04 November 2022

Submission to the Productivity Commission

Interim Report: Australia's data and digital dividend

Thank you for the opportunity to provide a response to the Productivity Commission's *5 Year productivity Inquiry: Australia's data and digital dividend* (Interim Report).

This submission proposes that aligning policy priorities and targeted government investment into extending and enhancing digital literacy capability across Australian primary and high schools is essential to develop our nation's digital skills and build a strong pipeline of talent that will be critical for Australia's future economic prosperity.

About WiseTech Global

WiseTech Global is a leading developer and provider of software solutions to the logistics execution industry globally. We originated, and are headquartered, in Australia and employ a team of more than 2,000 creative problem solvers around the world, with a large portion of our team focused on software engineering. Our customers include more than 18,000 of the world's logistics companies across 170 countries, including 41 of the top 50 global third-party logistics providers and 24 of the 25 largest global freight forwarders worldwide.

Our mission is to change the world by creating breakthrough products that enable and empower those that own and operate the supply chains of the world.

In 2021 and 2022, we announced two key initiatives to support Australia's technology future by building the nation's digital skills capability:

1. WiseTech pledged 1% of its annual pre-tax profit to enable tech education initiatives that develop technology skills and passion for creatively solving real-world problems in school-age children. Partnering with Grok Academy for an initial five-year period, the funds will enable all Australian K-12 students to enhance their digital technologies experience with the aim of encouraging more students into IT careers and helping Australia produce its own tech workers. This contribution has enabled the Grok Academy Learning Platform to be made available for free to all Australian students, teachers, and their adult learners from 2023.
2. We announced an 'Earn and Learn' WiseTech-funded program, initially available for up to 40 UTS computer science/software engineering students per year, with the program worth more than $100,000 per year/ per undergraduate student. Although the initial intake will be for up to 40 students per year, we are exploring the possibility to expand the program in both size and coverage of other universities in future years. We also intend to focus two thirds of our 'Earn and Learn' recruitment effort toward female high school students. WiseTech's financial contribution to the

'Earn and Learn' program covers course and subject fees and also gives the student a full-time salary and share rights while gaining real-world experience working at WiseTech.

Additionally, we have created the WiseTech Academy, an Australian Registered Training Organisation (RTO) to train, upskill and cross train mid-career and graduate persons in valuable industry skills and in-demand skills. As part of the 'Earn and Learn' program, participating students will take some of their undergraduate subjects through the WiseTech Academy. The WiseTech Academy has been operating for some years, has a highly developed set of training programs and is already training and certifying thousands of customers, staff, and students in advanced skills and in demand areas.

These initiatives form part of our approach to tackle the short-, medium- and long-term needs of the technology sector by improving the intake of students into technology education pathways at every level.

Our comments and recommendations on the Interim Report are outlined below.

Responding to section 3.3: Developing digital, data and cyber security skills

The issue: Insufficient local tech talent available to compete on a global scale

As one of Australia's most successful technology companies, choosing to base our global headquarters in Sydney and retain our Australia-first approach, we need a strong pipeline of skilled and talented permanent Australian residents with technology skills, especially in software engineering and related management and product development areas. Despite WiseTech's highly attractive employment, culture, employee share plans and compensation, we experience extreme competition for a very limited supply of candidates and a constant battle for retention of talent, often against global companies not founded in Australia and not paying substantial taxes in Australia. As a technology company that proudly pays a very fulsome set of Australian taxes and returns its earnings to Australia, by doing the majority of its billings directly from Australia to its global customers, we believe more needs to be done to communicate and build the attractiveness that Australian technology businesses provide to tech talent.

The very limited local supply of talented engineers, especially software engineers, and extreme demand for this talent creates a dysfunctional and economically damaging battle for tech talent between Australian-based and global businesses. As a nation, we need to create a much larger pool of locally created talent that will benefit Australian business growth and satisfy the exceptional demand. Such demand for key engineering skills is likely to continue as the thirst for more technology and increased productivity drives our economy into the future.

A local solution: Accessible, deep, and engaging digital skills education for all primary and high school students

The Interim Report touches on the need for digital skills education, with the recommendations for *"3.3 Developing digital, data and cyber security skills"* focused on tertiary education and adult reskilling.

While we strongly agree that there is a need to continue to build Australia's STEM talent at tertiary level and provide reskilling, upskilling and cross-skilling opportunities, we also firmly believe that to address the root-cause of the lack of supply of Australian tech talent, we need to intervene much earlier in the STEM talent lifecycle. There is significant evidence that points to educational issues, preferences and social biases that divert young, particularly female, students away from STEM and from high-paying careers in technology. Starting in early primary school and continuing through to high school to encourage students to preference STEM, rather than waiting for late high school when young people have already chosen their career pathways (potentially without any meaningful exposure to STEM subjects before then) is a critical way we can ensure we help solve the problem.

Recommendation #1: Extend and expand digital skills education across all primary and high schools through the Grok Academy Learning Platform

What students experience in primary school, and early high school, strongly influences what they elect to study later in life. We need to create experiences in primary school, and high school, that educate and inspire our youth into STEM and technology familiarity and allow them the ability to access rewarding and economically valuable tech-focused careers.

There is also a critical need to encourage girls and young women to study STEM and in-demand technology subjects. We must work to break lingering social biases about what is appropriate for girls to study - these biases are embedded in very early experiences and so dispelling them must start in early primary school. To hire more women in IT we need more females to want to join the technology-focused talent pool. More girls than boys go on to tertiary studies, yet 73% of students studying in the STEM field are male and the results are even more slanted towards males when we look at the hard sciences and deep technical talents[1]. Ensuring all students, regardless of gender, economic circumstance, or geography, have a positive STEM and technology skills experience at an early age, will inspire more students to embark on further technology studies and careers.

Grok Academy's Learning Platform delivers an online learning experience that provides teachers with the resources needed to enable engaged learning. The platform gives students from all socio-economic backgrounds equal opportunity to build their digital literacy skills in an interactive and holistic way.

[1] Australian Bureau of Statistics report: Education and Work, Australia, May 2021

WiseTech has committed 1% of our annual pre-tax profits each year to sponsoring the Grok Academy, over an initial period of five years. As referenced above, this contribution has enabled the Grok Academy Learning Platform to be made available free for all Australian students, teachers, parents, and adult learners from 2023.

Australia's industry, particularly the technology industry, and government at all levels need to do more to encourage STEM and technology interest. There must be continued investment in structured learning programs to help attract, engage and build the technologists of the future. While skilled migration has a role to play, a long-term solution needs to be grounded in creating local talent and opportunity for Australians, in order to fill this growing gap.

To create a lasting solution we need to focus on developing a holistic approach that addresses digital capabilities at a national level. While it is positive to see many players in this space, we run the risk of fragmentation and divergent goals and focus areas not achieving a true solution that provides equal access to all and the requisite outcomes needed.

Recommendation #2: Arm teachers with effective, easy to deliver digital course content and resources

Key to this grass roots approach is investing in standardised coursework, especially in STEM and digital skills, and provide much need resources to support all teachers to deliver an engaging and valuable experience for students. Many teachers are expected to teach skills that they did not learn themselves. Only 26–50% of Australian primary school teachers and 52–69% of high school teachers consider themselves proficient at teaching computer education[2]. And only 20% of teachers say their school has a comprehensive bank of ready-to-use, high-quality instructional materials[3].

To take the pressure off teachers, and ensure all students experience engaging digital skills learning, government and industry must invest in a bank of high-quality interactive computing skills content to arm all teachers and schools with the tools to deliver a positive digital skills experience for their students.

This means continuing to invest in, and build on, the Digital Technologies Curriculum and provide high quality STEM content to support teachers with the learning tools that will enable them to successfully build a strong pipeline of interested young Australians that will enter further tech studies and careers.

Recommendation #3: Develop a national approach to a digital skills curriculum

Australia's education system is at a crossroads. Our children are already living in a digital world and yet much of our education curriculum was developed decades ago and is still, in many cases, left to the individual teacher to develop coursework and related formative and summative assessments. Education to support a digital future cannot be

[2] ACS report: Computer education in Australian schools 2022 Enabling the next generation of IT professionals – p12
[3] Grattan Institute survey on curriculum planning and materials

built on analogue parts. A new high-quality content led approach to STEM education is needed to enable and empower teachers and build our nation's tech future.

Our current state-based approach to the curriculum is disparate and provides teachers high-level direction only, leaving teachers with large gaps to fill in[4]. Recent reports have highlighted the pressure our teachers are under to deliver coursework for which they may have little to no skills or knowledge.

Our contribution to the Grok Academy is aimed at beginning to solve this problem. Dr James Curran, CEO of Grok Academy, was a writer on the Australian Curriculum: Digital Technologies and consults with curriculum authorities around Australia. The Grok Academy Learning Platform provides a single source of teacher resources and materials that allow teachers with minimal knowledge to deliver highly valuable digital skills coursework to their students through the learning platform.

This is a solution that is focused on the future. It will help to take unnecessary pressures off teachers by providing high quality STEM and digital skills content and using technology, platforms, and content to deliver aspects of STEM and digital skills training from primary school through to high school.

We are calling on government at all levels and industry to support the creation of a national approach to a digital skills curriculum, for lasting long-term benefit to all.

Recommendation #4: Build awareness of the benefits, job qualities and stability of a tech career

According to the Tech Council of Australia, 1 In 16 Australians work in tech sector jobs, and there are more software engineers and developers in Australia than solicitors, plumbers, and hairdressers[5]. Despite this, we are still suffering from an extraordinary lack of skills to assist in growing this key area of the economy. According to a recent report from the Australian Academy of Technological Sciences & Engineering (ATSE), it is predicted that by 2025 one in four jobs created in Australia will be for digital technology workers[6].

Vacancy rates in tech are 60% higher than the national average[7] and many Australian tech employers have been forced by the extreme shortages, to employ offshore staff or outsource to technology providers and those staff are always outside of Australia and therefore a loss to the economy and the tax system.

The growing challenge of attracting enough young Australians, especially young women, into STEM subjects to meet business' needs.

[4] Grattan Institute: Ending the lesson lottery report: How to improve curriculum planning in schools, October 2022
[5] Tech Council of Australia & Accenture report: The Economic Contribution of Australia's Tech Sector
[6] ATSE report: Our STEM skilled future: An Education Roadmap for an Innovative Workforce October 2022
[7] Tech Council of Australia report: Getting to 1.2 million Our roadmap to create a thriving Australian tech workforce

If we are to be a leading digital economy and society by 2030, as set out in the Australian Government's *Digital Economy Strategy 2030*, we must do much more and focus much earlier to engage and encourage young students towards studying STEM. Otherwise, we run the risk of falling further behind other global competitors, to the detriment of the Australian economy.

There is an opportunity and a need, for industry and government at all levels to work together and strongly message to the nation the benefits and stability a career in technology brings.

Conclusion

The Australian Government and the Australian tech sector have a shared commitment to achieve 1.2 million tech jobs in Australia by 2030. According to the Tech Council of Australia, Australia will need to employ an additional 653,000 tech workers to meet this goal[8].

Tech jobs provide Australians with a well-paid, stable, and flexible career, and they are also among the most productive, with productivity growing at four times the rate of the market sector as a whole in the decade leading up to the COVID-19 pandemic[9], and they span a wide range of vertical industries.

In a future where digital literacy is no longer separate from general literacy, there is a responsibility for all of us to take action now to ensure the future prosperity and productivity of our country and people.

Thank you for the opportunity to provide feedback. I and my team at WiseTech would welcome further discussion.

Yours sincerely,

Richard White

CEO and Founder

WiseTech Global

www.wistechglobal.com

[8] Tech Council of Australia report: Getting to 1.2 million Our roadmap to create a thriving Australian tech workforce
[9] ATSE report: Our STEM skilled future: An Education Roadmap for an Innovative Workforce October 2022