



Growing Australia's digital workforce

June 2023

The digital skilling challenge



Australia is facing a shortage of over 370,000 digital expert and digitally enabled workers by 2026

Australia's digital expert and digitally enabled workforce is expected to grow by 16 percent to almost 7.7 million workers by 2026. [See Exhibit 5](#). This represents more than 1 million extra digital workers.

While projections indicate there will be a supply of 902,000 workers over this period from higher education, vocational education, and skilled migration, in the same period it is expected 620,000 digital workers will retire.

This results in a shortfall of over 370,000 digital expert and digitally enabled workers by 2026.

The shortfall is most pronounced for digital expert workers, with a predicted ten percent shortage by 2026 in this segment. [See Exhibit 5a](#).

Research published by the TCA in 2022 estimated that to meet Australia's technology sector aspirations by 2030, there would be a 186,000 worker shortage.² This comprises mostly digital expert workers ("technology occupations"), with a smaller number of digitally enabled workers ("non-technology occupations") working in the tech sector, such as HR, legal and administrative personnel.

The DSO economy-wide analysis complements the TCA research, reinforcing the earlier analysis of the shortage Australia faces in digital expert workers to fill roles in the tech sector. It also surfaces broader challenges across the economy as industries advance their demand for digital skills, and the implication this has for skilling millions of other workers.

This is consistent with research published by RMIT which found that 58 percent of businesses reported insufficient or out of date digital skills of their workforce.³ The Productivity Commission's Advancing Prosperity report has also highlighted the growing need for upskilling and reskilling, calling out the rising importance of digital skills as one of the driving factors.⁴

Taking a skills-driven approach to workforce analysis

This report is anchored by workforce analysis undertaken using a skills-driven approach to identify and segment the workforce.

This is distinct from using an occupation and/or industry driven approach because it recognises digital skills are in demand across the economy and patterns of demand will continue to change.

Given the scope of the DSO's remit in skills and training, it was necessary to look beyond the skilling requirements of technology workers and the technology sector.

[See Appendix A](#) for further methodological detail.

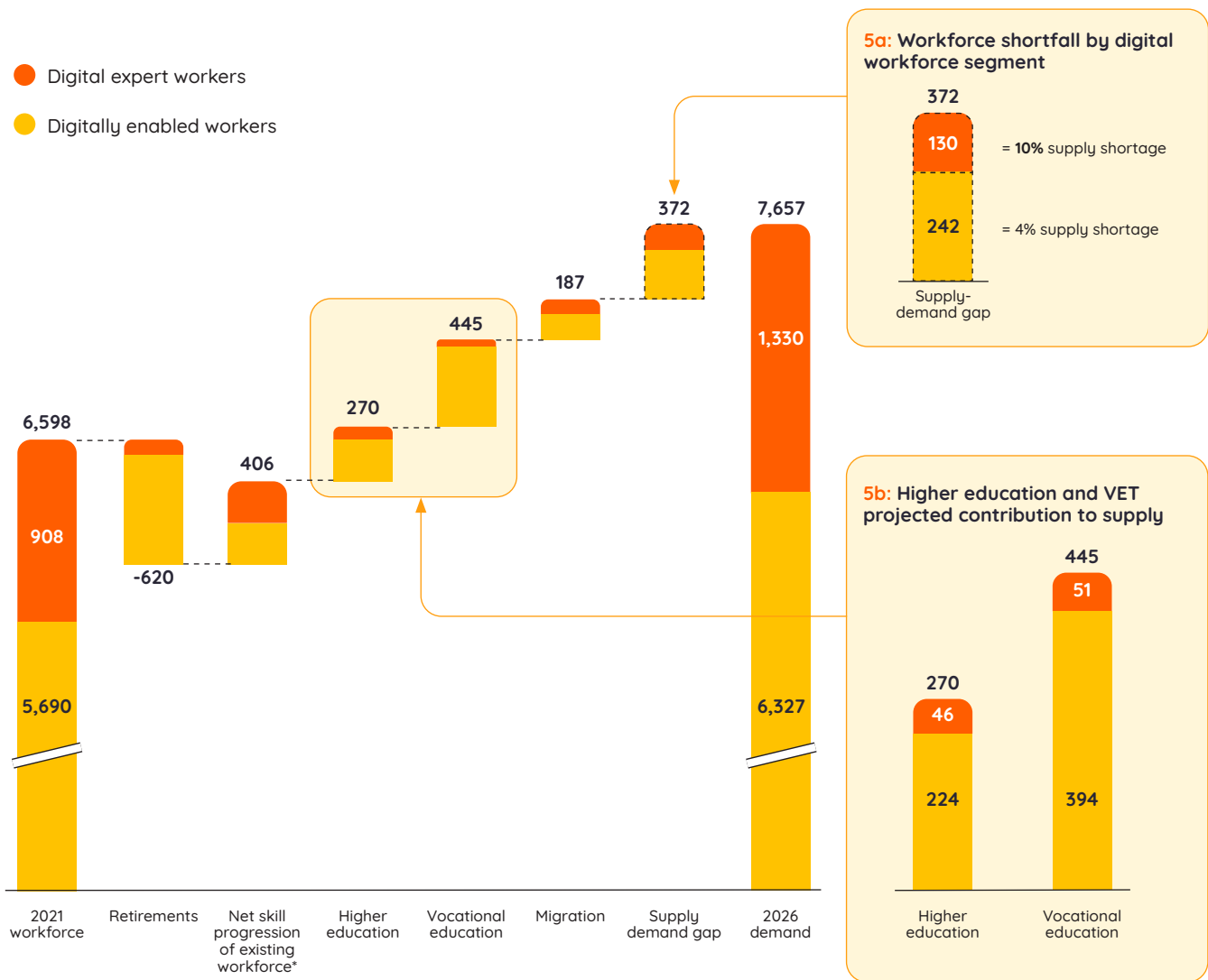
2. Tech Council of Australia, 'Getting to 1.2 million. Our roadmap to create a thriving Australian tech workforce', 2022

3. RMIT, 'Digital skills gap costing Australian businesses \$9 million per day', 2023

4. Productivity Commission, 'Advancing Prosperity', 2023

Exhibit 5: Project supply and demand of digital expert and digitally enabled workers*

Thousands of workers, 2021–2026



Source: Nous analysis; Lightcast, ABS; See Appendix A for methodology

*Notes:

a Totals may not add up due to rounding.

b. Net skill progression of existing workforce comprises workers in occupations that due to increased or decreased digital intensity will change classification between 2021 and 2026. It is assumed these workers will acquire those digital skills on-the-job.

There is an insufficient pipeline of digital workers due to low awareness of digital careers and complex training pathways

The insufficient supply pipeline shown in [Exhibit 5](#) has two contributing factors; low awareness of digital careers, and complex and fractured career and skilling pathways.

Low awareness

School leavers and people returning to the workforce or transitioning from other roles or industries are important workforce supply sources, alongside migration.

For the school leaver cohort, the DSO worked closely with school leaver service Year13 to identify barriers to awareness and test pilots to improve awareness. Research found that almost half of surveyed school students reported not being taught about digital careers.

The TCA's research highlighted that many Australians don't understand what tech jobs are, or the pathways to pursue them.⁵

Considering the contribution of VET to the pipeline of workers, this is observed in the number of people enrolling in IT related programs in VET over the recent past, 2017 to 2021. Despite the growth of the technology sector and increasing demand for digital expert workers over this period, enrolments have declined by 19 percent. [See Exhibit 6.](#)

Complex and fractured pathways

The TCA and YouGov research found approximately 40 percent of Australians are open to moving into digital expert roles, but many more (70 percent) cited a need to reskill to make this transition.⁵ With complex and fractured pathways, there is a lost opportunity to capture this substantial supply source for the future digital workforce.

Beyond digital expert workers, millions of workers will need to acquire digital skills to meet expectations of digitally enabled workers. However, 83 percent of Australian workers don't feel equipped to learn these digital skills.⁵

Strengthening Skills cited there is a 'lack of clear and useful information' for prospective students to make the right training decisions on what training pathway is required for a job.⁶ Clarity and transparency of information about skilling pathways and options have also been highlighted as limiting lifelong learning in *Advancing Productivity*.⁷

Research undertaken by the DSO and Year13 revealed almost half of students were not sure where to start when considering a digital career.⁵ This impacts their ability to make decisions about training for digital careers.

This complexity is demonstrated in the volume of underutilised VET IT training programs that have the potential to confuse learners and employers. Over the period of 2017 to 2021 there were 19 active IT training programs in VET, yet over 75 percent of completions in the last five years came from just three programs.⁸

Another nine programs produced fewer than 100 completions over this period; and six programs had 30 or fewer completions. [See Exhibit 7.](#)

This complexity can contribute to poor alignment between occupational aspiration and education or training pathways. One indicator of this is completion rates, which has been less than 50 percent for the last three recorded years.⁹

This inefficiency in the training system can slow the pipeline, with productivity impacts across industries.⁷

Simplifying pathways to skill into digital careers and for digital upskilling of the workforce is fundamental to overcoming Australia's digital skills shortfall.

5. Tech Council of Australia, 'Getting to 1.2 million. Our roadmap to create a thriving Australian tech workforce', 2022

6. Joyce, S., 'Strengthening Skills. Expert Review of Australia's Vocational Education and Training System', 2019

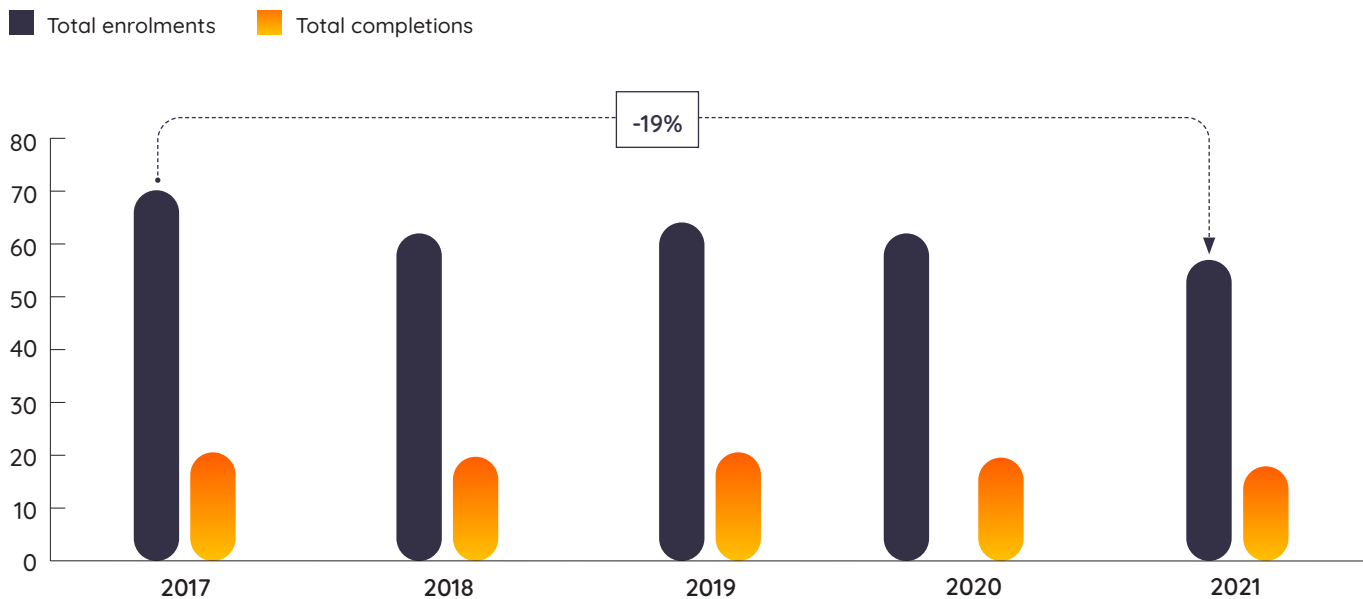
7. Productivity Commission, 'Advancing Prosperity', 2023

8. NCVET 2022, Total VET students and courses 2021, NCVET, Adelaide

9. Data available for 2017, 2018 and 2019; NCVET 2022, VET qualification completion rates 2021, NCVET, Adelaide

Exhibit 6: VET IT programs enrolments and completions*

Enrolments and completions ('000) (2017–2021)



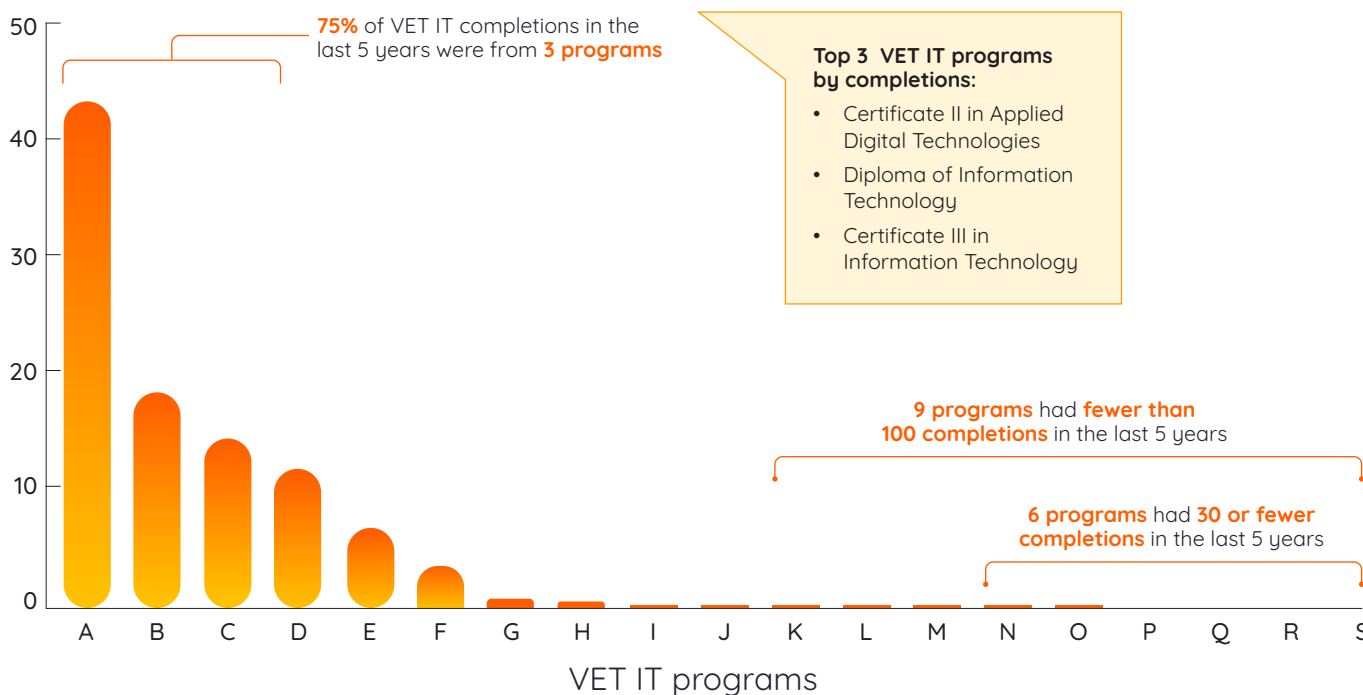
Source: NCVET 2022, Total VET students and courses 2021, NCVET, Adelaide.

*Notes:

- a. VET programs with field of education "02 - Information technology."
- b. 2021 completions are preliminary and will be revised upwards in 2023 to include completions that were advised after the reporting deadline.
- c. Program enrolments and program completions cannot be used to derive a completion rate.

Exhibit 7: VET IT completions by program, 2021*

Total completions ('000) 2021, by VET IT program



Source: NCVET 2022, Total VET students and courses 2021, NCVET, Adelaide.

*Notes:

- a. See Appendix B for program list key.
- b. 2021 completions are preliminary and will be revised upwards in 2023 to include completions that were advised after the reporting deadline.
- c. Completions in superseded programs have been included under the most recent program.

Learners are not being taught the skills that industry demand, resulting in suboptimal training and employment outcomes

Overall satisfaction and achievement of training goals are high for VET IT qualification completers. However, they have consistently ranked among the poorest in training and employment outcomes compared to other VET fields of education for the last few years.¹⁰ **See Exhibit 8.**

Despite 62 percent of people completing VET IT qualifications for employment reasons in 2021:

- 1 in 2 learners reported the skills are not relevant to their current job
- less than 1 in 10 reported to be employed in an occupation aligned to the training
- less than 1 in 3 reported improved skills from training
- less than 1 in 2 reported an improved employment status after training.

All of these student outcomes are lower than the VET average.¹¹ These outcomes also indicate that employers are not valuing the people coming through the VET system relative to other training pathways.

These factors may be contributing to the observed decreasing enrolments numbers and, with completion-rates less than 50 percent, suboptimal completion numbers.

See Exhibit 6.

There is also limited coverage of digital skills training in VET non-IT programs, which does not reflect increasing digital skills demands across industries.¹¹

A contributing factor to these skills training and industry demand mismatches is the absence of a shared and unified language describing digital skills and standards. This creates confusion and misalignment for learners, employers and the training sector.

This also hinders workforce agility, including the ability to consistently recognise skills obtained outside the accredited training sector.

The training system is not responsive and agile enough to keep pace with the rate of change

Research by the TCA revealed that 90 percent of major tech industry representatives interviewed wanted improvements to training and qualifications.¹² This is evident in the industry's trend towards use of non-accredited training to skill their workforce. **See Exhibit 9.**

This includes industry proprietary training providing relevant digital skills through short courses or industry microcredentials.

While VET subjects are bundled into short courses, research suggests “in the main, the most popular subject bundles do not appear to be focussed on developing new technology and digital literacy skills, nor are they focused on soft skills. There is a role for governments to stimulate training in this area.”¹³

Broad consultation and research across sectors have found that industries lack control over qualification development. Contributing factors include ineffective industry input and ineffective collaboration in determining training content and approaches.¹⁴

Approaches to facilitate more effective collaboration between registered training organisations (RTOs) and industry can make some progress; however, alternative regulatory, compliance and funding models are key to incentivising and sustaining innovative and responsive training solutions.

The regulatory and policy environment for VET has contributed to challenges of rigidity, outdated qualifications and inconsistencies in quality resulting from inconsistent application of standards.

Translating skilling requirements into training delivery can take several years, which puts the training system at risk of rapid obsolescence.¹⁴

In addition, the training system's focus and structure around occupations and qualifications rather than skills further contributes to rigidity. It means the system has less flexibility to be responsive to changing industry needs and evolution and creation of job roles across the economy.

This contrasts with a skills-based approach emphasising the development of skills that are transferable across jobs and industries, and the ability to recognise skills regardless of how these were acquired, and how skills are built up through life-long learning.

The VET funding model has also heightened focus on qualifications and compliance, leaving little margin or flexibility for innovation to meet industry and labour market needs.

In the context of digital skills, these limitations are especially problematic given the dynamic and rapid pace of change. These issues are also more pronounced in the formal training sector compared to providers of non-accredited training with more flexibility to respond and adapt to changing demands.

10. NCVER 2022, VET student outcomes 2022: DataBuilder, Category, Outcome by Year; Survey fielded in 2022 to completers from 2021

11. NCVER 2022, National VET Provider Collection 2017-2021, NCVER, Adelaide

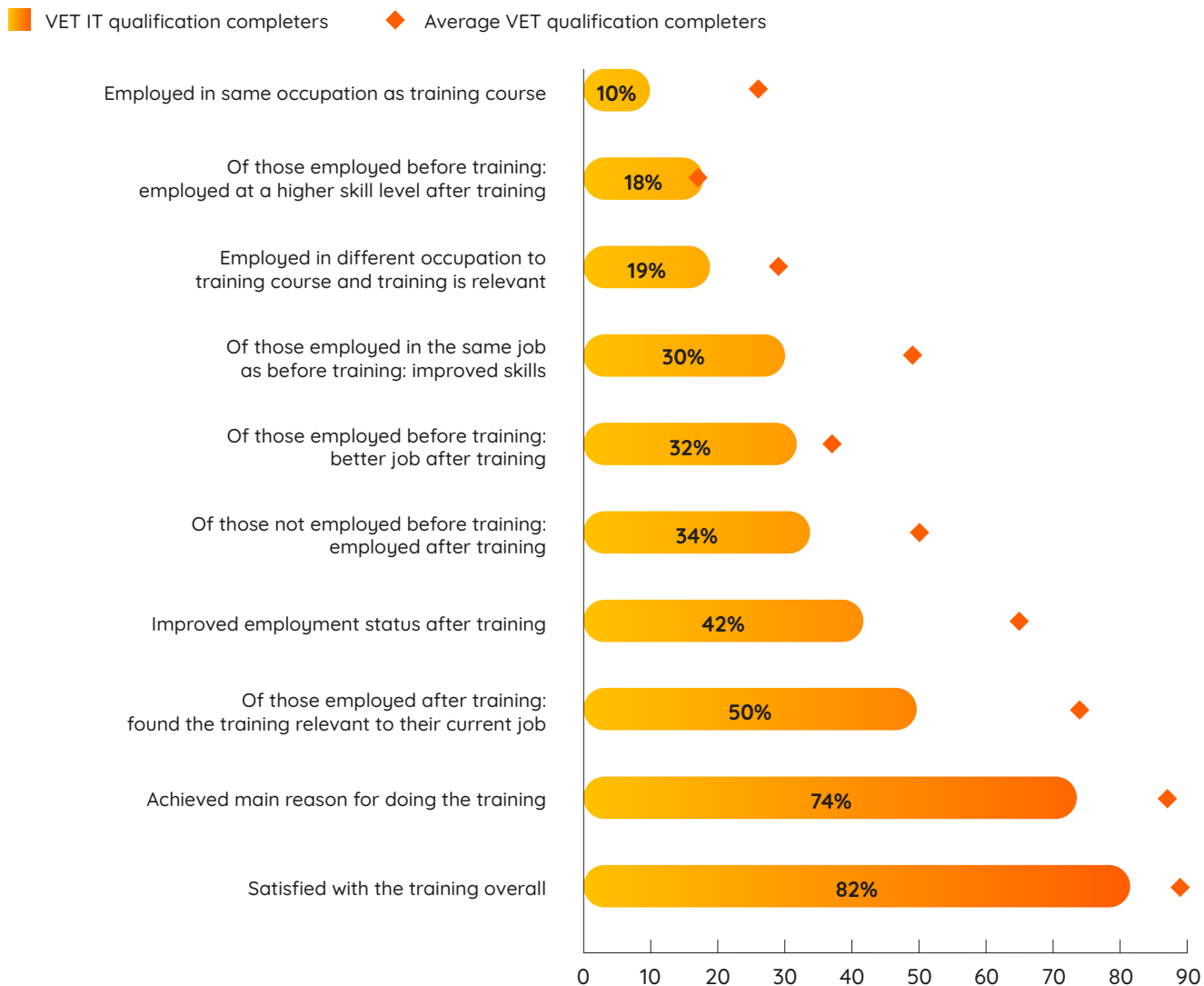
12. Tech Council of Australia, 'Getting to 1.2 million. Our roadmap to create a thriving Australian tech workforce', 2022

13. NCVER, 'An analysis of 'micro-credentials' in VET, 2021

14. Joyce, S., 'Strengthening Skills. Expert Review of Australia's Vocational Education and Training System', 2019

Exhibit 8: VET Student outcomes for IT qualification completers*

% of qualification completers, 2021



Source: NCVER 2022, Total VET students and courses 2021, NCVER, Adelaide.

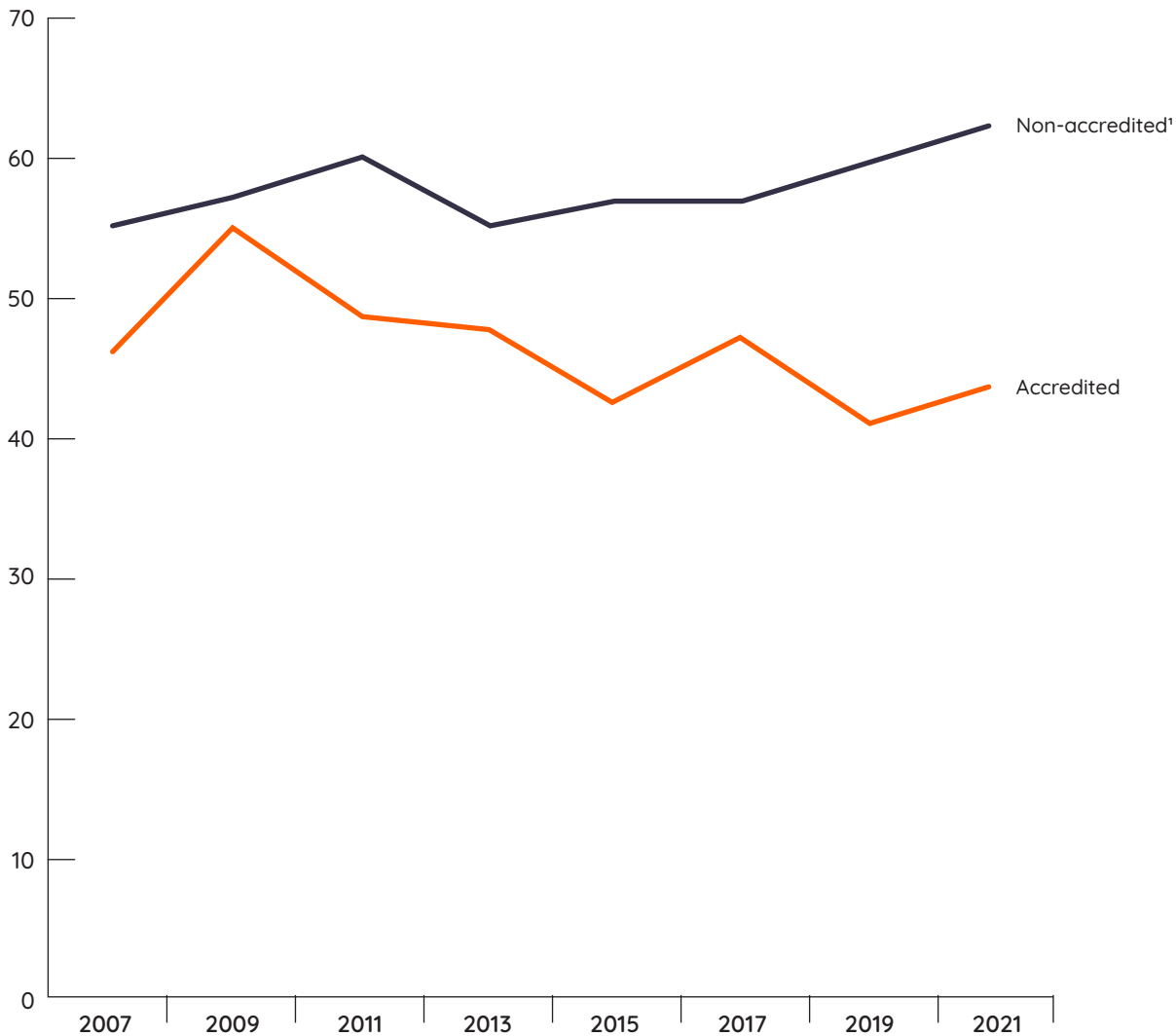
*Notes:

a. VET programs with field of education "02 - Information technology".

b. 2021 completions are preliminary and will be revised upwards in 2023 to include completions that were advised after the reporting deadline.

Exhibit 9: Employer use of VET accredited and non-accredited training*

% of employers in the Professional, scientific and technical services industry, use of training, 2007 - 2021



Source: NCVET 2021, Employers' use and views of the VET system 2021, NCVET, Adelaide

*Notes:

a. Non-accredited training includes any training that does not lead to a nationally recognised qualification or award.

b. Whilst several industries require significant digital skills, the Professional, scientific and technical services industry (defined by the Australian and New Zealand Standard Industry Classification (ANZSIC 2006)) was selected as a proxy for digital skills training as it is one of the most digitally intense industries. This industry covers a range of training that is not limited to digital skills, so caution should be used when drawing conclusions about the proportion of Accredited vs Non-accredited training in relation to digital skills specifically, using this data.

c. The values presented for 2007 have high margins of error and therefore need to be interpreted with caution.



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