning to better align with longer-term infrastructure, housing and services planning across all levels of government. The multi-

year approach will incorporate housing supply as one of the key factors to shape the broad direction of long-term migration planning.

Public consultation on the size and composition of the first four-year cycle (covering 2025–26 to 2028–29) will commence later this year.

### **Skilled Occupations Immigrants**

*<https://immi.homeaffairs.gov.au/Documents/core-sol.pdf>*

The above Skilled Occupation List (SOL) has 95 occupations listed from 1. Chief Executive and Managing Director to 95. Helicopter Pilot. It was clearly designed by a bureaucrat to protect them from making a mistake and allowing an undesirable multi-skilled autistic technological genius entrepreneur with no recognizable degree qualification into Australia as it is not on the list.

I believe that inevitably utilising such a list will stymie the attraction of migrating to Australia of engineers, information technologists and experienced business managers who may not have the formal qualifications of such graduates of Australian universities.

I once interviewed and then employed a IT technical specialist who did not have recognised local IT qualifications, yet he had gained a high level of experience and knowledge in an overseas position. He subsequently proved to have such knowledge that his performance was outstanding. I arranged for him to take a three-year degree IT course at UTS, and after a year his professor informed me that “He has received his degree and that he personally had taught him a great deal”. Sometimes the qualifications of overseas applicants may not strictly comply with those in Australia, perhaps this needs examination.

I also suggest the use of the SOL approach to skilled migration needs to be outsourced to a non-government independent review panel with suitable experience in assessing curricula vitae. Also, a review needs to be made of reducing and simplifying the 95 skilled occupations to eliminate those that target the identified skills that are needed for Australia's future technological developments.

In addition to the above approach, I suggest the complexity of immigration procedures needs to be reviewed to align Industrial needs immigration, with a view to simplifying the Visa Options, Skilled Occupation List, Skills Assessment, Expression of Interest (EOI) skill select system, Points-Based System factors, State/Territories, Regional Migration, Employer Nomination Scheme (ENS) visas, etc.

In conclusion I believe that the use of a governmental public service approach to immigration, existing university selection and outcomes, with a grass roots change approach to primary and secondary approach to education leadership and performance, needs to be examined using suitable private enterprise principals of practicality, efficiency, management and leadership.

**As a British migrant I acknowledge the declaration of a large part of Eastern Australia naming it New South Wales by Lieutenant James Cook of HMB Endeavour in the name of the Crown of Great Britain in 1772**

