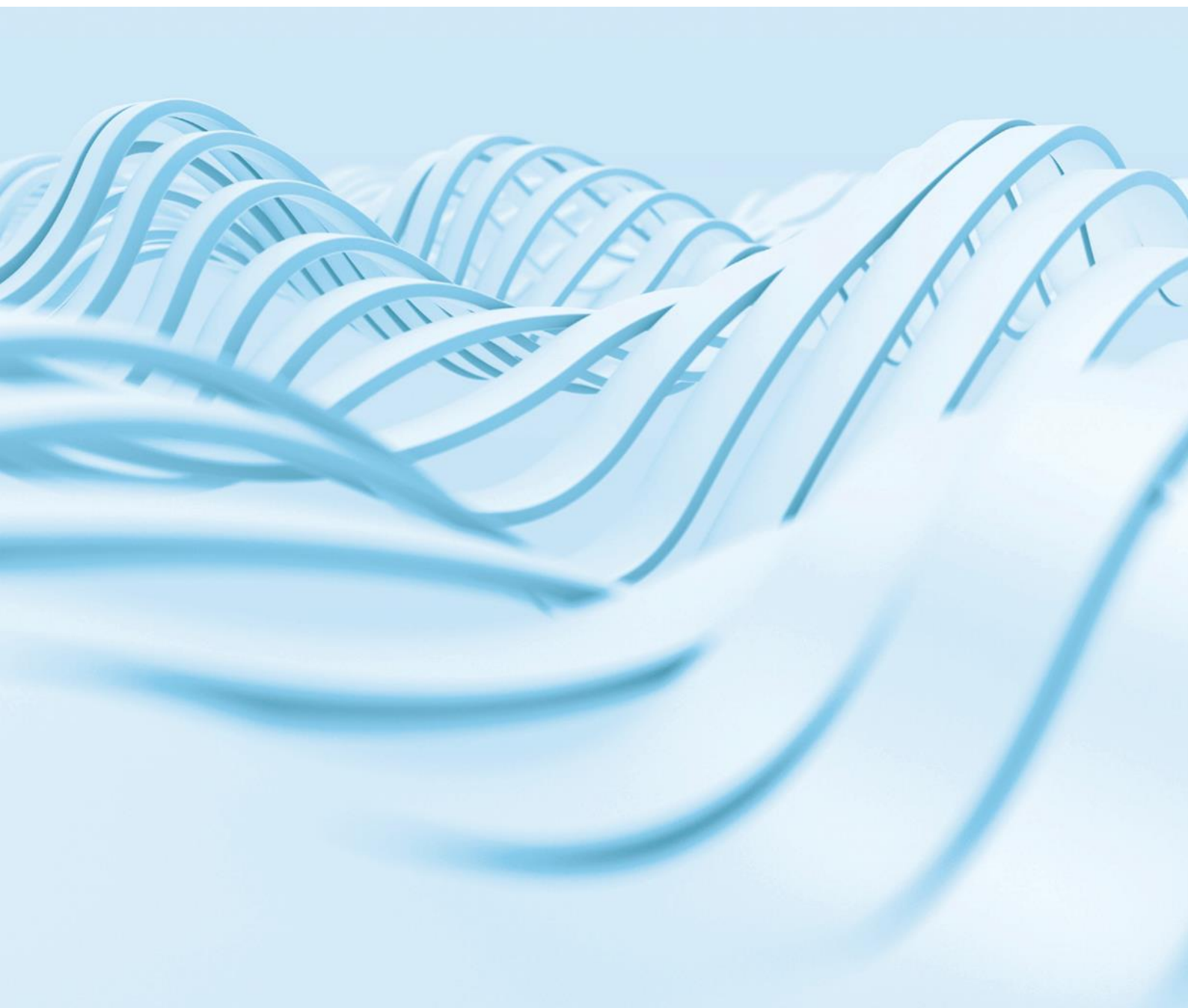




5-year Productivity Inquiry: From learning to growth

Inquiry report – *volume 8*



The Productivity Commission acknowledges the Traditional Owners of Country throughout Australia and their continuing connection to land, waters and community. We pay our respects to their Cultures, Country and Elders past and present.

The Productivity Commission

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website (www.pc.gov.au).

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Publication enquiries:

Media, Publications and Web | phone 03 9653 2244 | email publications@pc.gov.au

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The Commission’s report is divided into 9 volumes: an overview document (volume 1) that presents our policy agenda, and inquiry content volumes (volumes 2–9) that explain in greater detail the reforms that make up the policy agenda, including a modelling appendix. The full report is available from www.pc.gov.au.

Preface

Australia thinks of itself as a country rich in mineral resources. But, arguably, Australia's most valuable resource is its 26 million brains. With them we understand and use technology (from here and overseas), develop ideas and technology of our own, perform skilled work, manage our teams better, and improve our service delivery. The resources to thrive in the coming decades will necessarily come from our ideas, and from making the best use possible of them in our economy.

This is a challenge at a time when technology is transforming the nature of work. There has been a strong decline in the share of routine jobs over the past thirty years, particularly manual routine jobs, and an increase in non-routine cognitive work.

The reduction of routine tasks means that most workers will need a basic skill level to adapt to jobs that have complex demands. And it will be increasingly valuable to develop high-level skills, both for the economy and the individuals concerned. A large share of new jobs created in the next five years will require tertiary qualifications, and of these the majority will require university qualifications; the trend is likely to continue. White-collar work will not be immune from the changes brought about by digital technologies and artificial intelligence. Most people will need to learn new skills in an ongoing way to avoid obsolescence, and to find a new occupation if necessary.

Developing **foundational skills at school** is vital in this context. Young people who graduate from school without foundational skills will find it increasingly difficult to find secure work. One fifth of Australians have insufficient basic literacy and numeracy, and risk being marginalised and excluded from job markets. Foundational skills are also essential for continuing successfully to tertiary education, and for being able to learn new skills later in life. Yet increases in funding for schools in the past decade have not corresponded with improved results. If anything, a larger share of students is falling behind, particularly in numeracy. The implications for inequality are profound.

There are several promising tools for improving outcomes in schools. Giving teachers access to high-quality teaching materials reduces the variation between schools and frees up teachers to focus on better teaching. So does developing a systematic body of research on what works in the classroom and ensuring its adoption. Reducing the administrative burden on teachers provides more time for student support and improves retention of teachers. Digital technologies may support students falling behind or taking a subject outside of the scope of training of teachers in their school. Innovative new models (in terms of hours, governance or modes of delivery) may help reach disengaged students or provide new routes to excellence.

For **vocational education and training (VET)**, and for **universities and other higher education providers**, the rise of non-routine work and the explosion of high-skill jobs has implications for the **quantity** and **quality** of education needed. The Productivity Commission is advocating a cautious and gradual expansion of income-contingent loans to all career-oriented VET courses, starting at the Diploma level, so that more students can continue their studies after high school. The Commission also advocates for a return to a demand-driven university system, to meet growing demand and eliminate the distortions caused by funding caps for universities. Accompanied by recommended changes in the funding model to limit the fiscal cost of such a transition. Giving more students access to higher education is beneficial for them and the economy.

However, there are limits to the effectiveness of a quantity-driven strategy. Improvements in the quality of critical thinking and the relevance of the technical skills taught are sorely needed. Without these, skill shortages will persist, and firms will lack the new ideas and technical knowledge to deliver productivity improvements.

Satisfaction with VET and university has been mixed among graduates and employers. Course content in VET is slow to adapt. Incentives for universities to improve their teaching are weak. More needs to be done to promote quality teaching and leverage the opportunity presented by the ongoing shift online, which has been accelerated by the COVID-19 pandemic.

Most countries struggle with the challenge of improving the quality of tertiary education teaching. Students choose based on reputation and considerations such as location, with little information on teaching quality. Properly assessing and rewarding lecture delivery and quality materials is costly and can be gamed. But what information is out there can be leveraged more effectively: university lectures could be made freely accessible, survey data on VET and higher education could be expanded and made more salient to students choosing courses, and regulators' assessments of quality could be deepened. More study of what works and more rewards for what works are also useful.

Beyond entry-level qualifications, Australia has much to gain from **lifelong learning**. Keeping skills current, adapting to changing roles and changing occupations will all be vital to Australia's future productivity. In addition to making university lectures available to all, the government should build a consolidated strategy to ensure that all Australians can access learning through-out their lives and grow with the economy.

Let's use our most precious resource well.

1. The value of human capital

Key points

- * **Education increases people's capabilities — allowing them to do more or better work in the same time. It also makes society healthier, safer, better informed, and more civically engaged, as well as fostering social mobility.**
- * **Skills developed through education, training and on-the-job experience underlie the capacity to make the fullest use of technology, generate new ideas, and apply knowledge from within Australia and from overseas.**
 - Rising skill levels have contributed to Australia's productivity growth in recent decades, although it is challenging to measure the share of growth that can be attributed directly to education.
 - One in five Australians have low basic skills, which limits their job opportunities, versatility, capacity to acquire further skills, and lifetime wages. Quality education can help prevent young Australians from ending up with low basic skills, and improve social inclusion.
- * **As our reliance on the services sector expands, people's capabilities ('human capital') will play a more important role than physical capital in improving productivity.**
 - **General and foundational skills** will continue to underpin the workforce's contribution to productivity, and as routine tasks are automated, newly created jobs will increasingly rely on areas such as interpersonal skills, critical thinking, working with more complex equipment, and accomplished literacy and numeracy.
 - **Specific skills** in areas such as data and digital technology, allied health care and community services will be increasingly needed due to the changing composition of the economy and an ageing population.
- * **Beyond these trends, we cannot predict many of the jobs that will emerge over the coming decades. An adaptable system developing general capabilities as a complement to technical skills can provide resilience to these changes.**
- * **Outcomes across schooling, VET, and higher education are reasonable but there is still room to improve. Raising student outcomes for a given number of years of education and better matching what is taught to emerging skill needs will be critical to Australia's ongoing prosperity.**

1.1 Education is vital for productivity

Education is vital in developing ‘human capital’, which describes the economic and social value of a person’s skills and experience. Investments in human capital can increase an individual’s earnings, health, capacity to participate in the broader community, and their ability to appreciate art and culture. Education is a primary pillar in human capital development and can improve all these outcomes. Reflecting its importance, in 2020-21 government expenditure on education totalled \$116 billion (ABS 2022c). This volume of the inquiry focuses specifically on how education enables workforce productivity.

Many inquiry participants highlighted the importance of education for productivity, including those within the sector and those with a broader interest in productivity.¹ Many of these submissions remark on the role of education in developing human capital and how this drives productivity growth as well as its broader value, ‘providing the basis for successful engagement with the labour market and contributing to wellbeing’ and ‘contribut[ing] to civic values and creat[ing] the conditions for a more informed, engaged and productive citizenry’ (Tasmanian Government, sub. 196, p. 12; DASSH, sub. 141, p. 1).

The Productivity Commission has considered parts of the education sector in recent years (PC 2017a, 2019, 2020c). This inquiry is an opportunity to examine its role in promoting productivity, as well as lessons and opportunities from the COVID-19 pandemic. While this volume is primarily focused on the formal education system, this is only one channel that contributes to skill formation and labour productivity. For example, on-the-job training and experience also play a key role in developing human capital.

Improved education can contribute to productivity across the whole economy. But it is even more important for future productivity growth in the services sector, where human capital plays a much greater role. In agriculture and traditional manufacturing, physical capital accumulation and increasing mechanisation allows far fewer workers to produce far more. This might not be replicated in many parts of the services sector. For example, increased productivity in residential aged care is likely to reflect *better* care by staff. There may be less scope for reductions in staff-to-resident ratios facilitated by new technologies.

Education will also be critical for reaping the economy-wide benefits of automation and digital technologies — future growth is likely to involve a greater level of skill-biased technological change. These factors have prompted a growing need for tertiary graduates in the labour force. At the same time, school student test scores have been stagnant or declining, and new modes of education delivery have emerged. Although these challenges are not new, the COVID-19 pandemic has been an accelerant. Securing the right system settings now is imperative to ensure that Australia does not miss the opportunities of a world economy changing at an increasingly rapid rate.

Rising skill levels have underpinned Australia’s productivity growth

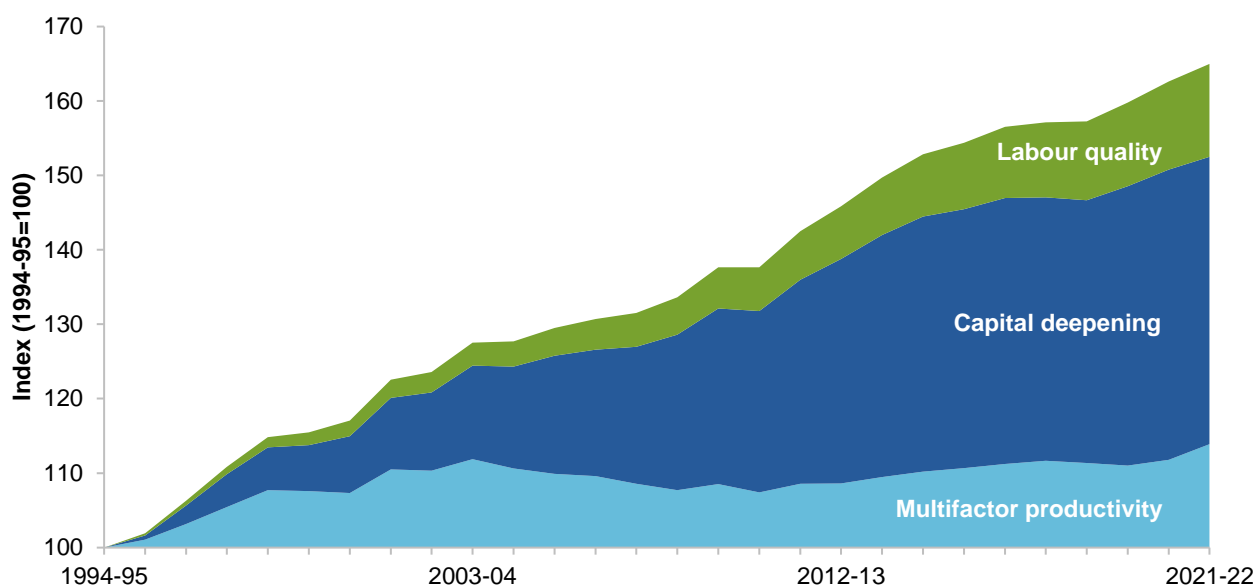
The evidence that education plays an important role in productivity growth is compelling. From 1993 to 2021, the share of Australian adults with less than a high school education fell from 47% to 16%, while the share of adults holding tertiary qualifications rose from 22% to 50% (OECD 2023). As this happened, the measured

¹ See for example, gemaker, sub. 13, Jenny Gordon, sub. 17, Australian Education Union Federal Office, sub. 21, The Smith Family, sub. 26, National Tertiary Education Union, sub. 36, Grattan Institute, sub. 37, Australian Chamber of Commerce and Industry, sub. 47, Australian HR Institute, sub. 54, Primary Focus, sub. 56, KPMG, sub. 60, Universities Australia, sub. 70, Alphacrucis University College, sub. 133, DASSH, sub. 141, Desmond Griffin, sub. 143, Regional Universities Network, sub. 154, Australian Chamber of Commerce and Industry, sub. 175, Innovative Research Universities, sub. 177, Ai Group, sub. 179, La Trobe University, sub. 182, Monash University, sub. 184, Group of 8, sub. 187, Science & Technology Australia, sub. 188, Universities Australia, sub.195, Tasmanian Government, sub. 196.

quality of labour in the economy improved. Figure 1.1 shows the results of a standard ‘growth accounting’ exercise. Relying on some assumptions, one can measure how more education (labour quality), more machinery and equipment (capital deepening), and more innovation (multifactor productivity) contribute to the growth in labour productivity. Labour quality — reflecting the education and experience of the workforce — has accounted for about 20% of labour productivity growth in recent decades. This suggests that labour quality has accounted for a larger share of labour productivity growth as other drivers have started to slow or stall.

This result is only approximate, as it relies on a number of assumptions. In particular, it relies on correctly measuring the growth in labour quality. Labour quality is measured in terms of the average years of education in the workforce, with an adjustment for average years of work experience. If greater numbers of educated workers reduce the benefits of additional education, then growth accounting would overestimate the contribution of labour quality. Likewise the contribution could be overstated if the quality of education had fallen. At the same time, better education could also be contributing to other factors, by increasing capital investment, innovation, or allowing workers to better use capital; in that sense growth accounting could underestimate the contribution of education (Cole, Paulson and Shastry 2014; Kong, Zhang and Zhang 2022; Parker and van Praag 2006; Riddell and Song 2017). That said, multifactor productivity has stagnated in recent decades despite the growth in educational attainment.

Figure 1.1 – Labour productivity has grown partly due to a more skilled workforce^a
Factors accounting for labour productivity growth since 1994-95



a. Capital deepening reflects the increase in GDP per hour worked that can be explained by higher levels of capital. Labour quality reflects the increase in GDP per hour worked that can be explained by higher levels of workforce education and experience and is not the causal effect of education. Multifactor productivity is the change in GDP per hour worked that cannot be explained by these factors.

Source: ABS (*Estimates of Industry Multifactor Productivity*, 2021-22 financial year, Cat. no. 5260.0.55.002, table 2).

It has been noted there may be limits in the contribution of increasing levels of education to economic growth (Tom Karmel, sub. 197, p. 1), as rising education levels reduce the productivity uplift from an even greater number of skilled workers. However, there is no evidence that we have reached — or are even close to — the point where the cost of education for marginal workers outweighs the benefit received by them and by society (chapter 3). And most new jobs are forecast to require some level of tertiary education (section 1.2).

Although aggregate productivity statistics point to an important role for education, the magnitude of the causal relationship is difficult to determine from the macroeconomic picture alone. The microeconomic evidence outlined below provides a stronger indication.

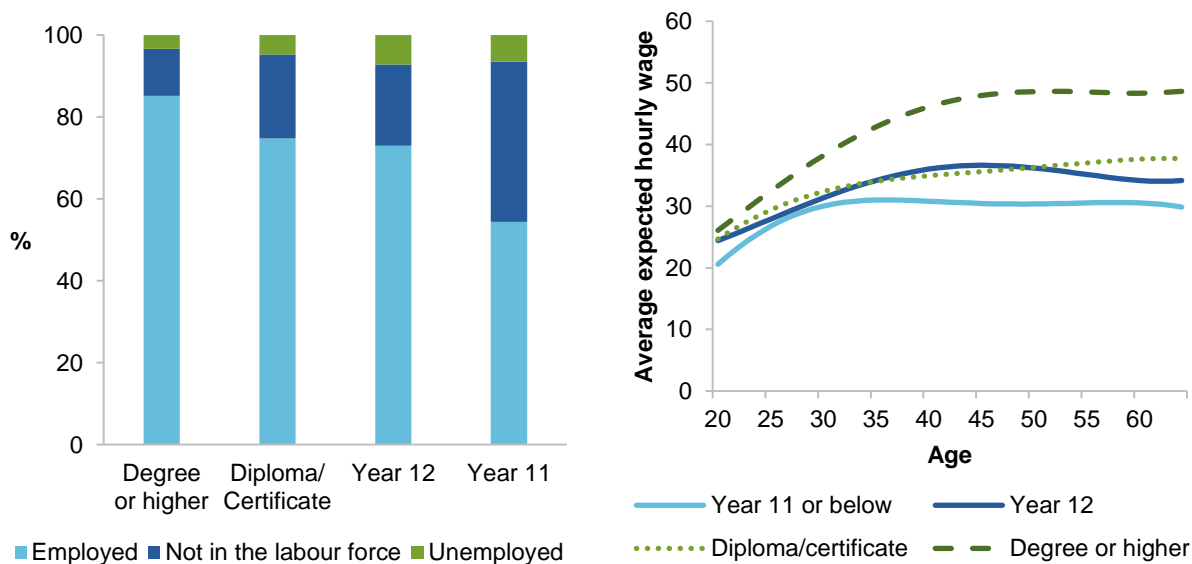
Education improves worker productivity

More educated workers are more likely to be employed and earn higher wages, even after accounting for some individual characteristics (figure 1.2).²

These effects remain strong despite two well-known confounders in the relationship between education and earnings.

- People with more innate ability take part in more education, meaning some of the effects of education will reflect pre-existing ability rather than the effect of education itself. Nonetheless, Australian evidence still finds substantial earnings and labour force participation benefits to the completion of secondary school, vocational education, and higher education after accounting for unobserved innate ability (Leigh 2008).³
- The ‘signalling’ theory holds that education could provide little benefit to worker productivity, but nevertheless increase earnings by showing employers the worker has the ability to complete their qualification. However, empirical evidence suggests that strong earnings benefits remain beyond the impact of signalling (box 1.1).

Figure 1.2 – More educated workers are more likely to be in the labour force and earn more over their lifetime



Source: Productivity Commission estimates using wave 20 of the *Household, Income and Labour Dynamics in Australia* survey, following Forbes, Barker and Turner (2010).

² Variables accounted for include gender, age, geographic location, and employment variables.

³ The method used to account for this ‘ability bias’ credibly found that this inflates the apparent earnings benefits of education by about 10% for secondary school students. However, it simply assumed that this bias is of the same magnitude in vocational and higher education.

Box 1.1 – Human capital and signalling theory – does a qualification make you smarter or just signal that you might be smarter?

Economists have long debated why workers with greater levels of education earn a higher income. **Human capital theory** holds that education — from schooling to university — increases a worker's productive capacity, which is rewarded by higher pay (Becker 1962). **Signalling theory**, however, holds that education has little or no intrinsic benefit, and that educated workers are only paid more because their higher innate ability makes it easier for them to complete qualifications, which they use to signal to employers that they are innately smart or hard-working (Spence 1973). Ultimately, there is evidence to support both human capital and signalling benefits of education, and recent work centres on measuring the extent of each effect (Huntington-Klein 2021).

But there is evidence against the most extreme form of signalling theory in that the earnings benefits from greater levels of education for workers with the same initial ability persist over time — if education is only valuable as a signal of ability, why would the effects persist even after employers can directly observe the ability of employees? There are two possible explanations. First, that employers are unable to ascertain the ability of their employees. And second, that starting out in a high-paid position locks workers onto a permanently higher-paying career trajectory.

Recent research has challenged these explanations and therefore signalling theory, comparing graduates who were just above or just below the threshold for university awards or had their marks arbitrarily rounded higher or lower — with the same ability, but different signals of their ability. In two studies, earnings for those with this false signal were higher initially, but differences disappeared after two years (Khoo and Ost 2018; Toft Hansen, Hvidman and Sievertsen 2021). The employers saw through the misleading signals, instead paying workers based on their ability. And starting out in a higher-paid position did not seem to have lasting effects.

Given this, persistent earnings benefits over time among workers with the same initial ability imply genuine human capital development from education. In fact, earnings benefits seem to grow over time (Bhuller, Mogstad and Salvanes 2017). These findings are significant, implying that tertiary education increases total workforce productivity by developing human capital, rather than merely redistributing the same jobs from less to more educated individuals through signalling effects.

Education develops general labour force skills ...

Education is critical to general skills development. There is evidence of benefits from both secondary and tertiary education to general cognitive performance (Kamhöfer, Schmitz and Westphal 2019; Ritchie and Tucker-Drob 2018). Literacy and numeracy skills, although largely developed at school, also increase at a faster rate among university students compared with other people of the same age (Hampf 2020).⁴

It also improves other non-cognitive skills, with evidence that this occurs into the post-schooling years. For example, an Australian study found that non-cognitive skills — such as sociability and tendency to co-operate — improve at a faster rate among those who go to university compared with those who do not

⁴ While this study estimated notable increases in both literacy and numeracy skills, the timing of tests means that some of these skills may have been gained while in the workforce, rather than at university.

(Kassenboehmer, Leung and Schurer 2018). And people who finish high school are often better equipped to make informed decisions, a skill that leads to a range of other benefits (OECD 2010).

Educated workers undertake more formal and informal on-the-job training (OECD 2012) which has similar benefits for productivity (Dostie 2010).⁵ Overall, the OECD estimated that increasing the skills of workers in median-productivity firms up to the skills of workers in firms on the productivity frontier could close the productivity gap between these firms by 19% (Criscuolo et al. 2021).

Beyond developing skills, education can also enable workers' skills to be put to better use. There is evidence that higher education can improve the matching of workers to jobs, as indicated by how long graduates stay with their first employer (Floyd, Tomar and Lee 2022), an additional channel through which education can increase productivity.

... fosters greater levels of innovation ...

An educated workforce has the potential to facilitate innovation. Clearly, advanced education in areas such as science, digital technology or medicine is a key input to technological breakthroughs in many areas. Similarly, increases in the supply of educated workers lead to greater levels of innovative activity from firms (Kong, Zhang and Zhang 2022). Managers with greater levels of education invest more in research and development (Huang et al. 2020). And education increases the success of entrepreneurs (Parker and van Praag 2006).

However, as emphasised in this inquiry's companion volume *'Innovation for the 98%'*, Australia can also see significant gains from adopting and putting into practice novel, or new-to-world, innovations from overseas, or from broader diffusion of Australian innovations. An educated workforce supports this diffusion, partly because educated workers are more likely to adopt new technologies (Riddell and Song 2017). Given the key role of innovation for productivity growth, this presents yet another mechanism through which education can drive productivity.

... and delivers broader benefits to society

Education improves productivity partly due to the positive spillovers it creates — benefits to society beyond the educated person. For example, workers may pass their skills or insights from their learning on to their peers, co-workers, or children and so increase their productivity (Bentsen, Munch and Schaur 2019; Suhonen and Karhunen 2019) A greater overall level of education may also create new jobs for lower skilled workers (Schultheiss, Pfister and Backes-Gellner 2018).

Further, education could improve health and reduce crime by enabling people to make better-informed life choices (Hai and Heckman 2022; Hjalmarsson, Holmlund and Lindquist 2014; Jha and Polidano 2016; Kamhöfer, Schmitz and Westphal 2019). The higher employment rates and earnings resulting from education can also reduce government support payments and raise tax receipts, which could be used to fund productivity-enhancing reforms or lower the tax burden.

Other work suggests that the benefits from education could be even broader. Higher levels of education appear to be associated with community engagement, advocacy and volunteering, trust and tolerance,

⁵ Although some research found that the benefits to the worker and the firm are roughly equal (Nilsson 2010), other work suggests wage benefits to workers, although positive, are smaller than the increase in their productivity (Konings and Vanormelingen 2015).

healthy behaviours, environmental conservation activities, employment and business management, lower financial stress, and reduced reliance on government support payments (DESE 2019).⁶

Public investment in education has been found to reduce inequality (Fournier and Johansson 2016) and generally ‘improves society by increasing equity and social cohesion’ (Australian Education Union, sub. 21, p. 3), potentially improving the prospects of the most disadvantaged students by fostering social mobility. Intergenerational cycles of disadvantage can also be disrupted by education, with parental education increasing a child’s attainment and reducing the chance that they repeat a grade (Havari and Savegnago 2014; Oreopoulos, Page and Stevens 2006).

University peak bodies have quantified the benefits of education, consolidating many of the factors outlined above, although there are significant limitations to the analysis that suggest it may overstate the net benefits (box 1.2).⁷

Box 1.2 – Reports from university peak bodies are overconfident in their estimated benefits of higher education

Recent studies commissioned by university peak bodies suggest large returns on investments in universities – with each dollar invested in university teaching apparently returning \$4 to society (Deloitte Access Economics 2020, p. 22), and education by Group of Eight universities providing \$5 billion in value to society, not including a potential \$11 billion in additional benefits to employers (London Economics 2018, p. viii).

However, there is reason to believe that the true effects are more limited, and far more challenging to estimate, than these reports suggest.

Both London Economics and Deloitte Access Economics included in their analysis the multiplier effects of university spending (that is, benefits to other businesses). Implicitly, this makes the incorrect assumption that governments and consumers would not spend these funds elsewhere if universities did not exist, or that if they did, there would be no multiplier. Indeed, guidance on cost-benefit analysis typically recommends against the inclusion of multipliers (Infrastructure Australia 2021, p. 89; NSW Treasury 2017, p. 12). London Economics also simply counted overseas student non-tuition spending in Australia as an economic contribution rather than estimating the net contribution (additional consumption minus additional labour supply); the net contribution using this approach is likely to be far smaller (PC 2020b, pp. 151–153). Making these adjustments significantly reduces the estimated effect.

Deloitte Access Economics used OECD country data to estimate a production function representing each country’s economy. The share of workers who have completed tertiary education was included as a multiplicative input. This approach will not perfectly capture the relationship between education and

⁶ While education is linked to a greater probability of these outcomes, it is difficult to disentangle the contribution of education, as those who opt in to additional education may be independently more likely to achieve them. However, international analyses that account for this have found beneficial effects in line with the Australian results for these outcomes (Hai and Heckman 2022; Kämpfen 2021; Österman 2021).

⁷ Note, these studies also attempt to estimate the estimated impact of university research output, however in the context of this volume we focus on their findings regarding the impact of university education. These research impact estimates also have some limitations. For example, diminishing marginal returns to research are not accounted for, and the methodological approach risks attributing the benefits of overseas R&D to Australian universities.

Box 1.2 – Reports from university peak bodies are overconfident in their estimated benefits of higher education

output — at the extreme, it implies that Australia’s GDP would be zero if all workers with tertiary qualifications did not have those qualifications.

Both papers estimated the impact on earnings of a university education. Students who attend university on average have characteristics that make them more likely to succeed in the labour market, even without a university education; so this must be accounted for. While both controlled for cognitive ability, using a rough measure, they did not control for other characteristics associated with university attendance, such as aspects of family background or individual personality; so the impact of university is likely overestimated, as educated workers would have earned more even without their education. London Economics at least acknowledged the estimates they use ‘do not provide any evidence on the causal effects of education attainment’, although they nevertheless used these estimates.

Any attempt to quantify benefits involves methodological challenges. But assumptions in modelling need to be reasonable. And reporting of impacts should imply a degree of certainty that is proportional to the strength of the evidence.

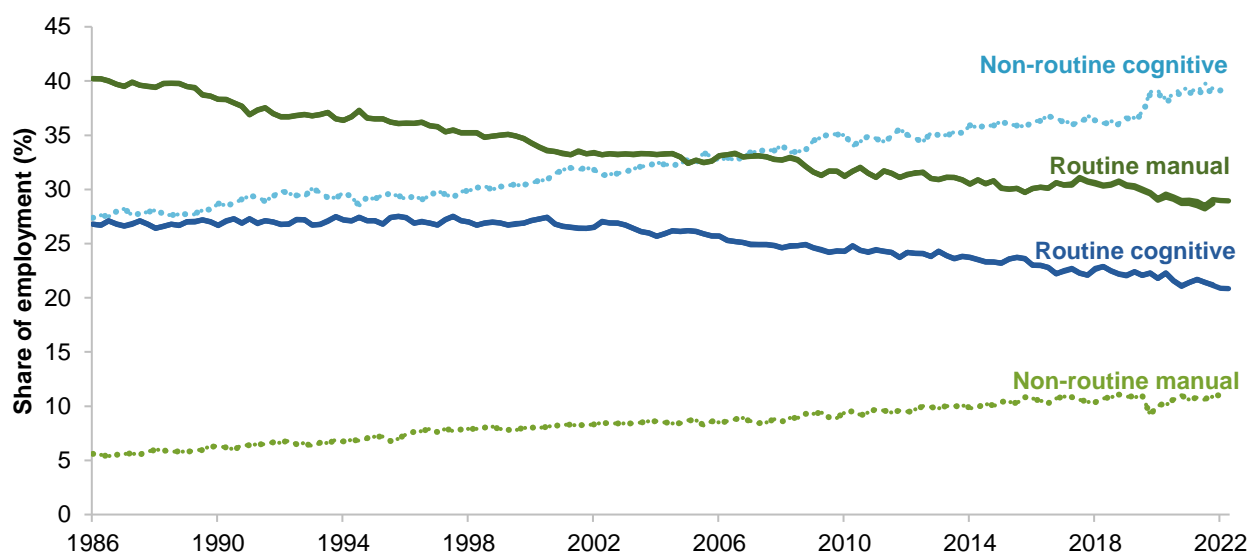
This is not to say that the benefits of education are not large, or that they do not justify further expansion of access to education. However, efforts to quantify these benefits (particularly when paid for by parties with a vested interest) need to be interpreted with caution.

1.2 What skills are necessary for Australia’s future workforce?

The education sector needs to adapt to emerging skills requirements of the Australian economy. The skills demanded have been shifting, and there is also likely to be ongoing structural adjustment in the wake of the COVID-19 pandemic. Over time, technological change and automation have replaced or enhanced aspects of some jobs, and generated demand for others (PC 2017, p. 83). An increasing proportion of jobs require non-routine skills, which typically demand workers with higher levels of education or training (figure 1.3). Past experience suggests automation is likely to shift tasks and occupations to new areas rather than simply eliminate them. As jobs and tasks change more rapidly, it will become increasingly important that education provides adaptable general skills. In particular, this would mean benefits to the workforce go beyond higher earnings to increased job security and lower risk of obsolescence.

In addition the services sector now predominates, accounting for 90% of workers, up from about 50% in 1900 — affecting the skills required in the economy (PC 2021, p. 6). Similarly, population ageing has meant rising demand for health and care workers. Education can develop the skills needed to meet these structural shifts, and reskill workers who become displaced (Ernst, Merola and Samaan 2019).

Figure 1.3 – Non-routine skills are increasingly demanded, particularly cognitive
Job types in the labour force (share of total)^a



a. Based on a mapping from ABS labour force to Australian and New Zealand Standard Classification of Occupations job classifications. Non-routine, cognitive: Managers, Professionals; Non-routine, manual: Community and Personal Service Workers; Routine, cognitive: Clerical and Administrative Workers, Sales Workers; Routine, manual: Technicians and Trades Workers, Machine Operators and Drivers, Labourers.

Source: ABS (*Labour Force, Australia, Detailed*, November 2022, Cat. no. 6291.0.55.001, table 7).

Foundational skills underpin productivity

The quality of the education received early in life affects wellbeing and has a long-term influence on Australia's economic growth and prosperity. Education prepares children for their future lives by providing foundational skills required to participate in further education or training, enter the workforce, and participate wholly in society as adults. It is at primary and secondary school that students acquire the foundations of learning in literacy, numeracy and digital skills recognised as 'essential skills for every student' (Education Council 2020, p. 13).

Conversely, poor literacy, numeracy, and digital skills limit workers' ability to perform many tasks or engage in further training. Put bluntly by one participant in this inquiry:

[P]roductivity enhancing attainment at TAFE and University are bounded by the limits of achievement at earlier levels of schooling. Poor readers make poor students at any stage of education. (Primary Focus sub. 56, p. 4)

Many Australians are still limited by these skills. One in five adults have low basic skills, leaving them unable to perform tasks that could include reading a petrol gauge or understanding the label on painkillers (OECD 2017). This is associated with lower likelihood of being in employment, education or training; and lower incomes. A better education system would reduce the share of lower-skilled people and promote their wellbeing and the productivity of the workforce. And foundational skill deficits will become even more damaging as the demand for routine manual skills continues to decline (figure 1.3).

Non-routine work requires more than technical skills

Interpersonal skills are also critical to many workplaces, with effective and respectful engagement with co-workers, managers, customers, or clients as their foundation. While interpersonal skills will often reflect family characteristics and general social norms, education and training can also play a role. For example, the ethos of customer-centric care in aged and disability care involves some teachable practices. Research has found strong earnings and productivity benefits to non-technical skills, and that these skills can be developed through education at many levels, ranging from preschool to on-the-job training (Heckman and Kautz 2012; Prada, Rucci and Urzúa 2019).

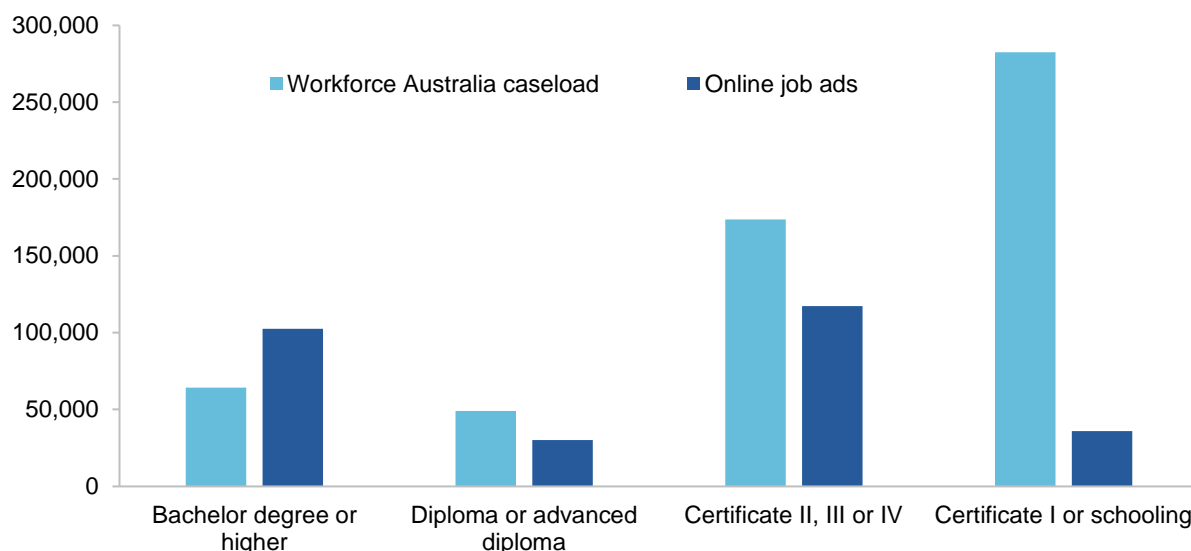
Skill formation will be essential to the future workforce

Skill requirements will grow in future decades. Even now, there is a significant mismatch between the qualification levels demanded by employers and those possessed by job seekers (figure 1.4). And this could worsen, with the former National Skills Commission (NSC) projecting that more than nine out of ten jobs created in the next five years will require post-school education, and that three out of every five new jobs will be high-skilled (NSC 2022b) (figure 1.5).

The NSC identified computing, cognitive abilities, communication, and care as key skills needed for future job growth (NSC 2021, p. 113). Developments in 'caring' sectors in particular will drive future skill needs. In 2020-21, for every one retirement age person, there were 3.9 working age people, but by 2060-61, there will only be 2.7. The number of working age people for every person over the age of 85 is expected to fall from 33.2 to 12.5 over the same time period (Centre for Population Projections 2021). This will increase the demand for aged care workers. And growing health spending, partly due to the ageing population, will continue requiring more healthcare workers. Occupations in these areas require varying levels of education (usually including post-school qualifications), and all benefit from the cognitive and non-cognitive skills developed in secondary and tertiary education. The tertiary sector, in particular, must be prepared to provide the skills necessary for the care workforce to expand in coming years.

Although we can make predictions that skills in some broad areas will experience greater demand in the future, exact skill needs are hard to predict. Many occupations that will be created in coming decades may be hard to even conceptualise, relying on technologies that are yet to be invented — necessitating lifelong learning to update skills in response to changing technologies and occupational demands. Ongoing and continual learning will complement and transcend what occurs in traditional education institutions. In this context, it is important that the education sector remains dynamic and adaptable and that businesses have the internal capacities and incentives to train their employees.

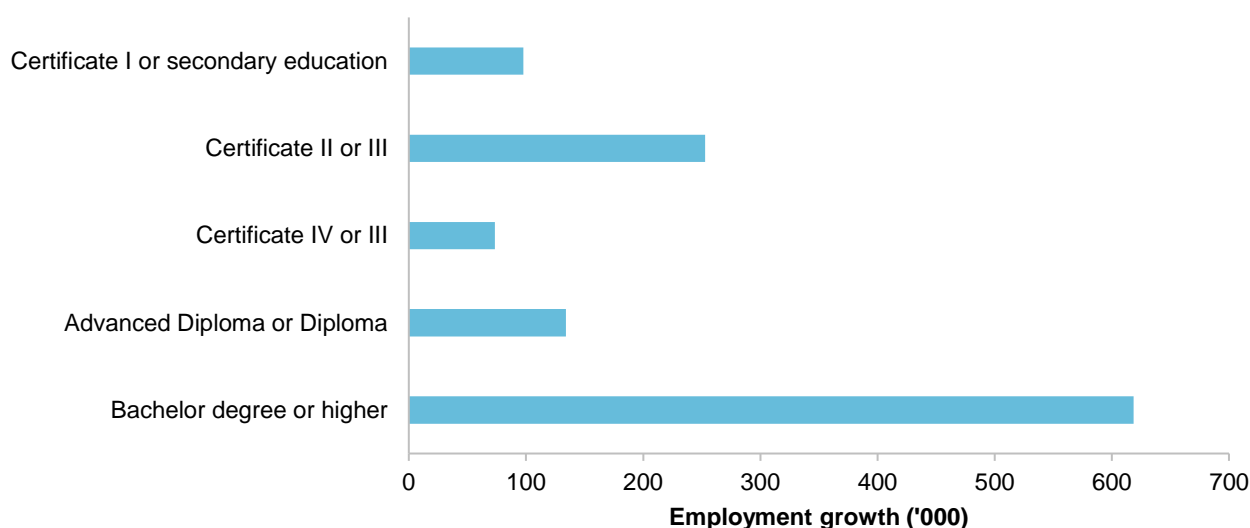
Figure 1.4 – Many job vacancies need higher qualifications than job seekers possess^{a,b}
Workforce Australia caseload and online job ads, by skill level



a. Workforce Australia caseload does not include all unemployed people. It also includes some employed people with low earnings. Workers with less than Year 10 education are not included. Caseload data as at 30 November 2022. **b.** Internet Vacancy Index data on online job ads are only based on a selection of websites. Multiple positions in a single advertisement will be treated as a single vacancy. Many jobs are not advertised online or at all, and this may be more likely to be the case for positions with lower skill requirements. Results have been seasonally adjusted. Vacancy data for October 2022.

Source: Productivity Commission analysis based on unpublished DEWR data and Jobs and Skills Australia (2022).

Figure 1.5 – Almost all new jobs over the next 5 years will require tertiary education^{a,b}



a. From the National Skills Commission Employment Projections, five years to November 2026. 'New jobs' refers to employment growth and does not include mobility between existing positions. **b.** **Certificate IV or III** includes Certificate III level qualifications that include at least two years on-the-job training. **Certificate II or III** includes Certificate III level qualifications that do not include at least two years on-the-job training.

Source: Adapted from NSC (2022).

1.3 The education sector context

Schooling in Australia consists of primary and secondary education, ranging from the Foundation Year to Year 12, with school attendance compulsory to Year 10. Of the 9600 schools, approximately 70% are run by State and Territory governments, with remaining schools operating as part of the Catholic education systems (18%) or as independent schools (12%) (ABS 2022, table 35b). In 2021, there were about four million students enrolled in primary, secondary and special education school across Australia (ABS 2022, table 42b).

Although a large share of learning occurs on the job, the tertiary education sector plays a vital role in providing both general and occupation-specific skills. The tertiary education sector can be divided into:

- **higher education**, comprising universities and other higher education providers (just under 200 providers in total)
- **vocational education and training (VET)**, comprising TAFE colleges and institutes, adult and community education providers, private providers, community organisations, schools, higher education institutions, commercial, industry body and enterprise training providers (over 4000 providers in total).⁸

The higher education sector delivers both generalist education and training for highly specialised professional occupations. Conversely, VET is mostly focused on targeted vocational training, developing skills for a particular job function or trade; but also plays an important role in developing foundational skills. Over recent decades, massive open online courses (MOOCs) and microcredentials have entered the market — often delivered by industry as well as higher education institutions — providing alternative avenues for skill formation.

How the sector is performing

Academic achievement of Australian school students has stagnated over the past decade. Student achievement is often gauged using results from the National Assessment Program — Literacy and Numeracy (NAPLAN) or the Programme for International Student Assessment (PISA) tests.⁹ Average PISA scores for both mathematics and reading have declined over recent surveys, while NAPLAN scores have been generally steady across all year levels. Recent Productivity Commission analysis suggests the fall in PISA results has been more modest than is commonly reported (PC 2023, pp. 57–58).

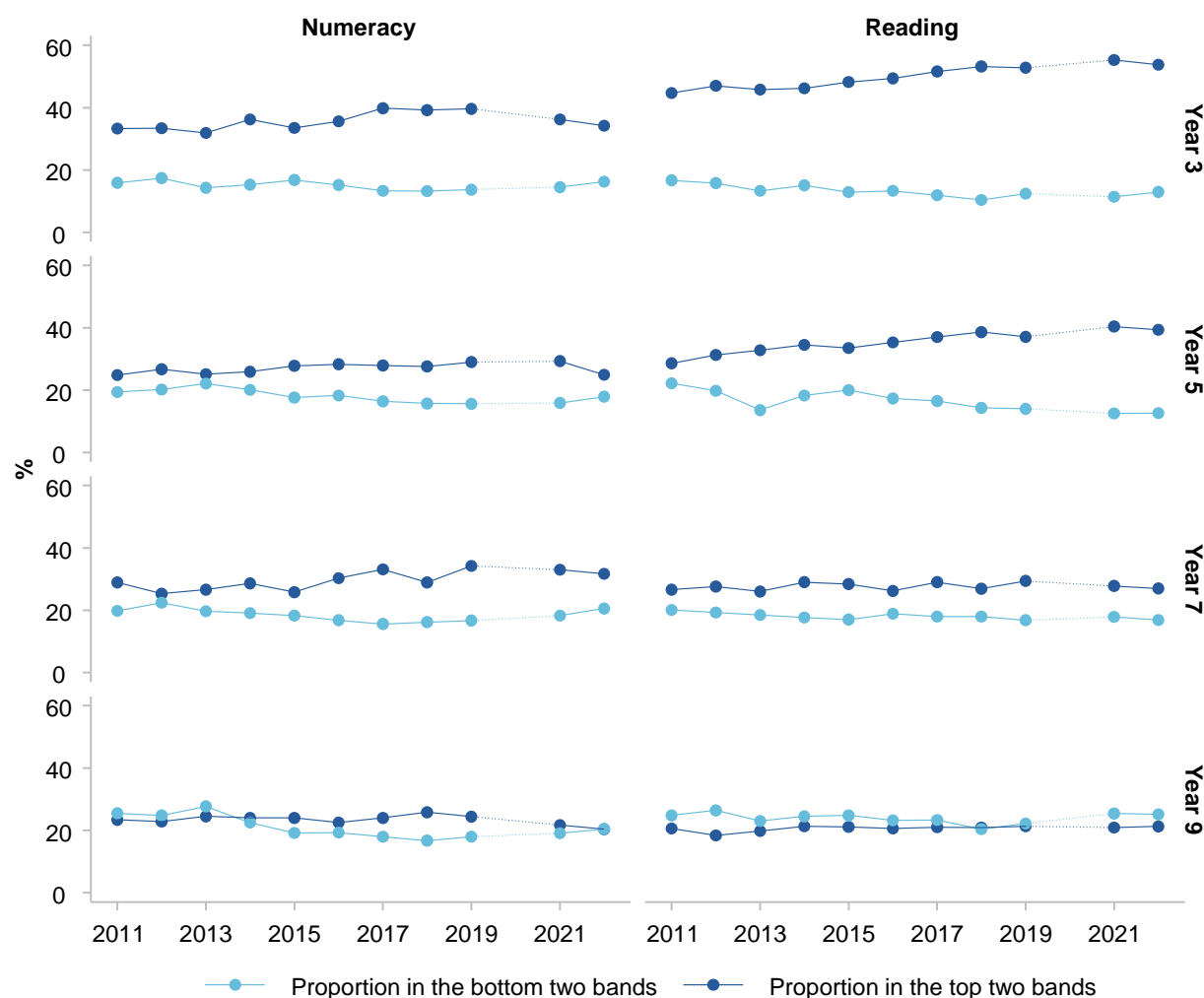
Overall student achievement can also be assessed by looking at ‘performance bands’ (figure 1.6). Performance bands represent increasingly challenging skill levels and correspond with increasingly higher scores on the NAPLAN scale. Prior to COVID-19 there was an increase in the proportion of high-performing students in primary schools in reading. Other than this, the proportions of students in the bottom and top performance have remained relatively constant across year levels.

The lack of improvement in academic results has been accompanied by a concurrent increase in the amount of money spent on schools (figure 1.7). Overall, gross school income per student has increased by nearly 20% in real terms since 2011, with little discernible improvement in test scores. A lack of improvement in such student outcomes may reflect where this additional money has been spent: school income per student from government sources for government schools increased by about 18% in real terms since 2011, while the increase was 34% for Catholic schools and 47% for Independent schools.

⁸ Based on the national register of vocational education and training (training.gov.au) as at January 2023.

⁹ NAPLAN is a national assessment taken each year by year 3, 5, 7, and 9 students, whereas PISA is an international standardised test for 15-year-old students — regardless of what year they are in at school — conducted each year by the Organisation for Economic Co-operation and Development (OECD).

Figure 1.6 – NAPLAN suggests that performance has not improved in recent years^{a,b}
Percentage of students in the top or bottom two bands, 2008–2022



a. NAPLAN testing was not conducted in 2020. **b.** Students assessed as being in the bottom two bands are at or below the national minimum standard. NAPLAN assessment scores for reading and numeracy can be grouped into 'bands' indicating proficiency in each domain. There are ten bands overall for each domain, with national minimum standards steadily increasing as year levels increase. Students are assessed as being in one of the six bands relevant to their year level, with band 2 the national minimum standard for Year 3, band 4 the minimum standard for Year 5, band 5 the minimum standard for Year 7 and band 6 the minimum standard for Year 9.

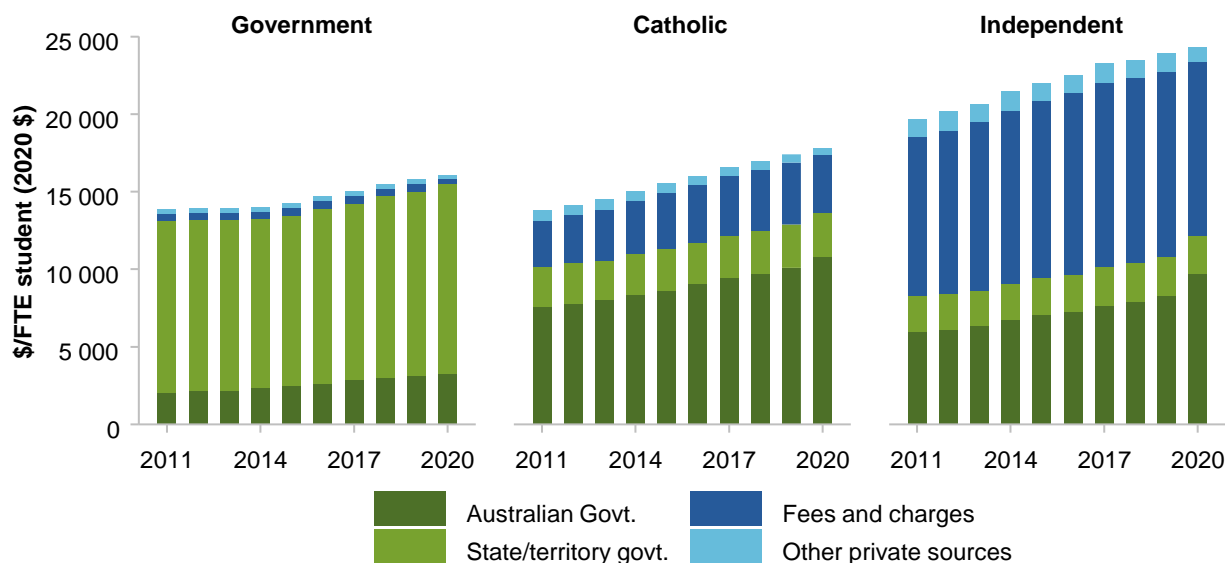
Source: ACARA *National Report on Schooling in Australia* data portal.

Australia's tertiary attainment rate is high, with more than half (54%) of 25-34 year-olds holding a tertiary qualification in 2021, well above the OECD average of 47% (OECD 2022a).¹⁰ However, a large share of students commence qualifications without completing them, raising the question of whether attainment rates could be improved, or the matching of students to different parts of the education system made more effective (chapter 3; chapter 4). For tertiary education, the best data available on performance quality comprises surveys on employment outcomes and student and employer satisfaction. These mostly point to reasonable and stable satisfaction, although there is room for improvement. In the years leading to the

¹⁰ Tertiary education is defined as Diploma and above under OECD classifications. For this volume more generally, tertiary education refers to qualifications that are Certificate III and above.

COVID-19 pandemic, university student satisfaction hovered around 80%, but it has fallen since the pandemic (SRC 2022b), likely owing to the rapid move online. Employer satisfaction is in the mid-eighties overall and over 90% in relation to technical and foundation skills — key aspects of university education. Government-funded VET qualification completers also reported high rates of satisfaction, averaging 88% over the past decade (NCVER 2022a).¹¹ In recent years, employer satisfaction with VET qualification holders has decreased, although it has increased slightly for university graduates (NCVER 2021; SRC 2022a).

Figure 1.7 – Spending on schools has increased^{a,b}
Gross income from different sources, by school sector



a. Total gross income excludes capital grants. b. Amounts are deflated using General Government Final Consumption chain prices (table 2A.26, SCRGSP 2022).

Source: ACARA National Report on Schooling in Australia data portal.

Most tertiary graduates find employment soon after completing their qualification. However, current cohorts do not appear to be faring as well in the short term as those a decade previously (figure 1.8). This may partly reflect temporary macroeconomic effects, rather than an indicator of poorer university performance. Indeed, in the medium term, there is little downward trend in labour market outcomes. More generally, it is difficult to disentangle the impacts of changing characteristics of the student intake and their course choices on labour market outcomes from the effectiveness of universities as training institutions.

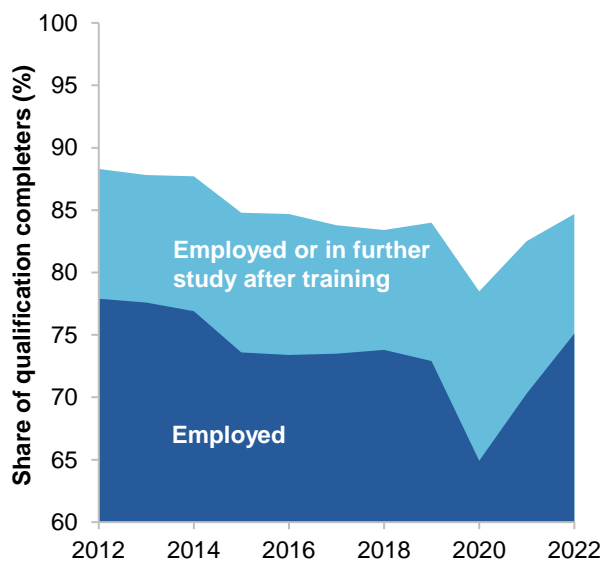
Still, even if the short-term declines cannot be attributed to the tertiary sector, they should prompt institutions to redouble their attention on improving student outcomes — to ensure they are able to support a student body with more diverse needs, and to prepare graduates for an increasingly challenging labour market.

¹¹ This does not capture students who do not complete their qualification, or the majority of students that do not receive government funding.

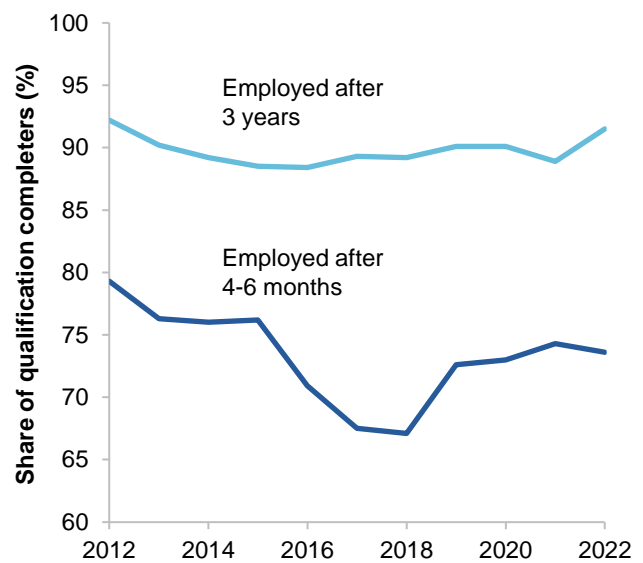
The sector is also not set up to meet rising demand for tertiary education. Those born during the ‘Costello baby boom’ of 2005–2008 will start to leave school shortly, dramatically increasing the population of potential students (figure 1.9). The higher education sector in particular will be unable to meet this additional demand under current funding arrangements (chapter 3).

Figure 1.8 – Changing trends in employment outcomes for VET and university graduates^{a,b}

Recent VET graduates employed or in further study, either full-time or part-time



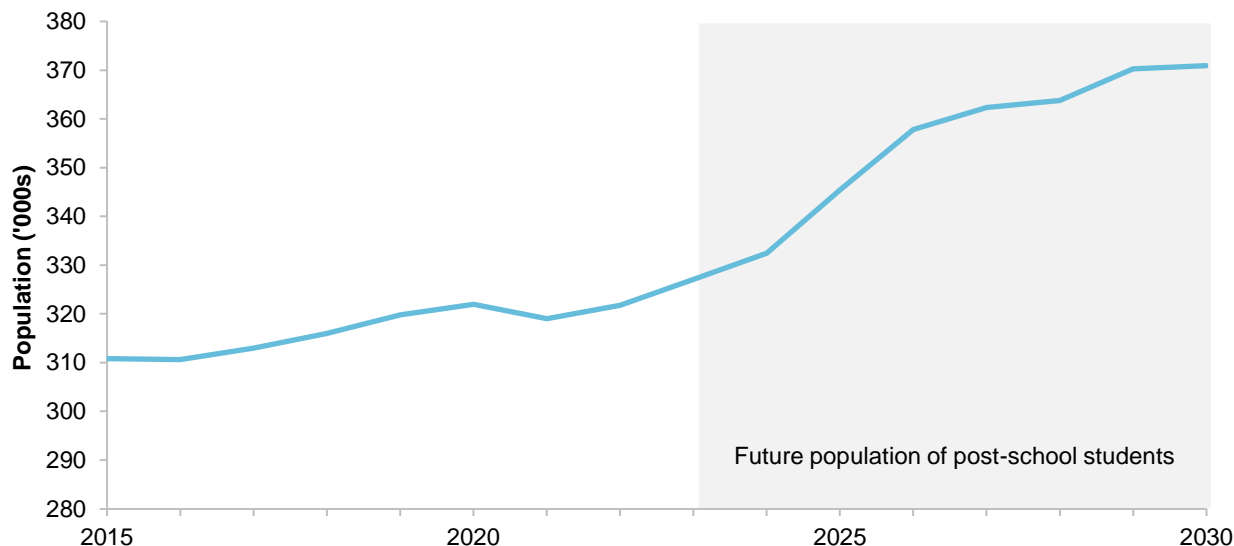
University graduates employed full-time after graduation



a. The NCVET National Student Outcomes survey is administered to VET graduates about 6 to 8 months after course completion. The QILT Graduate Outcomes Survey is administered to university graduates about 4 to 6 months after course completion while the Graduate Outcomes Survey – Longitudinal is administered after about 3 years. NCVET and QILT surveys are not directly comparable, including that the QILT Graduate Outcomes Survey does not report the share of graduates in employment or further study. b. NCVET National Student Outcome survey data include completed government-funded qualifications only.

Sources: NCVET (2021b); SRC (2022c).

Figure 1.9 – The population of school leavers will expand considerably in coming years^a
People reaching tertiary age over time



a. Population is projected from 2017 onwards. Projections do not account for the effect of COVID-19 on migration and may therefore be an underestimate, although most of the forecast growth comes from the domestic population.

Sources: ABS (*Population Projections, 2017 (base) — 2066*, Cat. no. 3222.0, table B9); ABS (*National, state and territory population, June 2022*, Cat no. 3101.0, table 59).

What this volume covers

Given the breadth of the education system, this volume of the inquiry does not review the sector comprehensively. There have been many reviews into various aspects of both school and tertiary education over recent years.

- School performance and student achievement were examined in the second Gonski review (Gonski et al. 2018), and there have been reviews of the Australian Curriculum (ACARA 2022c) and initial school teacher education (Paul et al. 2021). The Productivity Commission’s Review of the National Schools Reform Agreement examined how well national policy initiatives by the Australian, State and Territory governments have achieved the agreement’s objectives and outcomes (PC 2023).
- Recent reviews into the tertiary education sector have assessed the governance of the sector, including the role of the regulator ASQA (Braithwaite 2018); the higher education provider category standards (Coaldrake 2019); regional education (Halsey 2018; Napthine 2019); funding (PC 2019); and, the performance of the VET sector (Joyce 2019a; PC 2020c). The recently-commenced University Accord process will also consider many of these issues and is due to report in December 2023.

The early childhood family environment and quality early childhood education and care services can also be important for the development and future prospects of children, and lay the groundwork for effective education. However, this volume focuses on the school and tertiary education system.

Both the quantity of education delivered and its quality are important to Australia’s ongoing productivity and prosperity. While there is evidence of a need for greater levels of skill formation, over time it may become more challenging to achieve productivity improvements solely through increases in the *quantity* of education (that is, the number of people attaining higher levels of education). Gains from additional years of secondary schooling have mostly been exhausted, and although additional tertiary students still benefit greatly from their education (Deming 2022, pp. 77–78), these returns could diminish over time. More people flowing

through the education system makes the *quality* of education — what people gain from the years invested — increasingly important. And increases to the quantity of education will only benefit additional students, while quality improvements can increase outcomes for all students. Getting better outcomes for a given number of years of education by raising its quality and better matching what is taught to emerging skill needs will become critical.

In this light, the remainder of this volume considers improvements that support:

- schools to provide the foundational skills required to improve economic performance, including through better use of technology in the classroom; diffusion of effective teaching practices; and experimentation with innovative school models (chapter 2)
- post-school education to develop the skills needed in the Australian economy, achieved through better targeting government investment and loan arrangements (chapter 3)
- better student outcomes in post-school education, by encouraging quality and relevant teaching and facilitating completion where it is in the best interest of students (chapter 4).

Appendix A provides additional detail on the performance of higher education providers. Appendix B details stylised whole-of-economy modelling undertaken by the Productivity Commission for this inquiry, which found that potential productivity improvements arising from improved education quality and better meeting skill needs could lead to increased real GDP and individual wellbeing.

2. Building productivity in schools

Key points

- * **Academic achievement among children is stagnating, and the productivity of schools has been declining in recent years. Improvements in the way schools work and the quality of teaching could improve both the productivity of the education sector now and, through improvements in the productivity of our future workforce, contribute to long-term, economy-wide productivity gains.**
- * **Flexible and innovative approaches to allocating school resources are key to an effective and adaptive school system.**
- * **Digital technologies hold significant promise when combined with appropriate pedagogical techniques — to augment teacher-led instruction, provide formative assessment of student progress and further replace manual school administrative processes.**
 - Digital technologies can also expand access to quality teaching and help address the challenges associated with teaching out of field.
 - But not all technology is necessarily effective. There is a role for government agencies to provide guidance to teachers and schools about digital learning options with proven efficacy.
- * **Credible evidence about educational best practice is key to supporting better outcomes for more students, including in their post-school lives. But having the evidence alone will not achieve this. Effective observation and feedback, and curriculum implementation support are important mechanisms for diffusing best practice into more classrooms.**
- * **Beyond what happens in the classroom, how schools operate affects student outcomes. In contrast to a fundamental progression evident in nearly every other sector of the economy, the basic model of school operation in Australia has changed little over the past century. An openness to experimenting with school models and evaluating what works has the potential to deliver long-term benefits.**

2.1 Lifting productivity in a stretched system

The role of education in developing the future workforce to foster productivity growth is broadly accepted. By contrast, applying a productivity lens to the operation of schools can seem foreign and can draw opposition. This chapter addresses both these aspects and recognises that there are multiple channels through which education can drive productivity. But it is also important to note that better school outcomes matter beyond productivity. A better school system will also have broader benefits to students' wellbeing. Education increases people's capabilities, makes society healthier, safer, better informed, more civically engaged, and fosters social mobility (chapter 1). The benefits of a more productive school system would support all of these aims.

Improving productivity in schools is about getting better quality outcomes for students from the inputs (teachers, other staff, and physical capital) or using these resources more efficiently for the same quality outcomes. Aggregate future productivity improvements are more likely to come from improving the quality of education received than from additional years spent accruing education (Primary Focus, sub. 56, pp. 11, 23).¹²

Improving teacher effectiveness is central to improving student outcomes. A teacher who is one standard deviation above the average teacher (in terms of their ability to increase student achievement), instructing a classroom of 15 students, could increase the average lifetime earnings of the classroom by about \$530 000 in a given year; or about \$35 000 per student (PC 2023, pp. 333–334). While an effective teacher can improve student lifetime earnings, a less effective teacher can have the opposite effect. Further, the effects on student lifetime earnings are cumulative: students that have an effective teacher one year followed by an equally less effective teacher the next year will experience no net gains (Hanushek 2011, p. 473).

School productivity has trended downwards

Although it is difficult to reliably estimate (box 2.1), school productivity has been trending downwards in recent years. Given the size of the sector¹³ and the role of schools in providing the building blocks of future human capital, any improvement in the way schools work is likely to result in future economy-wide productivity gains. There may be some immediate gains from improved productivity in the sector. But perhaps more important are the longer-term gains from improved productivity of labour across the economy more generally.

As system designers, funders and suppliers of formal school education, governments play a key role. To achieve a better functioning schools system geared to long-run productivity improvement, governments can:

- embed digital technologies into the classroom in a way that supports improved outcomes for students (section 2.2)
- strengthen and embed the mechanisms to diffuse evidence-based best practices in the classroom (section 2.2)
- encourage and support trials of different educational operating models (section 2.3).

¹² Nevertheless, it is likely that completing Year 12 will have benefits to the individual, their families and communities.

¹³ In 2021, there were over 9500 schools across Australia, employing over 300 000 teachers and 140 000 non-teaching staff (ABS 2022f).

Box 2.1 – Resources needed to educate a child have increased significantly over time, while school productivity has declined

Productivity is a measure of how well an organisation uses available inputs to achieve its desired outputs. Schools primarily seek to use their ‘inputs’ — capital (buildings and equipment) and labour (teachers and other staff) — to produce ‘outputs’ in the form of educational attainment, which can be broadly defined. It is hard to measure school productivity because it is difficult to measure output and to account for changes in its quality (PC 2021, pp. 25–26). The failure to properly account for improvements in quality and difficult-to-measure outcomes mean that simple measures of productivity can substantially underestimate productivity improvements (OECD 2001, p. 37).

The ABS experimental estimates of school labour productivity and multifactor productivity (MFP) (see figure below) do not account for changes in the *quality* of inputs or outputs, and so should not be seen as an authoritative measure of productivity. They simply provide an indication of how aggregate changes in the number of students educated relate to changes in the volume of inputs used:

- labour productivity compares the changes in the volume of services produced (full-time equivalent enrolments, weighted by costs) with the change in the volume of labour used (hours worked)
- multifactor productivity compares the volume of outputs to a measure of combined inputs; including labour, capital, and intermediate inputs (energy, materials, and purchased services).

As school education is a labour-intensive service, changes in multifactor productivity are similar to changes in labour productivity. Over the ten years to 2018-19, MFP fell on average 1.2% each year, while labour productivity fell on average 1.1% each year. This reflects that annual growth in outputs (about 1.3%) was less than the measured growth in inputs (about 2.7% each year for combined inputs). Approximately 65% of the decline in labour productivity and 60% of the change in MFP is attributable to the decline in student-staff ratios. If student-staff ratios had been held constant over the ten years to 2018-19, labour productivity would have declined by only about 0.3% on average per year (instead of 1.1%).

Some studies make adjustments for education quality. The Queensland Productivity Commission adjusted estimated productivity for the proportion of students that met the minimum standards. These estimates also used cost shares to weight schools by type (primary or secondary) or sector (Independent, Catholic, or government) and used total deflated revenue as the measure of inputs (Cornell-Farrow 2019, pp. 8, 26).

By this metric, school productivity in Australia appears to have decreased modestly, with an annual rate of decline (across Australia) of about 0.14% between 2009 and 2016 compared with 0.72% growth of MFP in the market sector (16 industries) over the same time period (ABS 2022b; Cornell-Farrow 2019, p. 22).¹⁴ Nevertheless, achievement of minimum standards is still a narrow indication of education.¹⁵

¹⁴ Market sector multifactor productivity (MFP) differs from the school productivity measure used here in that the former used labour and capital inputs weighted by their cost shares while the latter uses total revenue deflated by the Government Final Consumption Expenditure implicit deflator. Also, the market sector figures use financial years ending in those years while the Queensland Productivity Commission figures use calendar years.

¹⁵ It does not cover important aspects of school education, including student engagement and student wellbeing, that should be considered in the context of productivity estimates.

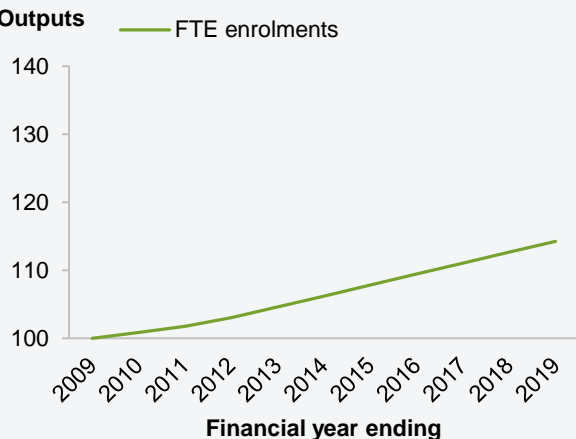
Box 2.1 – Resources needed to educate a child have increased significantly over time, while school productivity has declined

Overall, the evidence suggests that the resources required to educate a child have increased significantly over time, and that when quality adjusted, there is likely to have been a modest decline in productivity in the sector.

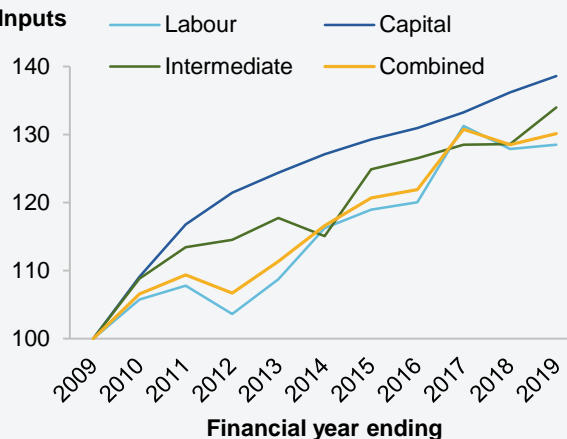
Inputs and outputs in the school sector

Index value 2008-09 = 100

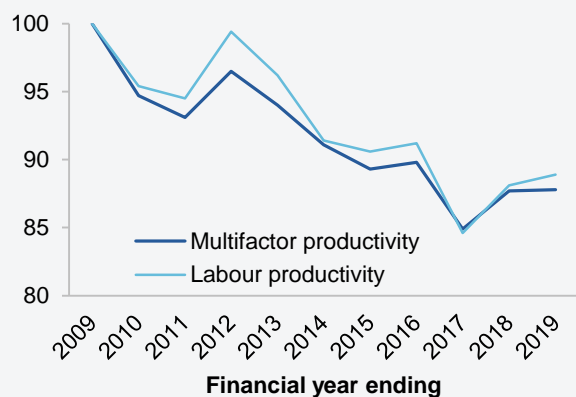
Outputs



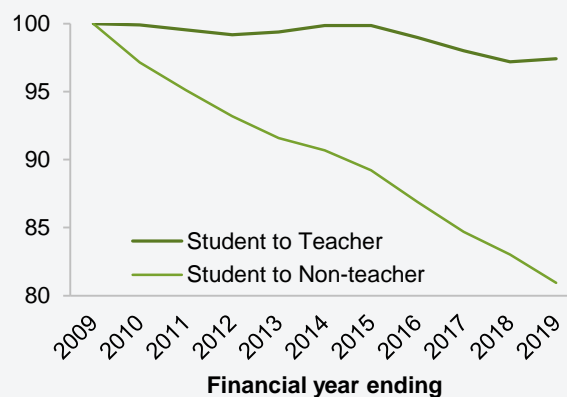
Inputs



Productivity indices



Student-to-staff ratio



Source: ABS (*Experimental school education multifactor productivity estimates*, September 2021, Cat. no. 8104.0).

A stretched system is less adaptive

Schools and teachers are bound by an array of policies and requirements intended to improve student outcomes. This architecture has been developed over time to enable all students to access high quality education. The COVID-19 pandemic demonstrated schools and teachers can adapt when they must. They responded quickly, transitioning teaching online across all year levels and adjusting teaching practices to manage risks of COVID upon students’ return to schools.

There is some adaptive capacity in the system, but simultaneously a lack of readiness or capacity to shift resources more fundamentally in search of better outcomes. There is evidence and research on what works

both in the classroom and at the school level, but current approaches and resource allocations — which concentrate most tasks at the teacher level — leave little time for staff and practices to adapt, experiment, and pick up innovative and evidence-based approaches.

The teacher’s role is increasingly complex

Teachers play a critical part in the education system and are the single largest ‘in-school’ factor contributing to student outcomes (figure 2.2). The teacher’s role is broad ranging — encompassing understanding students and how they learn, as well as knowing subject content and how best to teach and assess it. Beyond this, the *Australian Professional Standards for Teachers* require teachers to maintain a safe learning environment, provide feedback and report on student learning, interpret student data, communicate and engage with parents, communities, and colleagues, and undertake ongoing professional learning (AITSL 2018). Communities value and expect that, as part of a well-rounded education, teachers support the physical and mental health of students, cultivate critical and creative thinking, personalise learning, report on progress, and use data to support learning.

A teacher’s role and how they teach students is arguably becoming more complex and demanding. This reflects an increased need for, and recognition of, personalised and inclusive education, as well as increased administrative burdens that stem, in part, from the accountability necessitated by greater school autonomy.

A more customised learning experience (as opposed to teaching to target the average student) means that teachers need to understand a student’s prior knowledge, and tailor instruction, assessment, and feedback to their needs. The skills, capability, and time needed for teachers to personalise learning is significant, particularly given there is often a large spread of ability within classes. For example, the Productivity Commission found an average 4-year learning gap in numeracy in individual schools (PC 2023, pp. 5, 82).

Schools are also more diverse than they used to be, as classes consist of a broader range of abilities and backgrounds. Inclusive education, while valuable to student outcomes of both those who do and do not experience disability (CYDA 2022, p. 1), requires extra training, and takes time and skill to do well, adding to the complexity and intensity of the work of a teacher (Australian Education Union, sub. 21, p. 9).¹⁶

The OECD Teaching and Learning International Survey data shows that Australian lower secondary classrooms have a higher proportion of students with special needs and migrant backgrounds, and more non-native speakers and refugees than the OECD average (Thomson and Hillman 2019, p. 48). The Australian Curriculum, Assessment and Reporting Authority (ACARA 2022d, p. 7) highlighted the limited resources to address diverse teaching needs:

... teachers are working with diverse classroom environments in terms of their students’ ability levels, socio-economic backgrounds and demographic composition. In addition, many systems face budget constraints which limit the amount and quality of support available to teachers to face these new challenges and demands.

Teachers increasingly need to gather data as evidence of student learning or to demonstrate their own capabilities for accreditation against the *Australian Professional Standards for Teachers*. Many teachers find locating the right information and documenting accreditation time-consuming and challenging, and multiple systems and agencies have resulted in duplication (NSW Department of Education 2021b, p. 10).

Some have argued that school autonomy has increased teacher workload due to reduced centralised support and increased reporting requirements. School autonomy offers devolution of responsibilities from

¹⁶ Inclusive education recognises the right of every student to be included in a general education setting — adapting the environment and teaching approaches to ensure genuine and valued full participation of all students.

large government departments to schools — aiming to empower them to operate more efficiently, effectively, and produce better outcomes. Indeed, the World Bank concludes that most countries whose students perform well give their schools substantial authority to shape local education provision and determine the allocation and management of resources.

However, an emerging consequence has been the increased workload outcomes of heightened accountability and teacher ‘responsibility’ combined with greater work intensification. Indeed, higher administrative and accountability requirements supporting increased school autonomy are among the ‘primary sources of compliance and administrative requirements’ (AITSL 2020, p. 4). ACARA (2022d, p. 7) noted that:

... schools are arguably becoming more bureaucratic, teachers report having weak work autonomy in their daily activities and being overloaded with non-teaching activities, especially administrative tasks.

Teachers are impeded from focusing on the highest value tasks

Some teachers are working long hours, with estimates ranging from 44 to 57 hours per week for full-time teachers in term time. Yet these long hours in term time are often spent on low value — albeit necessary — tasks, preventing teachers from meeting the complex expectations of teaching. Teachers and principals report that teaching and learning is hindered by their high workload during term time (Hunter, Sonnemann and Joiner 2022, p. 16; McGarth-Champ et al. 2018, p. 2).

Further, a 2021 representative survey of teachers and school leaders found that over 90% of teachers surveyed reported they did not have enough time to prepare effectively for classroom teaching (Hunter, Sonnemann and Joiner 2022, p. 13). This view was largely backed by school leaders, with 77% agreeing that teachers in their school either ‘always’ or ‘frequently’ do not have enough time to prepare for effective teaching (Hunter, Sonnemann and Joiner 2022, p. 13).¹⁷ Monash Q Project¹⁸ and Australian Learning Lecture also highlighted that meaningfully integrating research about best practice into lesson planning is complex skilled work that teachers struggle to dedicate sufficient time to (sub. 160, p. 8; sub. 124, p. 6).

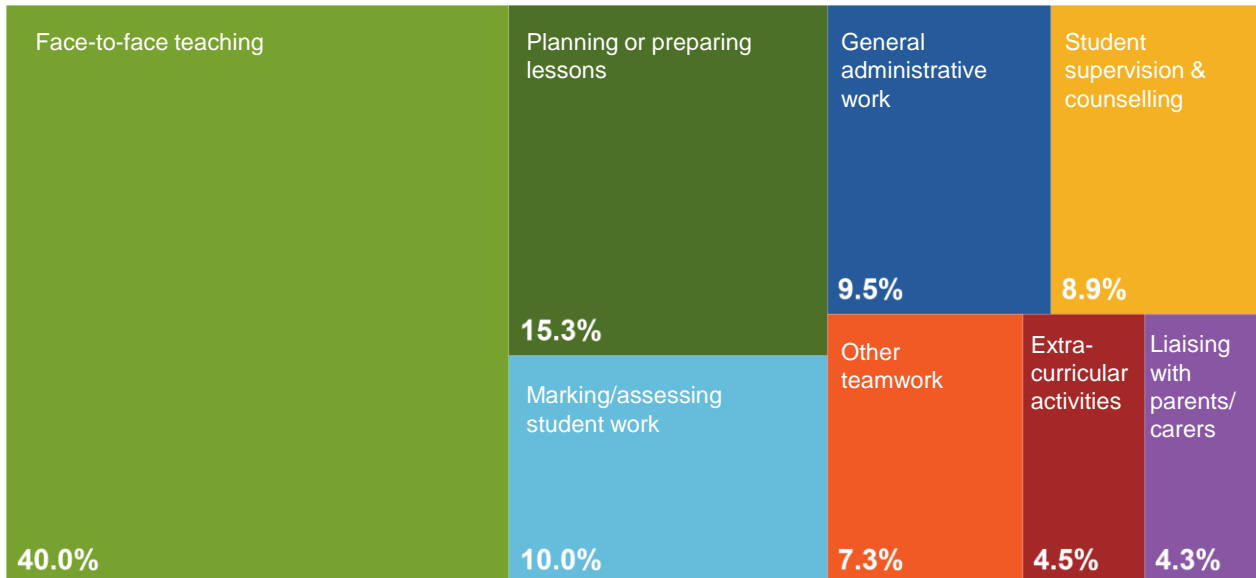
Face-to-face time represents just one element of a teacher’s week (figure 2.1). Full-time classroom teachers spend about 21 to 24 hours in face-to-face teaching in a typical teaching week (AITSL 2021, p. 66). One teacher observed how their day is filled with a breadth of tasks:

My days are filled with behaviour management, the bombardment of emails, writing programs, marking work, giving feedback, reporting to parents, setting student goals, writing individual programs, attending meetings and professional development to remain registered. And, dare I forget, the uploading of data into the system before the deadline. If only I could just teach! (Stroud 2022)

¹⁷ Preparing for effective teaching was defined to include planning for classroom instruction; preparing, marking, and analysing student assessments; preparing student feedback and adapting teaching; preparing to support struggling students; building professional knowledge and skills; and collaborating effectively with colleagues and experts.

¹⁸ The Monash Q Project is a five-year study in partnership between Monash University and the Paul Ramsay Foundation with the aim to better understand and improve the use of research in Australian schools (Monash Q Project, sub. 160, p. 2).

Figure 2.1 –Time teaching face-to-face is only one part of a teacher’s week^a
Average proportion of weekly hours spent on teaching tasks by full-time teachers, 2018



a. Survey respondents are from New South Wales, South Australia and the Northern Territory. Figure includes responses for full-time workers only.

Source: Australian Teacher Workforce Data Teacher Survey 2018.

High-value non-teaching tasks enable teachers to track and analyse students’ progress, inform parents of their child’s achievement, and maintain and improve their professional practice (NSW Department of Education 2021b, p. 2). But some teacher time is spent on tasks that are overly burdensome or do not actively support quality teaching — almost 10% of teacher time is spent on ‘general administrative work’ (such as manually processing forms or checking attendance) (figure 2.1). In a COVID-affected environment, teachers have also been managing health regulations relating to rapid antigen tests for students. One teacher reported that planning time was reduced to hand out COVID-19 tests, reflecting the opportunity cost of adding tasks to a teacher’s workload:

... this year I have spent hours of planning time handing out RATs to students, a task that anyone could do. Why am I doing this? Our deadlines are not extended when planning time is taken away because we’re expected to use our weekend to catch up on work. (Stroud 2022).

The New South Wales Government acknowledged, following a review of teachers’ workload, that too much time is spent on low-value administrative work.

We have heard from teachers and principals that too much time is spent on low-value administrative work that is overly burdensome, such as manually processing forms. Teacher time needs to be redirected to high-value tasks, such as adapting and differentiating lesson content and resources for the individual needs of their students. (NSW Department of Education 2021b, p. 2)

Whatever the cause, long working hours, high work intensity, and a lack of recovery time have been shown to impair not only teachers’ own wellbeing but also their motivation and ability to provide high-quality instruction (Boeskens and Nusche 2021, p. 14; Australian Education Union, sub. 21, p. 2). This compromises student outcomes. Supporting a better allocation of teacher time to make the most from their skills and qualification would help support quality teaching and student learning.



Finding 8.1

Making time to adapt and deliver best practice will require better allocation of school resources

Teachers' roles have become more complex, with increasing demand for provision of a high quality, evidence based, personalised, and inclusive education that reflects and accommodates diversity in the needs of students.

Current use of resources across the system leaves teachers stretched. Enabling teachers to focus on quality teaching vital to student outcomes would require more efficient and innovative use of school resources — including teachers, other school staff, and technological solutions — to support better student outcomes.

Educational needs and demands on the role of teachers will continue to evolve with changes in the economy and future workforce needs, and so there needs to be scope to test out innovative approaches to teaching and learning.

2.2 Working smarter to improve student outcomes

The Productivity Commission's education policy reform directions are primarily focused on influencing the adoption of best practices in education (in both classrooms and schools) and enabling innovation in how schools operate. There is a poor connection between education policymaking and implementation in the classroom, and some participants have advocated that a better understanding of classroom practice is essential to designing effective education policy (PC 2023, p. 198).

Improved productivity in schools can be achieved through various means, such as:

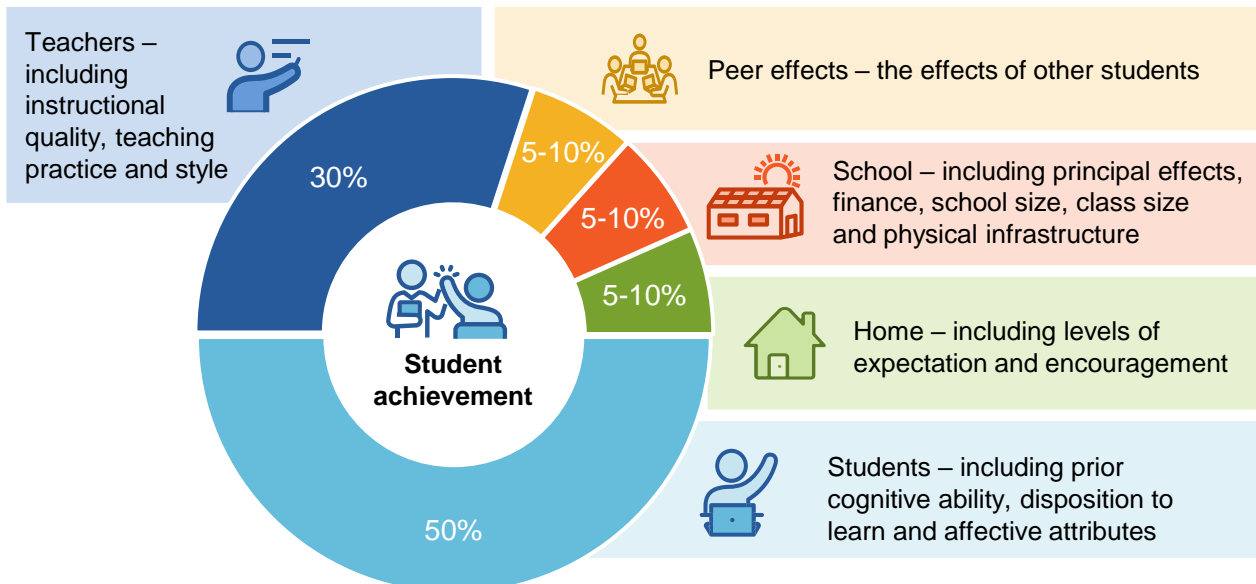
- **Better resource allocation:** improving the use of all school staff so that teachers can focus their time and effort on high-value tasks, with lower value tasks allocated to other school staff
- **Higher quality teaching:** shifting the overall quality of teaching will benefit all students, and have a greater impact on those who are struggling and at risk of falling behind
- **Ongoing diffusion of best practice:** using various mechanisms with flow-on impacts to classroom practice across all schools, including by leveraging effective digital technologies.

Some of the recommendations proposed in the following sections could be initiated in the short to medium term (for example, improving use of digital technology, and implementing better observation and feedback practices in schools). But they also have long-term implications for the productivity of both the school system (that is, getting more out of the resources used) and the broader economy, as students who benefit from such reforms will ultimately become more active and productive members of society. Looking further ahead, experimenting with the school model and trialling innovative approaches (section 2.3) could ultimately have a transformative effect for some schools and students.

Improving use of staff is key to better outcomes

School outcomes are influenced by a range of factors inside and outside of school (figure 2.2). While young people's personal attributes and home environment strongly influence how they perform at school, the act of teaching and the attributes of the teacher make a big difference, explaining about 30% of the variation in student achievement.

Figure 2.2 – Variation in student achievement is explained by a range of factors inside and outside of school^a



a. Student- and home-level factors are affected by the child's and family's wellbeing, which are influenced by the family's context and environment and broader policy settings. The relative effect of these factors is likely to differ by cohort and environment.

Source: Productivity Commission (2023), adapted from Hattie (2003).

Staff salaries in government schools account for approximately 64% of total in-school expenditure (ACARA 2022a, p. 104).¹⁹ As education is labour-intensive, making the best use of the staff in schools is critical to achieving the objectives of the education system with the resources available.

However, the way we conceive of teaching can constrain its quality:

Teaching is also constrained by old ways of thinking. Despite the growing recognition of demands on teachers' workloads, their work is still often measured by their physical presence in the classroom. Everything else that enables successful lesson delivery such as lesson planning, learning design, marking, and assessment, is often unacknowledged and undervalued. (Australian Learning Lecture, sub. 124 p. 6)

The future vision of the role of the teacher and their most valued tasks is shaped, and possibly limited, by the system that is currently operating. Given the current complexity of teaching, choices need to be made about how limited staff time can be used most effectively. Considerations include: the relative effort afforded to each task; the best way to do each task; and, how teachers can be supported by other resources (such as other staff, infrastructure, and technology).

Better use of non-teaching staff

The mix of different types of staff in schools, their responsibilities, and how they are managed can deeply impact the use of teachers (Boeskens and Nusche 2021, p. 67).²⁰ For example, teaching assistants, by providing increased attention on certain students, can have a positive effect on cohesion in the classroom,

¹⁹ Teacher salaries make up about half of all in-school expenses and about 80% of salary costs. In-school expenses include the user cost of capital as well as those that relate to teaching, learning, school administration and library functions.

²⁰ Schools employ a range of staff in addition to teachers and school leaders, including teaching assistants, administrative staff, maintenance staff as well as specialist support staff (such as guidance counsellors and school librarians).

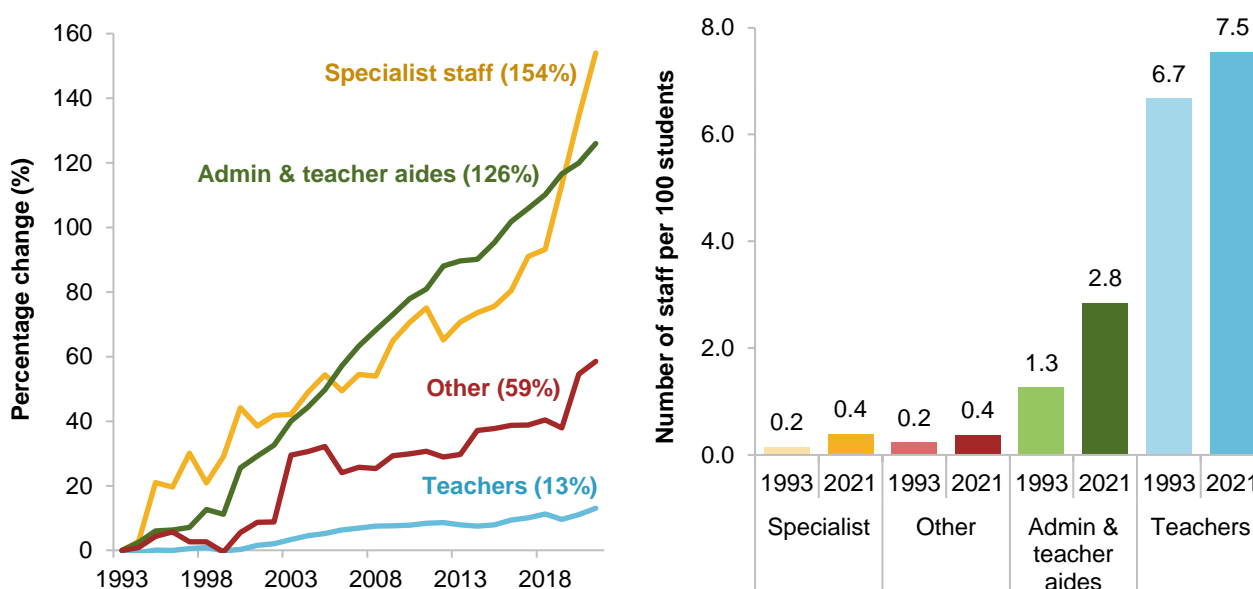
reduce disruption, and allow more time for teachers to teach (Evidence for Learning 2019a, p. 7). Additionally, administrative staff can free up teachers to focus on core teaching functions by doing tasks such as processing excursion permission slips (Evidence for Learning 2019a, p. 7).

Options such as delegating low-value tasks and changing task allocation between types of staff are not revolutionary but nevertheless could, if applied on a widespread basis, help teachers better use their time and focus on activities that have the greatest positive impact on student learning.

Over the past 30 years, all categories of non-teaching staff have grown considerably relative to students (from a very low base), while the growth in teaching staff has been somewhat lower (figure 2.3). This increase in school staff has occurred at the same time as the intensification of teacher workload.

Figure 2.3 – A greater diversity of types of staff in schools^a

Change in staff to student ratio between 1993 and 2021



a. Administrative staff and teacher aides include classroom assistants, library assistants, teacher aides, bursars/school administrators, IT support staff, and accountants. **Specialist Support Staff** include student support services, such as career advisers, student counsellors or liaison officers; educational development, such as staff and curriculum development; school psychologists and social workers. **Other** includes janitors, building or grounds maintenance staff, technical services and general maintenance staff, school nurses, and canteen workers.

Source: ABS (*Schools*, various years, Cat. no. 4221.0, table 51a).

Rather than more staff overall, what may be required is the better use of existing non-teaching staff, particularly teaching assistants.

The research on the impact of teaching assistants in Australia is not extensive. Considerable research in the United Kingdom over the past decade or so provides some insight on where Australia may look to improve how teaching assistants are used in classrooms. Indeed, the deployment of teaching assistants has not typically improved student outcomes in the United Kingdom (Evidence for Learning 2019a, p. 14). Evidence for Learning recommended focusing on moving away from teaching assistants substituting as teachers for students with highest needs, toward being a general class resource helping teachers better accommodate all students (Evidence for Learning 2019a, p. 14).

The Productivity Commission’s review of the National School Reform Agreement (NSRA) found governments should seek to better understand teachers and school leaders’ perspectives on what teaching assistants’

role should be, and how to best prepare teaching assistants for their role (PC 2023, p. 235). AITSL's submission to this inquiry has echoed the need to clarify and understand the role, use, and impact of other school staff, and develop an evidence base on best deployment and support mechanisms (sub. 146, p. 6).

Improving student learning with digital technology

Technology has fundamentally changed the way students learn, teachers practice their profession, and schools operate. It has evolved from one computer for the school, to one per class, to personal devices operating in networked schools that wirelessly save outputs to the cloud and enable sharing with teachers and other students.

Historically, public discussion on the use and spread of technology in schools has focused on hardware, perhaps motivated by a sense that access to computers would help students learn about technology. In fact, future gains in educational outcomes will likely come through software, as applications get integrated into classroom practice and technology is used to augment the teaching of 'traditional' core subjects like maths, reading, or history (OECD 2021c, pp. 15–17). Three broad categories of education technology (EdTech) that offer the most promise to improving student outcomes (Loble and Hawcroft 2022, pp. 21–22) are:

- **student-oriented applications:** intelligent tutoring systems that create personalised learning paths for students that adapt as they progress and encourage them to reflect on their learning
- **teacher-oriented applications:** 'smart' curriculum tools using AI to bring evidence-based resources directly to teachers for lesson planning and assessment
- **system-oriented applications:** AI-based modern data techniques (such as machine learning) can empower schools and systems to more accurately identify students at risk of disengagement and intervene in a timely and targeted way.

Opportunities to improve student learning

Digital technologies offer an array of new possibilities to support student learning, including providing opportunities for learning unconstrained by space or time and providing access to learning tasks that were not previously possible (box 2.2). Technology can support students of different abilities and/or learning paces through personalised learning programs, where students work through material in an online application (supported by a teacher) (Major, Francis and Tsapali 2021, pp. 1938–1939).

Online apps present information to students using varied methods (such as passages of text or video) to cater for the different ways students prefer to learn. In this way, technology can increase student engagement by making learning more appealing, such as using game-based learning or virtual reality. Students can be engaged with learning in a playful and dynamic way using principles of competition, points, incentives, and rewards. For example, Mathletics provides students with animated maths activities and challenges that allow students to earn rewards for correct answers, consistency of work over a number of weeks, and participation in live competitions (3P Learning 2014).

Box 2.2 – A framework for integrating technology into student learning

The *Substitution, Augmentation, Modification, Redefinition* framework outlines how digital technology can be integrated into student learning with reference to traditional teaching methods or materials (Terada 2020). Although the distinction between categories can be unclear at times, the use of digital technology in teaching can be classed as fitting into one of four levels:

- *substitution*: Technology acts as a direct substitute replacing traditional material with no functional change. For example, lessons and worksheets are converted into PDFs and posted online for students to access rather than a paper version distributed in class
- *augmentation*: Technology acts as a direct substitute with some functional improvement to enhance learning. For example, worksheets that are converted to PDFs may also include hyperlinks to additional material or have a media clip embedded for students to watch
- *modification*: Technology allows the learning task to be significantly redesigned. For example, allowing students to ask their teacher questions through a chat function as an alternative to orally
- *redefinition*: Technology allows for the creation of new tasks, previously inconceivable. For example, a school 400 kilometres south of Darwin used cameras to locate spiky pokipain (echidna), which had not been seen in the region for years (Fitzgerald 2022).

Digital technology can also be more adaptive to new learning content. In the past, textbooks would be set and used for years, and it could take some time for new information to be reflected in these books. Online programs, including digital texts, can be updated with new information in a much shorter cycle than physical learning materials. Further, digital texts can provide access to information and specialised material beyond what is in a textbook using the internet (OECD 2022b, p. 78).

In some ways, the future role of technology in school education could be similar to the role it has played in advancing the quality of health care provision over the past century (Ambinder 2005, pp. 54–56; HATI International 2017).²¹ Digital technologies can more easily ‘scale up’ practices across schools and potentially present a lower cost option to augment teacher capabilities. Augmenting inputs can support teachers in lesson delivery, for example — and in some cases replace low-value tasks such as by automating administrative processes.

Supporting teachers with digital technology

With expanded access to resources and knowledge, students may become less reliant on the teacher during class time, potentially freeing up the teacher to focus on students with greater learning needs during lessons, and reduce the amount of planning time required for each class.

Digital technologies can aid teachers in a range of activities, including planning and presenting lessons, sharing resources, individualising lesson plans, and assessing students. They can also support other tasks that are separate from learning activities, such as administration, and aid communication with parents.

²¹ The increase in precision and accessibility of medical imaging technology (such as MRI scans), for example, allows doctors to find diseases in their early stages — leading to better outcomes for patients (PBMC Health 2018). When combined with other technologies, such as artificial intelligence, further quality improvements can be achieved (such as better diagnoses) along with easing the workloads of radiologists (Walach 2022).

Formative assessments that use digital technologies may help teachers move away from a resource-intensive, paper-based practice to one that is more streamlined and provides support to the teacher in analysing individual learning progress and common trends in the classroom (table 2.1).²²

Table 2.1 – Technology can support teachers in their formative assessment practice

	Traditional approach	Technology-enabled approach
Teaching & learning	The teacher develops their own resources (or utilises centrally provided resources).	The teacher uses existing digital content or interactive applications.
Assessment questions	The teacher creates paper-based assessments, using a photocopier outside of class time.	The teacher can select from pre-existing assessments or create their own, distributing assessments digitally and quickly.
Administer assessment	Students can only sit paper-based assessments if in school. Students who are not present miss the assessment.	Students sit the assessment digitally, available through an app or browser. This flexibility enables students to take assessments 'on-demand', as opposed to having to be present in the classroom. Other issues, such as managing potential cheating, need to be managed, but technology can help with this too.
Mark assessments	The teacher marks each student's responses on paper with pen.	The teacher retains the ability to mark papers individually but could make use of automatic marking solutions, such as self-marking quizzes.
Student Feedback	Students physically receive their returned assessment, graded by the teacher. In some instances, the teacher will provide additional written feedback.	The teacher can provide individual feedback and make use of voice notes and/or video to provide richer, deeper feedback to students.
Data Capture & Storage	The teacher stores data in a spreadsheet, manually inputting individual student scores.	The teacher can use assessment platforms to automate data capture, which can be shared more widely with other staff members or with parents.
Gap Analysis & Spotting Trends	The teacher analyses the scores manually, looking for knowledge gaps or trends in performance.	The teacher can intelligently analyse student performance, either at an individual level or across cohorts (pre-determined such as year groups or custom groups).

Source: Edtech Impact (2022).

While formative assessment can be done manually by teachers, software can potentially automate repetitive, time-intensive tasks such as marking student assessments and provide more granular insights into student learning. Students are likely to experience greater benefit where 'individualised feedback is provided instantaneously and more frequently' (Lane et al. 2019, p. 13). The potential benefit of this area is recognised with formative assessment included in the eight policy initiatives in the NSRA (DESE 2021d).

²² Formative assessment encompasses both formal and informal assessment procedures that are used to modify future teaching and learning activities.

Digital technologies can also assist in monitoring student engagement in learning activities. Teachers are able to monitor whether materials have been accessed and which questions have been attempted and answered correctly, providing feedback about active participation with assigned tasks.

Digital technology can reduce teacher administrative load

Replacing administrative tasks via automation is likely to be welcomed by teachers and school staff to the extent that it removes or simplifies tasks that are often tedious or time consuming, and do not necessarily directly contribute to student learning. Examples include:

- a phone accessible interactive portal that lets parents give permission for their child to attend an excursion (with email or text message reminders for parents so they do not miss the due date, which would otherwise require teachers to follow up with a phone call)
- an application that can efficiently book a series of parent-teacher interviews, at mutually convenient times with minimal need for teachers to manage the process.

Implementation of digital technologies for administrative purposes needs to consider staff (including non-teachers) workflow, staff training and skill requirements, interoperability of systems and successful transition from paper-based systems. A shift from total to partial reliance on paper-based administrative tasks can require staff to manage more administrative processes, actually increasing workflow.

In a UK survey, the majority of headteachers (74%) and teachers (65%) indicated that technology already had, or would in the future, contribute to reduced workload (CooperGibson Research 2021, p. 14).²³ Where there is concern about increased workflow, schools (or governments) may wish to consider the scope for a cap on the total administrative tasks (or hours) teachers are doing, to ensure that technology replaces or simplifies tasks rather than creating new ones.

But there are challenges for schools ahead

While better use of staff and technology represent some immediate ways to lift school productivity, consideration must be given to the associated implementation challenge in an already stretched system, and on ensuring that technology works for the benefit of students and teachers.

School staff need to be digitally competent

Technology is not a silver bullet, and with it comes challenges for teachers, principals, and school administrators. Many people working at schools did not learn digital skills while at school themselves — teachers will need support to integrate digital technology effectively into their teaching practices, and schools will need support to identify the best products to deliver the desired benefits to their students. Being able to teach students digital skills requires:

... developing the technical skills of educators first rather than assuming (incorrectly) that they have the skills already, then the specific pedagogical approaches for digital skills, and finally integrating digital skills deeply and authentically in their own disciplines. (Grok Academy, sub. 185, p. 4)

The same challenges apply in using digital technology in the classroom environment. The COVID-19 pandemic opened the school system to change, but the challenge ahead is to retain the benefits of these approaches, rather than reverting to previous operating models.

²³ The Commission could not find similar data for Australia.

While there remains scope for schools to extend the use of technology and improve the use of existing technologies, past studies have shown that its use does not always lead to better student outcomes (OECD 2022b, p. 27). The Australian Education Research Organisation (AERO) noted:

One area in which considerable investments are being made with an inadequate evidence-base is education technology ... Rigorous evaluation of the features which make such technology effective, and evidence-based quality assurance of education content, would be wise prior to their implementation at scale. (AERO 2022, p. 2)

Teachers' training and ability to integrate technology into teaching processes is also key (OECD 2022b, p. 79). For example, the effective use of formative assessments that involve digital technologies requires both assessment knowledge and data literacy, meaning that deriving beneficial learning outcomes from the technology needs an increased focus on the use of digital technologies in initial teacher education and teacher professional development.

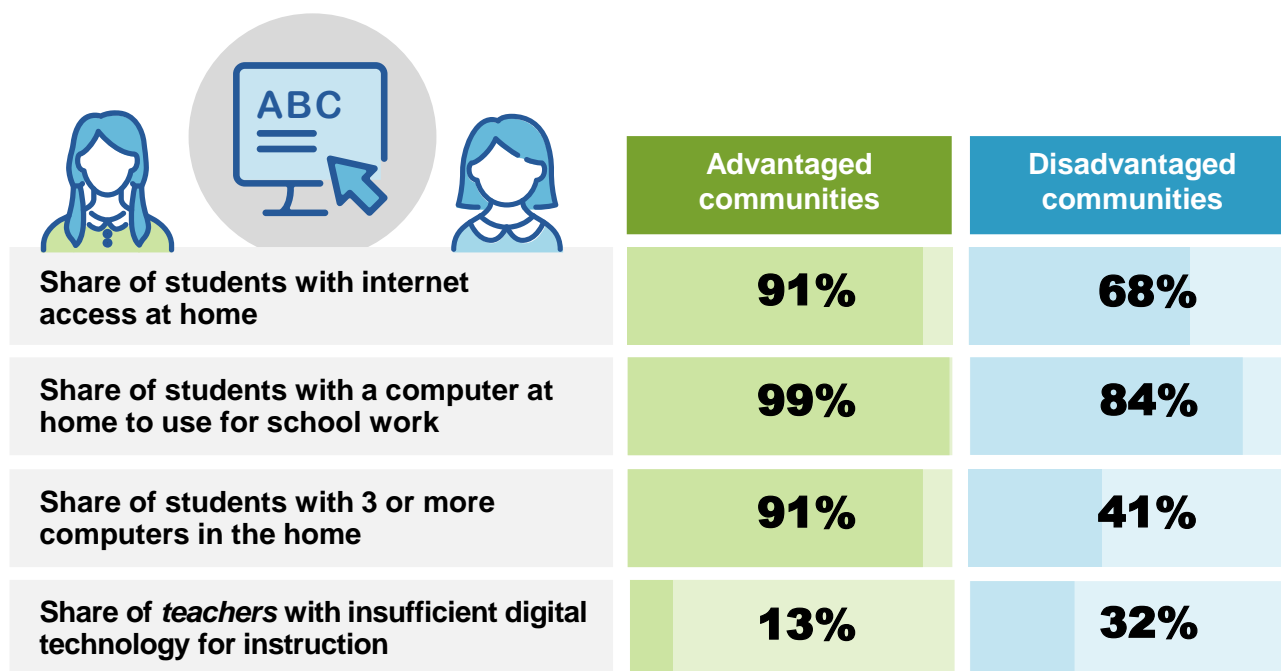
A digital divide in learning persists

Inclusion remains an important consideration in formulating approaches to the use of digital technology in schools. The COVID-19 pandemic focused attention on the challenges education systems face in addressing the 'digital divide': structural differences in the ability of students to access and effectively use digital technologies. There are substantial differences in access to technology (for students and teachers) between advantaged and disadvantaged communities (figure 2.4).

Meaningful digital inclusion depends on more than just access to devices and functioning broadband.²⁴ Students and teachers need to have the knowledge, skills, and motivation to make the most of the technology offered. The 'digital use divide' exists between students who use digital technologies in active and creative ways to support their learning, and students who use them for passive content consumption (Vlies 2020), and there are also gaps in access to these opportunities between socioeconomic groups (Thomson 2020). These challenges make the implementation of EdTech complex, and therefore it needs to be properly designed, used, and regulated to have a demonstrably positive impact on learning outcomes for disadvantaged students (Loble and Hawcroft 2022, p. 8).

²⁴ The Australian Digital Inclusion Index (ADII) covers three core aspects of inclusion: access, affordability, and digital ability which includes enthusiasm, confidence, and a sense of control when using the internet, as well as experience, skills, and knowledge in internet use.

Figure 2.4 – The digital divide in advantaged and disadvantaged communities



Sources: The Smith Family (2017), Thomson (2020), Thomson and Hillman (2019).

Issues arise with technology interoperability, privacy and security

The system and software requirements of schools depend on the size of the school, the social and economic demographic of the students, the availability of internet access, the age of students and the technical proficiency of educators within the school. Many schools, therefore, complement their centralised student information systems with commercial off-the-shelf products (PwC 2020).²⁵ This requires school staff and potentially teachers or principals to consider a range of factors including software integration (interoperability), privacy and security of data, and the efficacy of the product. However, teachers and principals may not always have the training, time or information to make these choices well.

A number of State and Territory governments provide support to schools purchasing software.²⁶ For example, the Victorian Department of Education provides guidance on privacy impact assessment. This process helps schools identify privacy and security risks, evaluate compliance with the *Victorian Privacy and Data Protection Act 2014* and *Health Records Act 2001*, and document what actions are required to mitigate any identified risk (Victorian Department of Education 2020). The Australian Government’s eSafety Commissioner provides online safety assessment tools and checklists to screen new technologies (eSafety Commissioner 2022). However, even with such supports, risks remain. Analysis of over 150 educational apps and websites found that close to 90% of those used could put children’s privacy at risk. These products

²⁵ A schools’ student information system is the central source of information. It holds information about a student — their name, contact details, medical information, and academic information. Some jurisdictions have mandated centrally delivered systems, while others allow the schools to choose (PwC 2020). Off-the-shelf packages can be used for a range of functions: channels of communication with parents; scheduling parent-teacher interviews; managing parent payments for tuition or excursions; canteen services and uniform shops; recording visitors to school premises; and, monitoring student attendance and results.

²⁶ The New South Wales Government has a centralised process for all information technology purchases (NSW Department of Education 2022).

requested access to students' contacts and locations, and monitored their keystrokes. Some of these products had undergone a privacy impact assessment (Duffy and Stewart 2022).

Support needed to implement digital technologies

There is limited information about how schools identify the need for digital technologies, understand the evidence about how these technologies are best used, and assess the relative costs and benefits of their deployment. Given the cost of some purchases, it is essential that school staff have the skills and capabilities to choose technologies that are fit for purpose, provide value for money, have the necessary safeguards, and are also beneficial for student learning, support teachers to teach or improve the operation of schools. If school staff lack this capability, they will need access to resources to help them.

While agreeing with the potential for digital technology to enhance education, AITSL noted:

Whatever technology is used, it is important that it supports effective teaching and learning. Teachers must have the capacity to shape how technology is used, and be provided with the time and professional learning they need to implement it. Evaluation should focus on the impact of any technology on student learning, and on how knowledge of impactful teaching has driven the use of technology (not the other way around). (sub. 146, p. 6)

To make these decisions, schools need to have access to information about the products available and be able to assess this information to make an informed decision. Evidence from other markets that sell complex products, such as financial products, suggests consumers can resort to decision-making processes that are less than ideal when the information available is complex and opaque, or pricing structures are difficult to compare (PC 2018, pp. 364–365, 373).

On that basis, there appears to be a role for government to provide a greater level of support — or one that is more coordinated — for school staff to ensure the most beneficial digital procurement decisions are pursued. AERO, or similar state- or territory-based organisations within each jurisdiction, should be responsible for researching and vetting off-the-shelf digital learning programs or formative assessment tools that meet desired criteria, such as effectiveness, usability (for students and teachers), privacy and risk considerations, and their complementarity to the national curriculum.

This would go some way to ensuring schools are not left on their own to navigate such decisions, and also assist in the diffusion of best practice programs and tools. However, such responsibility should not extend to mandating particular products, as some schools and jurisdictions may be well progressed on this front already. It is important that schools and jurisdictions retain autonomy to make their own digital procurement decisions, and having a body like AERO play a role in researching and vetting effective digital technologies would be of greatest benefit to schools that are under-resourced to perform this role themselves.

To support digital technology integration into the classroom, an ongoing commitment to teacher development is essential, especially considering the changing environment in which teachers are operating. The Grok Academy (sub. 185, p. 5) emphasises that digital skills matter to all jobs, and advanced digital skills take time to develop — priority should therefore be given to increasing digital skills development among educators instead of assuming that they have these already. In regard to spreading best teaching practice AITSL (sub. 146, p. 5) recommended funding a 'national online tool that allows teachers to find, manage, record and evaluate professional learning'. Such a tool could also help teachers develop and learn the best ways to leverage and apply digital technology in their classrooms. Similarly, teachers may need assistance to understand and integrate the results of technology-enabled student progress analysis into their teaching.

Enhanced professional learning modules for teachers, that better aid them in understanding how to use data collected digitally and apply this to their teaching practices could be developed. The New South Wales

Government has already identified this challenge as part of its Schools Digital Strategy (NSW Department of Education 2019, p. 20) with an actionable roadmap to address various challenges and opportunities that education technology brings, including teachers having the professional development and access to resources to apply digital technologies where appropriate to improve student outcomes.



Recommendation 8.1 **Leverage digital technology in schools**

State and Territory Governments should work with schools to extend, improve and embed the use of education technology in order to realise future benefits for students.

Initiatives should aim to:

- enable teaching practices to evolve with the changing classroom environment by prioritising the development and implementation of digital tools to support teaching and learning, while balancing flexibility for individual jurisdictions' needs – this could include developing an online assessment tool and giving the Australian Education Research Organisation (AERO) responsibility for researching and vetting effective digital technologies to be implemented in schools
- replace manual school administrative processes with technology-based and automated solutions where this has not been done already – this could include evaluating technology-based solutions for administrative processes currently in place and developing mechanisms to diffuse these to other schools
- support continuous commitment to ongoing professional development modules that support teachers in using data analytics to drive student improvement.

Making best practice teaching common practice

Drivers of effective teaching are varied and include factors that are affected by government policy (such as teacher salaries, the school environment, workload, classroom pedagogy, the national curriculum, and school management) as well as professional development in both initial and ongoing training. One way to support effective teaching is by building and supporting mechanisms that ensure evidence-based practice is used to drive better outcomes. But how best to convert knowledge about educational best practice into common practice is one of the main gaps in the process of diffusion (AERO 2021; OECD 2022c, p. 11; PC 2016, p. 29).

Some participants have called for government to have a greater understanding of classroom practice and pedagogical techniques (AERO 2022, p. 5; Grattan Institute 2022, p. 14). Having a greater understanding of classroom practice would help policy makers, school leaders, and teachers make informed decisions about the policies, programs and classroom practices that would lift student outcomes.²⁷

However, having an evidence base on its own will not ensure improvements in educational outcomes — effective practices must be employed by teachers in classrooms. Currently, there appears to be a substantial gap between high-level policy discourse, education research and classroom practice. Walsh et al. (2022, p. 7) found that teachers did not often use evidence-based research in practice. Instead, they indicated a stronger

²⁷ The creation of AERO in 2021, which seeks to provide an evidence base relevant to Australian schools, should, in time support informed decision making. The development of a strong evidence base is discussed more extensively in the Commission's Review of the NSRA (PC 2023, p. 189).

preference for professional information such as student data (77%) and professional observations (70%), compared with quantitative research (57%), qualitative research (48%) and randomised controlled trials (18%).

Not having a strong mechanism to convert education research into practice in the classroom lowers student outcomes, relative to what they could be, and has flow-on implications for productivity:

The price of this disconnect between education policy, research and practice has been high: Over the last few decades, education in most OECD countries has lost productivity, with teacher salaries having risen but outcomes not improved. (OECD 2022c, p. 3)

Education research needs to be salient and readily usable by practitioners

Making sure that evidence-based practices are successfully applied in the classroom is a deliberate and ongoing process.²⁸ AITSL submitted that translating evidence into the classroom is not as simple ‘as describing ‘best practice’ and expecting teachers to adopt it’ (sub. 146, p. 5). ‘Knowledge mobilisation’ (converting knowledge about best practice into common teaching practice) has moved away from a linear transmission, whereby evidence is developed (producers) and made available to the teachers and school leaders (users). Instead, it has moved toward a systems approach, which leverages relationships and engagement between all parties, and sees feedback loops and co-creation as central to knowledge creation and implementation (OECD 2022c, pp. 12, 20, 35–36).

At the school level, successful application of research relies on the ability of teachers, principals, and other school leaders to plan, implement, and evaluate change (Evidence for Learning 2019b, pp. 6–8). AITSL highlighted that the critical ingredients to success include: the skills of school leaders managing change; and, the skills of teachers in selecting and applying strategies that suit both their students and the content they are teaching (sub. 146, p. 5).

However, there can be barriers including a lack of time to access and engage with research. Research results can also be inaccessible and not readily translated to classroom activities. Added to this may be challenges posed by competing objectives, differing timelines, priorities, and prior views of researchers, policy makers, teachers, and principals. Facilitating greater diffusion of evidence-based research will therefore require coordination and leadership across multiple levels, skills and capabilities of key parties, effective communication channels, and well-placed accountability structures (OECD 2022c, p. 36).




Efforts to promote evidence-based practice also need to be complemented by better information on what happens in classrooms. This will help policymakers: understand gaps between evidence and practice; monitor whether, and to what extent, particular evidence-based pedagogies and materials are being taken up; assess whether initiatives to promote best practice are working; and, understand barriers to the adoption of effective approaches (AERO 2022, p. 10; Sonnemann and Goss 2018, p. 16; Steiner, Magee and Jensen 2018, p. 15).²⁹

Teachers also need guidance to consistently integrate the most effective approaches into daily practice. Governments can play a role in facilitating better implementation of best practice by supporting better research production, which involves more co-creation and greater visibility of classroom activity, and improving initial and ongoing teacher training. Helping teachers access and implement evidenced practice also means acknowledging the demand on their limited time and the resources needed to fully engage with the research.

²⁸ The OECD (2022c, pp. 18–19) examines the models of knowledge transfer, the interplay of each organisation and mechanisms for successful adoption of evidence-based practices in the classroom.

²⁹ There are numerous ways to improve visibility of classroom practice, including teacher and student surveys and direct observation of classroom practice. All options carry costs and benefits (PC 2023, p. 200).

Figure 2.5 – Translating evidence and diffusing best practice

Diffusion of best practice	Accessible and translatable high-quality evidence	Co-creation of relevant and high-quality evidence	
	Resources to learn and implement new approaches	Time and support to research and implement new evidence-based approaches	
	Networks for co-creation and diffusion of evidence	Cultivating relationships which effectively communicate best practice and create feedback loops to improve future evidence	

Observation and feedback is central to improving teacher practice

Cultivating effective teaching can look different for teachers at different points in their careers. At early career stages, especially in the first three to five years of work, teachers gain a lot of their knowledge from induction and mentoring. Ongoing professional development can help teachers at all stages access new evidence-based classroom practices or new ways to approach teaching using new technologies.

The process of sharing teacher expertise can take many forms, but a central element is observation and feedback. High performing school systems ‘cultivate an open door culture’ that ensures teachers have the time to observe others to develop their knowledge and expertise and to provide feedback (Jensen et al. 2016, p. 39). Teaching should be promoted as a collaborative endeavour, with performance improved through an ongoing process of constructive feedback (OECD 2018, pp. 115–116). Mentoring networks are particularly important for teachers and staff in schools experiencing disadvantage who often have more limited resources but more complex classroom environments (PC 2012, p. 278).

‘Highly Accomplished and Lead Teachers’ (HALTs), ‘Master Teachers’, and ‘Instructional Specialists’ are formal professional distinctions intended to recognise high-performing teachers. Employed by high-performing school systems overseas, such as in Singapore and Shanghai, Master Teachers are intended to be the pedagogical leaders in their subjects, working across a network of schools in their region to identify teacher needs, coordinate training, and connect schools with research (AERO 2022, p. 11). Unlike Master Teachers, who have no classroom load, Instructional Specialists split their time between classroom teaching and instructional leadership, working in their own schools to support and guide other teachers in specific subjects (Goss and Sonnemann 2020, p. 11).³⁰

Some Australian States and Territories also have their own specialist teaching roles. For example, in government schools in Victoria, Learning Specialists refer to highly skilled teachers that work with other teachers to improve their practice. In New South Wales, the ‘Best in Class’ Teaching Unit is made up of ‘handpicked’ teachers, chosen for being leaders and teaching experts in their respective fields. It is claimed that these teachers comprise the state’s best teachers who share their classrooms skills directly with those teachers and students who need it most (NSW Department of Education 2020).

³⁰ The *Australian Professional Standards for Teachers* recognise four professional levels and career stages: graduate teachers; proficient teachers; highly accomplished teachers; and lead teachers. Highly Accomplished and Lead Teachers (HALTs) are identified as ‘expert teachers and reflective practitioners who lead and support colleagues toward better outcomes for learners’.

But the uptake of such formalised teacher networks has been limited in Australia. Since the introduction of HALT certifications in 2012, only 1025 teachers have become certified; approximately 0.3% of the workforce (AITSL 2022, p. 14).

Reflecting the overall barriers to diffusion more generally, there are often limited instructional opportunities due to limited resources and constrained teacher time (Goss and Sonnemann 2020, p. 20; Willis et al. 2022, p. 35). A 2019 survey conducted by the Grattan Institute of 700 instructional leaders, teachers, and principals found that Australia's best teachers are often confined to their own classrooms, or stretched with 'add-on' instructional leadership responsibilities without adequate time, guidance or support to improve teaching in their school. They are rarely given access to an expert mentor, and were usually provided with no initial training in being an instructional leader (Goss and Sonnemann 2020, p. 10).

While emphasis is often placed on more formalised programs such as HALTs, teachers sharing expertise with others has also been identified as an effective form of learning and professional development (Grattan Institute 2022, p. 9; Hattie 2003, pp. 1–2; Ingvarson and Rowe 2008, p. 8). Less formal networks — where teachers work together in small groups to analyse and improve their practice — have been found to have significant positive effects on teaching quality and student academic achievement (TTRC, sub. 122, p. 3). Indeed, teachers are more likely to trust research shared by colleagues than from any other source (Walsh et al. 2022, p. 13). As informal networks do not require intensive application or certification processes, they can provide an accessible avenue for time-poor teachers to improve their practice (PC 2023, p. 187). Ochre Education observed that more support is needed to facilitate greater sharing of expertise and reach the 300 000 plus teachers in Australia (Ochre Education 2022, p. 4).

These various models are not mutually exclusive, and there is an opportunity more broadly to better support observation and feedback mechanisms within schools. In the recent review of the NSRA, the Productivity Commission recommended that State and Territory Governments include mechanisms for ensuring expert teachers can support colleagues to achieve better student outcomes through the dissemination of evidence-based practices (PC 2023, p. 188). Such initiatives would lift the quality of teaching in schools, improve student learning and over the long term, lead to a more productive economy.

Centralised curriculum support is a key mechanism to diffuse best practice

The process of spreading best practice can also be facilitated by dissemination of high quality curriculum-linked teaching materials. To implement the high-level achievement standards described in the Australian Curriculum, schools and teachers are typically left to their own devices to map out what to teach and how (box 2.3). Ochre Education observed that the Australian Curriculum is:

... a very broad and general framework to guide teaching of the subjects in the curriculum, including the standards at each grade level. This means that the work of delivering or enacting the curriculum on a daily basis is a significant task. Many teachers struggle to find the time, expertise, or resources to create excellent lessons each day. (Ochre Education 2022, p. 5)

Box 2.3 Achievement standards, curriculum, lesson plans

Australian curriculum – national standards

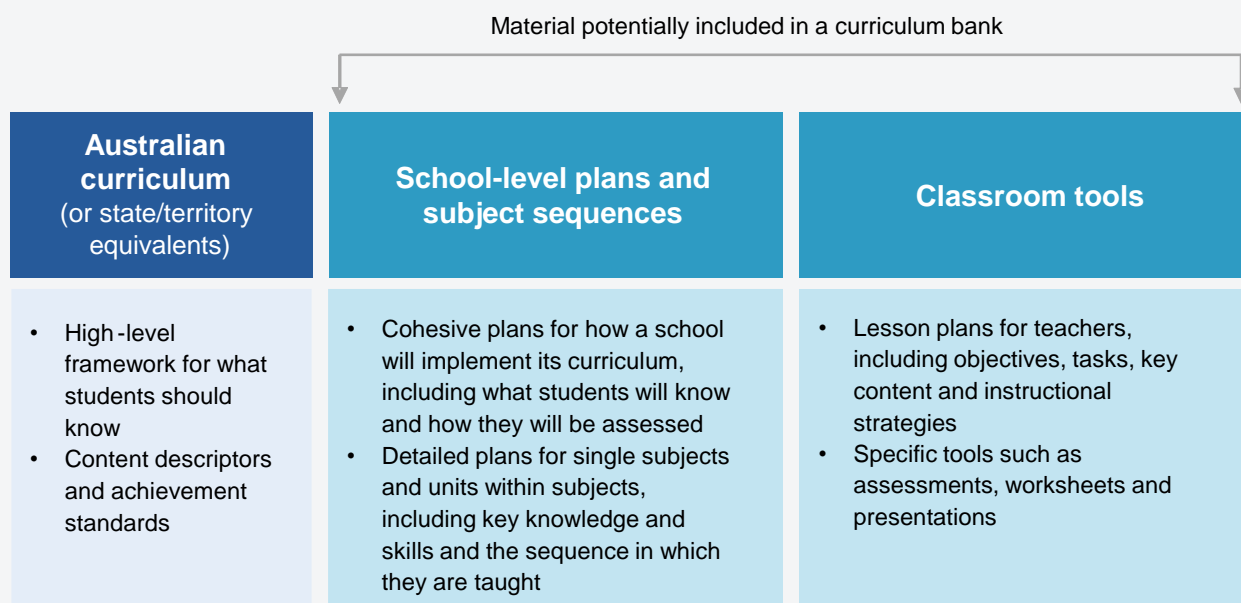
The Australian Curriculum sets consistent national standards to improve learning outcomes for all young Australians. It sets out, through content descriptions and achievement standards, what students should be taught and achieve as they progress through school (ACARA 2022b).

School curriculum planning

Schools develop a syllabus that outlines the means to achieve the goals and standards expressed in the Australian curriculum (or respective jurisdiction curriculum) across year levels and subject areas.

Schools also develop guidance to help teachers understand and apply what is in the national standards. For example, learning progressions, developmental continuums, scope and sequence documents, and unit goals and plans.

Teachers use instructional material to help students achieve the learning goals set out in the standards, such as textbooks, assignments, assessment tasks and scoring rubrics, computer programs, and lesson plans (Toon and Jensen 2017, p. 6). Lesson plans, one example of instructional materials, are a teacher’s detailed description of a lesson prepared before they start teaching. It covers what students will learn, how it will be taught and how teachers assess learning (NSW Department of Education 2021a).



Source: Figure adapted from Ochre Education (2022).

Individual teachers report spending hours preparing classroom lesson plans. While a central activity for teachers, most (86%) say that they do not have enough time for high-quality lesson planning — a view shared by both novice and experienced teachers (Hunter, Sonnemann and Joiner 2022, pp. 13–14).

While some degree of lesson planning is an important component of teacher’s work to enable tailoring to individual student needs, there are core aspects of planning for which it is inefficient to have every teacher undertaking the planning individually. Such an approach introduces variability in the quality of lesson plans from classroom to classroom or school to school, which can flow through to diversity in student outcomes.

The Grattan Institute found that ‘many students experience a curriculum that comprises a poorly connected series of activities, that can be highly repetitive or leave critical gaps’ (Hunter, Haywood and Parkinson 2022, p. 7). Many teachers use materials from private platforms that are difficult to quality-assure. For example, 64% reported using YouTube (Hunter, Haywood and Parkinson 2022, p. 31).

Even when self-produced lesson plans and classroom tools are individually of a high quality, ‘having teachers create their own lessons over time will rarely result in a fully sequenced, coherent learning experience for their students’ (Steiner, Magee and Jensen 2018, p. 14). Ochre Education observed that there were ‘significant gaps in much-needed detailed clarity, guidance, and support for teachers in planning and implementing the curriculum’ and this drove a lack of consistency and integrity in implementing the curriculum (Ochre Education 2022, p. 5).

High-quality curriculum guidance and instructional material could support the spread of evidence-based teaching practices in the classroom and reduce variability in the quality of lesson planning, and hence, outcomes for students. Providing teachers with classroom resources would also likely free up much of the time they spend planning lessons. Hunter, Haywood and Parkinson (2022, p. 34) found that the typical teacher surveyed (whose school provides them with a comprehensive bank of lesson plans for all subjects) spends three hours a week less on sourcing and creating classroom materials than the typical teacher whose school does not. This is in line with the experience of the UK’s Oak National Academy, whose bank of lesson plans improved the workload of just under half of users in the 2021-22 academic year, with a median saving of three hours per week (ImpactEd 2022, p. 4).

Saving this time would benefit students not just through quality teaching that is based on best practice resources, but also through enabling teachers to spend more time customising their teaching to their classes (Hunter, Haywood and Parkinson 2022, p. 32). The saving could be greater for those teachers who are teaching out of field, and need to spend more time to understand new content and prepare lesson plans (Mayer et al. 2015, p. 127). Further, the development of curriculum support could also be coordinated with better leveraging of technology to improve student outcomes.

Still, more than 40% of teachers reported their school does not have access to common, detailed lesson plans, unit plans, and assessments and a similar share said that their school has not established a detailed whole-school curriculum across subjects and year levels (Hunter, Sonnemann and Joiner 2022, p. 25). Just under half of all teachers are teaching in schools with no ‘school-based bank of instructional resources’ (Ochre Education 2022, p. 6).

Not surprisingly, high quality material can also positively affect student learning (Hunter, Haywood and Parkinson 2022, pp. 66–75; Steiner, Magee and Jensen 2018, p. 11). Improving teaching through better curriculum materials can have a positive effect on student academic achievement, especially when partnered with professional development programs for teachers. In a meta-analysis of international studies, Lynch et al. (2019) found that high-quality STEM instructional improvement programs (either curriculum sequences or professional development, or both) had an average effect of improving student test scores by 0.21 standard deviations. The most effective programs combined curriculum materials with professional development, and/or had particular characteristics such as offering teachers meetings to troubleshoot and discuss classroom implementation of the program (Lynch et al. 2019, p. 284). Similarly, the use of a particular high-quality mathematics curriculum in UK schools, along with professional development, was associated with the equivalent of one extra month of learning (Stokes et al. 2018).

The Australian Government is already pursuing some initiatives to assist teachers in spreading best practice through the provision or sharing of evidence-based teaching resources by funding the Digital Technologies Hub, Mathematics Hub and Literacy Hub, created by Education Services Australia. The hubs were developed over a number of years, in collaboration with the States and Territories and a range of teachers, academics and other subject matter experts to deliver a curated collection of resources aligned to the Australian Curriculum. Yet most teachers still spend many hours per week developing lesson plans with a large share reporting that available government-provided resources from their jurisdiction do not meet their needs (Hunter, Haywood and Parkinson 2022, p. 42).

Improved curriculum implementation support for teachers has the potential to diffuse best practice approaches in schools, reduce inefficiencies in use of teachers and improve the consistency of teaching and outcomes for students. Governments should work together to curate evidence-based curriculum resources and make them available for teachers and school leaders from a single source (PC 2023, pp. 41, 197).

Resources should:

- be curated by organisations with relevant curriculum expertise such as ACARA, AERO and/or Education Services Australia
- be independently quality assured based on what research says is most effective
- encompass whole-school curriculum plans, whole-subject sequences, lesson plans, and classroom tools
- use existing quality materials, including from the private sector, where possible
- be complemented with training in how to use the material.



Recommendation 8.2

Make best practice teaching common practice

State and Territory Governments should facilitate greater classroom access for the Australian Education Research Organisation (AERO) to support more principal and teacher involvement in education research to ensure that evidence-based research provides information that is salient and readily applicable by practitioners.

Initiatives should focus on:

- enabling greater observation of, and feedback on, classroom teaching practices, by supporting more informal teacher networks, and creating or strengthening the existing roles within the local school system for highly accomplished and lead teachers (HALT) to share their in-depth knowledge and skills with their colleagues
- increasing curriculum implementation support for teachers, by curating high-quality, evidence-based and government endorsed curriculum resources (curriculum plans, whole-subject sequences, lesson plans and classroom tools), to be made available for teachers and school leaders from a single source.

2.3 Shaking up how schools operate

The basic model of school operation in Australia, and many other developed countries, has changed little since it crystallised in the 19th and 20th centuries (with the exception of a gradually increased number of compulsory years) — with one teacher leading a class of 20 to 30 students between the hours of 9 am and 3 pm, with some minor variations across jurisdictions. Secondary schools are much the same but with different teachers instructing in each subject. The Australian Learning Lecture submitted that school is ‘stuck in the 1900s’ and ‘school systems want learners to do the same thing, at the same time, in the same way’ (sub. 124, p. 6).

While this traditional model of school has worked well for some students, that does not mean it is beneficial for all students, nor does it reflect the individualised nature of learning. Reforming school operation could therefore influence student outcomes, by offering learning options for students who are not thriving in the current system, particularly those who are not attending school or missing out on specific subjects.

Given the evidence that productivity growth in schools has typically lagged other sectors (section 2.1), there is value in ensuring it is possible to trial or implement new models (box 2.4), or adjust the existing model, including, for example through:

- digital delivery of lessons, to reduce out of field teaching
- delivery of lessons not based on age, to enhance individualised learning
- changes to school hours, to better suit student needs and preferences
- increased autonomy of schools to implement alternative, innovative operating models.

Box 2.4 – Trials can identify worthwhile programs when supported by quality evaluation

Trialling potential innovative approaches to learning offers an avenue for testing the targeting, design, implementation, and relative merits of alternative approaches before implementing them more broadly within the school system. In the context of the school system, innovations could cater to the local needs of particular types of students or communities.

Trials can give policymakers and the public valuable information about the potential benefits, implementation issues, and trade-offs involved in a proposed reform direction without having to incur the full cost of broadscale reform. They can also be terminated at a much lower cost than state-wide implementation if the expected benefits do not eventuate. However, trials should not be used as a tool by policy makers to simply postpone needed largescale reform.

Public schools are most likely to benefit from trialling alternative models of education as Catholic and Independent schools currently have more scope to explore different ways of teaching and more variations in their approach to education.

It is important that trials are properly evaluated to ensure intended objectives and outcomes are being achieved (and cost-effectively), with lessons incorporated into future policy making (PC 2020a).

Digital delivery of lessons to reduce out of field teaching

Teaching subjects that are beyond the field of a teacher's expertise is a perennial source of concern about lower quality education. Remote delivery of classes has the potential to reduce teaching out of field. While teaching out of field can reflect a shortage of teachers, it also reflects a mismatch of teachers across

schools.^{31, 32} There are teachers with a specialisation not teaching the subject in which they specialise, while in other parts of the school system, there are teachers teaching that subject out of field (figure 2.6).

Interestingly, the number of teachers who have specialised but are not currently teaching their specialisation (dark blue in figure 2.6) outweighs the number of teachers who are teaching that subject out of field (yellow in figure 2.6) (Weldon 2016, p. 4).

Using technology to deliver blended in-class and remote learning can help reduce the downsides associated with teaching out of field, including poor student outcomes, and additional teacher stress (PC 2012, pp. 95–96; Shah, Richardson and Watt 2020, pp. 9–10). Online portals and video technologies offer a way of ensuring access to qualified teachers, providing a viable alternative to either denying students access to subjects or using an unqualified teacher. Lessons could be pre-recorded or live, with pre-recorded lessons allowing schools timetabling flexibility. Students would still require school support while studying, including distributing resources and supervising assessments.

A similar schooling model is currently offered at Virtual School Victoria. While it is a model that caters for all subjects to be taught virtually, it also accommodates blended learning options — that is, where students want to maintain their current enrolment in their mainstream school, complete one or two subjects through Virtual School Victoria that are not offered at their school or not available due to timetabling clashes. Similarly, there are 7 state schools in Queensland that offer online education for isolated students throughout the state, providing a wider range of subjects to choose from, including languages.

An alternative approach involves interschool, video-based collaboration where students take classes at other local schools, attending lessons remotely. Once a term (or more frequently) the student could attend in-person for one-on-one tuition with the teacher.

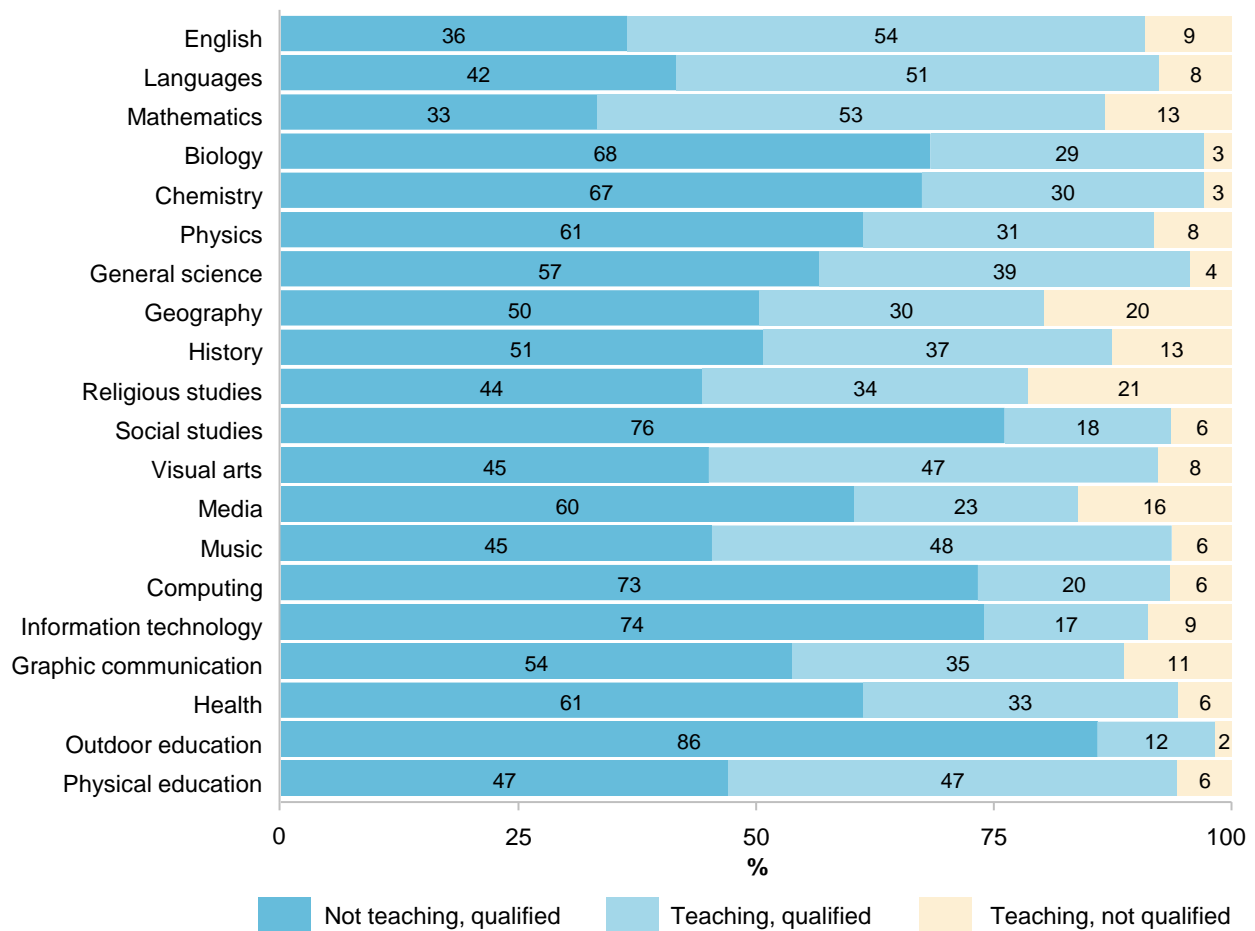
Some submissions to the inquiry provided broad support for remote delivery of class content to address out of field teaching (for example, Australian Investment Council, sub. 135, Australian Learning Lecture, sub. 124). AITSL (sub. 146) noted that the experience of teaching through the COVID-19 pandemic has provided a testing ground for more effective online lesson delivery, with various models adopted across schools. The Australian Learning Lecture observed that:

The most effective models of learning combined intensive synchronous learning, student focused asynchronous learning and an intentional focus on wellbeing and social connection. These models gave learners the agency and context to practise and develop the skillsets, mindsets and toolsets necessary to thrive now and into the future. (sub. 124, p. 5)

³¹ Teaching out of field is often attributed to a shortage of teachers in that field, with policy responses that aim to increase the supply of teachers. There are also broad-based solutions to attract more people to teaching generally, including raising the profile of teaching as a valued occupation and providing a greater career pay progression. Other strategies target support to those teaching out of field by providing a mentor or experienced in-field teacher to observe their classroom practices. The Commission's Review of the National School Reform Agreement has a detailed discussion of the rates of teaching out of field (PC 2023, pp. 205–225).

³² The mismatch is caused by the complexities of school class scheduling, autonomy and funding of teacher deployment, and the nature of student-teacher ratio funding making it difficult for some schools, particularly small schools, to have the right mix of teachers to cover the full spectrum of classes demanded for secondary school students (Hobbs and Porsch 2021, p. 1).

Figure 2.6 – Qualified but not teaching that subject while others are teaching out of field
Percentage of secondary teachers either teaching or qualified to teach, by subject



Source: Weldon (2016).

Delivery of lessons based on progress, not age

The ability of students to progress through their education, and absorb and benefit from more advanced learning, will differ substantially between students. However, the way that students progress through various year levels is a feature of school operation that appears to have changed very little over time. Students are generally grouped by age, and progress through school together with their age cohort (Masters 2022, p. 13). This approach is taken despite the increasing emphasis that is placed on individualised learning — students are broadly taught the same curriculum at the same time and given the same opportunities to master the content before being assessed and moved on.

The downside of the conventional approach is that low-achieving students often lack the skills necessary to progress, and fall further and further behind, confirming their lack of mastery and increasing their likelihood of disengagement. At the same time, high-achieving students who are ready to progress to more challenging and advanced material can be held back.

An alternative approach that sees learning as a continuous process that is flexible to the needs and proficiencies of individual students is the use of ‘untimed syllabuses’, as suggested in a recent review of the

NSW curriculum (NESA 2020). This restructures the curriculum as a sequence of levels that students progress through at their own pace:

The underlying principle is that learning is maximised when learners are presented with appropriately challenging material, rather than being under-challenged by what they already know or over-challenged by what they are not yet ready to learn. (NESA 2020, p. xv)

Schools would still be organised in year groups, with students in each year group made up of students working at different levels. In practice, this would likely involve a highly personalised approach to learning that would be reliant on effective use of digital technologies (Deunk et al. 2018; Li and Wong 2021).

While teachers regularly differentiate teaching within classes as a strategy to maximise student learning, there is no current evidence supporting the implementation of untimed or differentiated curricula at a system level (Wilson 2021). At a school level, differentiation may lead to small to moderate student improvements in student performance when it is implemented as part of a program of broader school reform including appropriate teacher training and implementation of technology (Deunk et al. 2018).

In an ongoing quest to improve student outcomes, it may be worth trialling untimed syllabuses in Australian schools to shore up the skills of lower-achieving students and extend the capacity of those at the higher end.

Adjust school hours to better suit student needs and preferences

The current school hours have been broadly in operation for many years — set at a time where society's norms, knowledge, and economy were very different. A variety of reasons have been put forward as to why current school hours may not be appropriate — particularly for student learning and parents' labour force participation.³³ The focus in this report is on whether adjusting school hours would alter student outcomes, while acknowledging that there could be other labour market participation and productivity impacts.

State and Territory Governments are responsible for setting school hours. While all jurisdictions allow individual schools to determine specific times based on local factors, the usual school day is about 6 to 7 hours (8:30-9:00 am to 3:00-3:30 pm).³⁴ Despite this autonomy, school changes to start and finish times generally appear to be minor — within 15 minutes to half an hour of the usual time. This can be to accommodate local bus timetabling, for example.

Most schools making more substantial changes to start and finish times are secondary schools, although this also occurs at other levels. For example, one primary school, Merrylands East Public School, operates from 8:00 am to 1:15 pm, with playground supervision from 7:30 am. It has a recess break and no lunch break but offers the same amount of teaching time as public schools. Internationally, there is considerable variation in school hours. At a national level, some countries have longer school hours than the Australian standard day, with Hong Kong, Taiwan and South Korea, averaging between 7.5 and 8.5 hours a day (NCEE 2018). In other countries, decisions about school hours are made at a local level. Academies in the UK, for example, were established to provide greater autonomy, which could include increasing school hours if they think their students would benefit (Hutchings and Francis 2018, p. 8).

Some have proposed extending the school day to broaden the range of subjects and activities students could explore (Strahle 2016). For example, it could allow students to explore hands-on science, engineering, music or arts. The New South Wales Government is trialling extended operating hours with a focus on

³³ The primary purpose of schooling is teaching and learning. Students being supervised is a by-product of the time spent at school learning, although supervision is more relevant for younger primary school children than older students, particularly high school students. Nevertheless, students attending school allows for parents and carers to work.

³⁴ Independent and Catholic schools set their own start and finish times, but these are broadly similar to public schools.

broadening the activities in which students participate and supporting parental participation in the workforce (White 2022). For some schools and some topics, the current after-school hours care model could offer a basis for integration of a broader range of activity opportunities.

Others have proposed longer school hours to support learning, particularly for those that are falling behind learning benchmarks. This has garnered interest in recent years with disrupted and lost learning opportunities due to COVID-19 (Kim and Ashbury 2021; Weale 2021). Owing to the cumulative nature of learning, students that have missed learning foundational concepts will struggle to keep up. The United Nations agency, the Accelerated Education Working Group, recommends extending teaching time as an appropriate strategy when pupils have missed out on up to one year of education (AEWG 2021, p. 6,19). Schools could use the additional hours of instructional time to provide extra support to students struggling in specific subjects.

However, matching resources with students' needs and making optimal use of that time and other resources are central to realising a student's learning potential (OECD 2021b, p. 330). The decision to lengthen the school day needs to take into account the costs and benefits.

Further, the benefits of longer school days are contingent on what happens during the longer hours — whether that be improved learning or exposure to cocurricular activities that are more efficiently and equitably provided at school. Extending hours may also reduce stress on harried parents trying to balance work and their children's needs, increasing parental labour force participation rates and potentially reducing the need for after-school hours homework. However, if managed badly, none of these benefits are likely to materialise. The Australian Learning Lecture suggested that rather than extending hours, classroom time could be reduced instead:

In addressing the productivity issue, we need to reconsider the curriculum and cut compulsory face-to-face learning hours for students, to enable teachers to design more personalised and responsive student learning, and give students more control over their learning and deepen their learning. Teachers also need time to reskill for our changing world. (sub. 124, p. 7)

Whatever their benefits, alternative school timing options would need to be traded off against the associated implications for salary costs of teachers and other staff, and the value for children of time spent on other activities outside of the school environment.

Increasing autonomy of schools to adapt to local needs

Rethinking approaches to schooling that are not working in certain cases may justify a more fundamental change to the school model, as has been observed in Australia (for example the Nawardekken Academy in West Arnhem Land, box 2.5), and overseas (for example, charter schools in the US, and academies in the UK, box 2.6). The Australian Investment Council recommended fast-tracking the establishment of dedicated STEAM (Science, Technology, Engineering, the Arts and Mathematics) schools, another example of innovation in the school model (sub. 135, p. 4).

State-funded autonomous schools may provide opportunities to innovate in education services, particularly where the standard model of schooling is not flourishing. Part of the rationale for increased autonomy is that it should provide increased opportunity for innovation in the delivery of education services. In urban areas, autonomous schools may also provide competitive pressures that inspire improvement in government-run schools, although there is limited evidence for this (Gill 2016).

Academies and similar autonomous schools aim to improve the results of disadvantaged students they serve. While evidence is mixed, they have largely been able to at least match the performance of the national average (Hatton and Drake 2019; Worth 2016). However, they appear to benefit certain cohorts of students more than others and it is difficult to find evidence that is applicable to all academies and charter school students while having confidence in the direction of causation. It is also unclear what drives the improved performance of academies.

Box 2.5 – Nawarddeken Academy as an example of innovation

Nawarddeken Academy is an Independent primary school that provides full-time education from teachers and Aboriginal elders. In 2015, the Kabulwarnamyo campus, based in an outstation in west Arnhem land with a population of just over 50 people, was established using a grant from the Karrkad Kanjdji Trust and Gunbalanya School (Vivian 2022). It was not until 2019 that it was able to register as an Independent school making it eligible for recurrent funding from the Australian Government (Nawarddeken Academy 2020). In 2022, two further campuses at Manmoyi and Mamadawerre were established (Vivian 2022).

The genesis of Narwaddeken Academy lies in an Indigenous ranger program established in part by recognised artist, Elder and traditional knowledge holder, Bardayal ‘Lofty’ Nadjamerrek OAM. Indigenous rangers sought education for their children to be delivered on country so that they would not have to leave their children with family in larger towns.

‘Country as classroom’

The school uses a ‘both ways’ approach that emphasises ‘respect, and the ability to integrate customary modes of learning guided by our old people with a ‘western’ educational curriculum’ (Nawarddeken Academy 2020, p. 7). In doing this, the Academy seeks to, among other things:

- empower young people to be strong and confident in western and Indigenous knowledge systems
- preserve Nawarddeken languages and culture through bilingual and bicultural experiential learning.

Nawarddeken Academy uses a curriculum based on the concept of ‘country as classroom’ which links people’s desire for environmental and social outcomes on their own land with an alternate school education that works for their children. The unique curriculum is based on:

[O]ur land, language and culture, using formal and informal teaching and learning approaches; emphasising mental and physical health, while cultivating individual and collective respect and responsibility. (Nawarddeken Academy 2020)

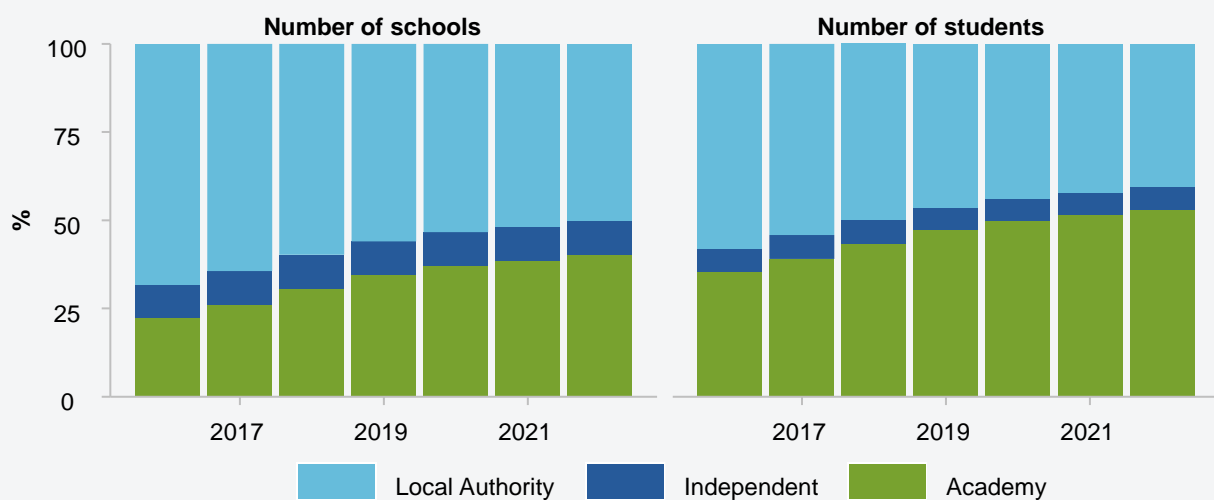
This approach simultaneously recognises that ‘education that is not connected to the reality of a student’s life will fail’ (Fogarty 2012), and the ‘importance of country in the social and economic fabric of everyday life in remote communities’ (Fogarty and Schwab 2013, p. 13). Implementation of this approach saw attendance rates of between 78 and 93% over the four school terms in 2020 (Nawarddeken Academy 2020), and increased student engagement (Masters 2021). By comparison, the student attendance rate for years 1-10 was 53.7% for Aboriginal and Torres Strait Islander students in very remote areas of the Northern Territory in 2019 (SCRGSP 2022).

Box 2.6 – Academies and charter schools allow for different approaches in schooling

English academies

The academy program started in 2002, and over two decades has become the predominant model of secondary school in England, making up about 80% of secondary schools, and educating about 79% of secondary students (National Statistics (UK) 2022). Overall, 40% of all schools are now academies, with more than half of English students (53%) now attending an academy (figure) (National Statistics (UK) 2022).

The charter school sector in England continues to grow^a



a. Figure contains data for both primary and secondary schools and students.

Source: National Statistics (UK) (2022).

Academies have typically replaced poor-performing secondary schools located in areas with concentrated social disadvantage. An ‘academy trust’ administers the school and has the autonomy to vary ‘curriculum, school year, staff pay and conditions of service’ (Hutchings and Francis 2018, p. 8). They are independent, non-selective in their student intake and state-funded, and are generally sponsored by philanthropists or business partners seeking to improve local education.

Charter schools in the United States

The degree of autonomy accorded to charter schools varies by state, but they are typically unable to be selective in their student intake and unable to charge fees for schooling (Epple, Romano and Zimmer 2015, p. 2). Where there is an excess of demand for charter school services, students are typically chosen through a lottery process. Since 2009, the proportion of all public schools that were charter schools has increased from 5% to 8%, making up about 7500 schools across the United States.

Despite not legally being allowed to be selective in their student intake, charter schools are not necessarily representative of the general population. Compared with the national average, they tend to be: more ethnically and racially diverse, with higher shares of Hispanic and African-American students; lower proportions of students that speak English; and, lower proportions of students with special needs.

Advocates highlight the increased ability of autonomous schools to meet the unique circumstances and needs of the community in which they operate, while detractors tend to attribute success to the practice of academies becoming more selective in their student intake (and barring students who would otherwise bring down results). Submissions to the inquiry did not shed further light on the evidence for or against autonomous schools, such as charter or academy models. These models represent just two examples that have arisen from giving schools increased autonomy to adapt to local needs.

There may be some benefit in trialling state-funded but privately administered schools as an alternative when public schools are not meeting the needs of their local community or the needs of a particular cohort of children — indeed, this is what has already been done with the establishment of the Nawardekken Academy.

Moving forward, State and Territory governments should ensure there are no barriers to experimenting with alternative, new and innovative school models, where there is a justification to suggest a particular model could improve student outcomes. The Productivity Commission is not advocating a particular model — given the lack of evidence suggesting that one approach is more favourable to others if applied in an Australian context — but rather supports a policy environment that encourages experimentation and new innovations designed specific to local needs, preferences, and objectives.



Recommendation 8.3

Enable experimentation with alternative approaches to schooling

State and Territory Governments should be open to experimenting with new, innovative school models or operational changes where there is an evidence base (including overseas) to suggest outcomes could be improved for Australian students.

In the first instance, legislative, regulatory, administrative or policy barriers that would prevent individual schools varying their operating model should be removed. In addition, there should be capacity and appropriate resourcing within the local school system to allow the merits of any trials to be evaluated.

Innovations should aim to:

- offer different lesson delivery options to lift quality teaching and learning, including for example, offering online classes in the absence of a teacher with the relevant expertise in a topic, or trials of untimed syllabus approaches to promote a continuous learning process
- better cater to student needs to encourage school attendance and lift student outcomes, including through variations in school hours and use of technology to personalise students' learning environment.

3. Investing for future skill needs

Key points

- * **Rationing places in tertiary education — through skill lists or provider funding caps — impedes efficient skill acquisition by limiting access or distorting course choice. Concerns about fiscal costs are better addressed through other means, such as changes to subsidies or expanding income-contingent loans.**
- * **The Australian Government should return to demand-driven funding for Commonwealth supported places for domestic undergraduate university students.**
 - Demand-driven funding would allow the sector to better support workforce needs, facilitate competition, and avoid perverse incentives to enrol students in courses that do not align with skill needs.
 - Reaping the benefits of a demand-driven system will hinge on measures to contain fiscal costs and ensure all students are adequately supported to complete their studies, or if appropriate, to ‘fail fast’.
- * **Subsidy allocations need to be recalibrated to improve efficiency and equity.**
 - Currently, governments set subsidies based on targeting public benefits and skill needs, but these have little impact on student choice and many students receive large subsidies despite large private benefits.
 - Instead, student contributions should be set based on average expected earnings for each field of study, with more of the costs paid by those that benefit from study rather than the broader tax base. The government subsidy should cover the gap between the student contribution and estimated cost of delivery.
- * **Unlike students, providers are highly responsive to course prices. Setting prices to better reflect course delivery costs would encourage providers to meet skill needs and dampen incentives to prioritise enrolments in high margin courses.**
- * **Expanding loan access for vocational education and training (VET) students would reduce barriers to participation, but would need to manage the risks of abuse seen under VET FEE-HELP.**
 - All Diploma and Advanced Diploma courses should be eligible for VET Student Loans, except those primarily taken for leisure or with poor labour market outcomes. Following an evaluation, expansion to Certificate IV and Certificate III qualifications should be considered.
- * **Labour market trends suggest a growing need for upskilling and reskilling given changes in the nature of work and structural shifts in the economy, particularly the rising importance of digital, dynamic, and service oriented skills. Policies supporting learning later in life should be consolidated to avoid overlaps and gaps, and to target barriers to uptake.**

Investment in tertiary education — primarily provided by government directly or through loan programs and student contributions — is critical to developing the skills of Australia’s workforce (chapter 1). This chapter explores whether current settings are well-designed to support the sector’s growing importance in meeting labour market needs and driving Australia’s long-term productivity. While the tertiary sector has generally performed well against key metrics (chapter 1), there are significant opportunities for improvement.

Australia’s tertiary system is bifurcated, with vocational and higher education funded, regulated, and delivered separately and provision continuing to overlap. Governments use broadly similar levers across both sectors to influence investment, but these are implemented in distinct ways (table 3.1).

Table 3.1 – Differences in regulating, funding and financing VET and higher education

How govts ...	Vocational education and training	Higher education
Regulate the sector	<ul style="list-style-type: none"> Primarily S & T government responsibility Most qualifications at AQF 1-6^a Admission to individual provider, or through employer for apprenticeship pathways ASQA^b responsible for regulating national minimum standards and compliance with the VET Quality Framework S & T governments regulate quality standards of funded providers through contracts Mostly competency-based assessment. 	<ul style="list-style-type: none"> Primarily Australian Government responsibility Most qualifications at AQF 5-10 Applications for admission centralised for the majority of school leavers TEQSA responsible for regulating national minimum standards Some providers (mostly universities) self-accredit qualification content, and TEQSA regulates materials for most non-universities Proficiency-based assessment.
Regulate places	<ul style="list-style-type: none"> S & T governments manage demand through a ‘skills list’ of courses eligible for subsidies, but also cap subsidised places for certain courses or registered training organisations (RTOs). 	<ul style="list-style-type: none"> Places not directly set but constrained by the maximum basic grant amount. Universities can enrol more students but do not receive a government contribution after reaching the maximum basic grant amount.^c
Set course prices	<ul style="list-style-type: none"> Prices not regulated in most jurisdictions, but some set maximum or minimum prices. 	<ul style="list-style-type: none"> Maximum prices for undergraduate courses set based on median cost of delivery.
Set subsidies	<ul style="list-style-type: none"> Government subsidy varies based on skill shortages and economic or social returns. 	<ul style="list-style-type: none"> Government subsidy varies based on national priorities and estimated employment prospects.
Allocate funding	<ul style="list-style-type: none"> Subsidised providers contracted by the relevant S & T Government. 	<ul style="list-style-type: none"> Subsidised providers block funded through Commonwealth Grant Scheme (CGS).
Offer loans	<ul style="list-style-type: none"> Australian Government administers VET Student Loans and Trade Support Loans Loans available for Diploma and above, only for certain courses with industry need. Full fee-paying students incur a 20% loan fee. 	<ul style="list-style-type: none"> Australian Government administers Higher Education Loan Program (HELP) Loans available to all domestic students, some full-fee-paying students incur a 20% loan fee.
Fund other programs	<ul style="list-style-type: none"> Governments fund apprenticeship support, as well as employer assistance for apprentices. 	<ul style="list-style-type: none"> Contingent funding for equity groups through the Higher Education Participation and Partnerships Program (HEPPP).

a. Australian Qualifications Framework. **b.** ASQA regulates about 90% of RTOs, including those operating across jurisdictions or delivering training to international students. RTOs delivering training only to local students in Victoria and Western Australia are regulated by state-based bodies (the Victorian Registration and Qualifications Authority and the Western Australian Training Accreditation Council). **c.** Demand-driven funding applies to Aboriginal and Torres Strait Islander students who live in regional and remote Australia.

Participants noted the stark differences in arrangements between the sectors. Expressed bluntly:

... Australia's tertiary education space is a dog's breakfast. It's as if VET comes from Mars and higher education from Venus. ... We have a qualification classification that separates VET and higher education. We have two regulatory bodies, with quite different ways of operating. We have funding arrangements which reflect history rather than logic. We have fee and loan arrangements which are all over the place. (Tom Karmel, Sub. 197, p 5)

If one were starting from a blank slate, the tertiary education sector would almost certainly be designed more cohesively. However, the practical reality is that the VET and higher education sectors have evolved in vastly different ways over time. In large part this is because State and Territory governments play the dominant role in VET, while the Australian Government is the principal funder and regulator of higher education.

In this historical context, steps toward greater consistency should not be taken arbitrarily and need to have expected benefits that justify the costs and disruptions associated with any change. For example, while some have called for a single tertiary sector regulator, ASQA and TEQSA (the VET and higher education regulators) largely oversee separate markets with different types of institutions and risks. The greatest gains are likely to be achieved by streamlining regulation for dual sector operators (as advocated by IHEA, sub. 120, pp. 8–9).

Another key priority is the reforms to the Australian Qualifications Framework (AQF) recommended in the Noonan review. These reforms were also supported by the Bean-Dawkins *Review of University-Industry Collaboration in Teaching and Learning* and several submissions to this inquiry (for example, AiGroup, sub. 179, p. 6). Reforming the AQF would go some way in breaking down barriers and improving pathways between the sectors; as well as recognising the growing importance of microcredentials and the increasing need for generalised capabilities in the workplace. The Productivity Commission has not considered the AQF in detail as part of this inquiry, but encourages continued momentum in reforming the AQF.³⁵

For this chapter, the Productivity Commission has focused on government investment (figure 3.1). Investment has a pervasive influence on the operation of providers, the choices of students, the outcomes within Australia's tertiary system, and therefore labour market and social outcomes more generally. As these issues often manifest in similar ways across sectors, each section considers both VET and higher education. However, given the recent review of the National Agreement on Skills and Workforce Development proposed many reforms to VET funding, there is more focus on higher education in the recommendations in sections 3.1-3.3. Still, section 3.4 recommends greater harmony in loan settings between the VET and higher education sector.³⁶ Finally, section 3.5 considers the role of government support in fostering a culture of lifelong learning, covering both sectors.







Although international students play an important role in the tertiary education sector and the Australian economy, they are not a focus of this chapter, which considers access to tertiary education for domestic students. While international students have a bearing on productivity if they transition into the skilled

³⁵ Implementation has been slow, in part, as it requires agreement between Australian, State and Territory governments; and across school, VET, and higher education sectors. A cross-jurisdictional working group has been established to develop and provide advice to Skills and Education Ministers about addressing AQF Review recommendations, with advice expected in 2023 (pers. comm. Department of Education, December 2022).

³⁶ This is consistent with the views of many participants in this inquiry, who cited access to financing as the most salient discrepancy in policy settings between the sectors, with implications for student choice.

migration intake, most (84%) do not stay in Australia long-term after studying (Treasury and Department of Home Affairs 2018, p. 21).³⁷

Figure 3.1 – Investing for future skill needs

Section 3.1	Expanding tertiary places	 Uncapping places to meet skill needs
Section 3.2	Recalibrating funding	 Student contribution  Gov't contribution
Section 3.3	Setting cost-reflective prices	 Provider revenue per student
Section 3.4	Increasing loan access	 Income-contingent loans for more students
Section 3.5	Supporting lifelong learning	 Targeted government support

3.1 Meeting demand for a more educated workforce

Education improves productivity and brings broader benefits to the Australian community (chapter 1).

However, government investment in education needs to be efficient — it is not just the aggregate level that influences productivity and public benefits, but also how it is spent and targeted. Subsidies and loans that differ across courses and sectors (VET and higher education) may influence choices about whether and where to study. Appropriate funding settings can encourage students to pursue education with long-term individual and societal benefits. But poorly targeted funding can lead to students studying courses that are a poor fit, resulting in lower completion rates, lifetime earnings, and productivity growth.

The public benefits from investing in education are sizeable, but there is also an opportunity cost — investment in supporting students must be funded by taxpayers and, like other government investments, funding can always be used elsewhere.³⁸ As such, there is a finite capacity for public investment in tertiary education.

Saying this, policies should allow equally able students to attend regardless of their background and financial situation.³⁹ Educational attainment is often determined by factors other than innate ability or potential public and personal gains. Health, familial responsibility, financial situation and other circumstances can limit students with high potential. Continuing support for such students is essential for an equitable system.

³⁷ Pathways to permanent residency are discussed further in this inquiry's companion volume *'A more productive labour market'*.

³⁸ Additional investment in education requires either raising funds through taxes — which have distributional impacts and can distort economic activity (for example, income taxes reduce labour market participation) — or reducing funding from other government services and payments, such as healthcare, transport, or welfare payments.

³⁹ The quality dimension of the student experience also becomes increasingly important to outcomes as the student body becomes more diverse (chapter 4).

Due to the finite capacity of governments to subsidise tertiary education, all governments use mechanisms to limit financial outlays. Many State and Territory governments partly or fully cap funded places available in their training programs (PC 2020c, pp. 454–468), and the Australian Government limits the total funding available for each university, which effectively acts as a cap on places (DESE 2021c).⁴⁰

Demand for tertiary-educated workers continues to grow, meaning pressure on government budgets or students missing out

The growth in Australia’s educational attainment — with over half of 25-34-year-olds now holding a tertiary qualification — has contributed to productivity growth (chapter 1). But despite record participation, demand for tertiary-educated workers is still growing as Australian businesses require new skills to operate in an increasingly digital and service-oriented economy. This suggests that the tertiary sector will need to ensure that it has capacity to provide up to date initial qualifications and support upskilling and reskilling. A more educated workforce will also position Australia to better take advantage of worldwide skill-biased technological change, as a more attractive location for businesses employing highly skilled workers.

Further, there are demographic pressures on the sector, which are insufficiently factored into planned funding growth.⁴¹ The population of post-school students will grow, with an expected 15% increase in the number of 19-year-olds in the decade to 2030 (chapter 1). This growth means governments will either have to accept a smaller proportion of young people attending tertiary education, spend significantly more, or alter funding structures to allow more places to be delivered for the same fiscal cost.

Forecasts of jobs growth for university-qualified roles exceed the forecast growth of additional university places by a factor of 8:1 by 2026.⁴² However, this is not a like-with-like comparison, as the forecast growth in jobs includes all workers with a bachelor’s degree or higher, not just new graduates. This gap might otherwise be met through students supported under current funding arrangements, skilled migration programs, and through better allocation of skilled workers. Nonetheless, current settings mean the tertiary sector will not adequately support future skill needs and productivity growth.

From an economy-wide perspective, short-term fiscal constraints alone are not a strong rationale for limiting places in tertiary education. Limiting places reduces long-term human capital development, productivity growth and the economic opportunities of some — for the short-term benefit of the taxpayer.⁴³

⁴⁰ Places in Medicine are specifically capped by the Australian Government, but restrictions on full-fee domestic undergraduate places, combined with the maximum funding amounts for universities can effectively constrain places each year (DESE 2021c).

⁴¹ This point was also made by many participants in this inquiry — both those in the sector and employer groups (AEU, sub. 21; NTEU, sub. 36; ACCI; sub. 47; Master Builders Australia, sub. 58; Universities Australia, sub. 70; Regional Universities Network, sub. 154; Group of 8, sub. 187; Science and Technology Australia, sub. 188). On this basis, some advocated a return to demand-driven university funding (Australian Investment Council, sub. 135).

⁴² Commission estimate based on NSC (2022b) and Warburton (2021, p. 6). The number of university places is not set directly, rather the Australian Government sets a maximum basic grant amount for each university. Actual places depend on course enrolments, given the different Commonwealth contribution levels by field of study.

⁴³ Notwithstanding, there remain good reasons for careful management of education and training programs from a fiscal perspective. This has been demonstrated by the experience of budget blowouts and subsequent cuts under recent policy experiments, posing risks to the quality of education and the life outcomes of students. These issues can occur even in more constrained programs, as recently occurred with the ACT’s Skilled Capital training initiative (Jervis-Bardy 2020).

Lessons from past expansions need to be heeded

Several recent government policies have changed tertiary education access settings. The ‘demand-driven’ university system between 2010 and 2017⁴⁴ resulted in a place for every domestic undergraduate student that universities decided to enrol (PC 2019, p. 19). This significantly increased university participation, from 53% to 60% between 2010 and 2016 (PC 2019b, p. 49) but funding caps were reintroduced due to budget concerns — discussed further below.

Similarly, the national entitlement to training implemented in the VET sector meant each jurisdiction implemented their own version of an ‘entitlement’ to a Certificate III or above.⁴⁵ The most expansive and ‘demand-driven’ was the Victorian Training Guarantee. This policy was successful in significantly expanding access and providing greater choice of qualifications for students, but also led to major budget and quality concerns, resulting in the recapping of course places, and major funding cuts to VET in Victoria (Hetherington and Rust 2013). Other States and Territories implementing the training entitlement also had significant increases in enrolments, such as South Australia’s Skills for All (ACIL Allen Consulting 2015), but subsequent programs in other jurisdictions were more tightly constrained (PC 2020c, p. 148).

Budget blowouts occurred under these policies, threatening their political viability and prompting governments to search for savings elsewhere in the system. This sometimes involved reductions in the amount providers received for each student, with risks to the quality of education.

Fiscal costs do need to be controlled, but this can be better achieved by recalibrating subsidy and loan settings so that more of the costs are borne by students rather than reducing overall funding below the level that is needed to deliver a high-quality education. If done well, this can equitably share the costs of expanding access to education without deterring potential students from study or distorting student choice within or between VET and higher education (section 3.2, section 3.4).

Sustainably expanding places requires careful consideration of the balance of places and other policy settings across VET and higher education. For example, the introduction of the demand-driven system in universities coincided with a decline in VET enrolments, although the complex factors affecting enrolments in each are difficult to disentangle. To the extent that VET and higher education are substitutable pathways for some students, expanded access should be considered with reference to both sectors to avoid shifting students from one sector to another due to policy settings rather than students’ capabilities and interests. This is challenging given the separate determination of funding allocations between VET and higher education — with differing Australian, State and Territory government responsibilities.

The barriers to educational attainment and the paths to improve investment also differ across the university and VET sectors. In higher education, caps on places are largely determined by government investment with limited scope for domestic students to undertake fee-for-service undergraduate study at public universities.⁴⁶

⁴⁴ The demand-driven system involved a 5% increase in the cap on student numbers in 2010 and 2011. Places were then fully uncapped from 2012 to 2017 for almost all fields of study. Funding was frozen in 2018 (PC 2019, p. 5).

⁴⁵ The national training entitlement was agreed to by the Council of Australian Governments in 2012 as part of the renegotiation of the *National Agreement on Skills and Workforce Development* and the *National Partnership Agreement on Skills Reform*. Under this agreement, State and Territory governments committed to establishing or expanding existing training programs to improve VET access and affordability. As part of this, the Australian Government also expanded VET FEE-HELP to provide ICLs for Diploma and above courses, which was subsequently wound back and abandoned due to escalating costs and rorting (PC 2020a, p. 84-85).

⁴⁶ Undergraduate domestic full-fee places are only available to students who are not eligible for a Commonwealth supported place, for example, an Australian Citizen who is living overseas while studying, or international students who were granted permanent residency during their course of study (The University of Melbourne nd; The University of New England nd). In 2020, about 0.8% of total domestic student places were fee-paying bachelor’s degrees (Universities Australia 2022).

In VET, where students can pursue fee-for-service training (and fee-for-service enrolments outweigh government-funded enrolments), limited loan eligibility may be the main constraint on demand.

Increasing access to vocational and higher education simultaneously, including through expanding loan access to more VET courses (section 3.4), would help prevent any ‘residualisation’ of VET that may have occurred under the demand-driven system. This would be complemented by reforms that have been initiated to improve the quality and relevance of the VET system (chapter 4).

Funding places to meet demand brings clear benefits

Expanding places in line with demand has three key benefits.

- Additional students experience considerable employment and income benefits from attending tertiary education, and this is particularly so in the context of an imminent spike in school leavers and continuing growth in jobs requiring tertiary qualifications.
- The current approach to public funding of universities stymies competition, while a demand-driven system allows greater flexibility for funding to follow the student.
- The current approach also creates an incentive for providers to enrol students in certain courses that may not align with skill needs, which can be eliminated in a demand-driven system.

Each of these is discussed in turn below.

Greater access to tertiary education will benefit students and productivity

Tertiary education comes with significant costs, including government subsidies and students’ time, debt, and forgone earnings. In most cases, the benefits to students and society exceed these costs (chapter 1). But expanding access is only worthwhile if this holds true for those students who would not otherwise have enrolled (‘additional’ students).

Demand-driven university funding (in place until 2017) attracted many such additional students — with the share of young people attending university by age 22 years increasing from 53% in 2010 to an estimated 60% in 2016 (PC 2019b, p. 49). The Productivity Commission analysed the performance of these additional students, comparing their performance to that of ‘other’ students who would have attended university without the policy. Most additional students seemed to see significant benefits from the demand-driven system.

When comparing outcomes against other students, additional students did perform worse on some dimensions, with a significantly higher proportion dropping out — 22% rather than 12%. However, these additional students faced more hurdles, for example being more likely to have a lower SES background, be the first in their family to attend university, and have a lower Australian Tertiary Admissions Rank (ATAR).

Given these challenges, additional students performed quite well. By age 25 years, they were equally as likely to be in full-time employment as their more advantaged counterparts, and most had found managerial or professional employment.⁴⁷ Earnings differences were modest (PC 2019, p. 7).

The most relevant question is not whether outcomes for additional students are worse than those of the average student — this is to be expected. Rather it is whether the additional students would have been better off pursuing other pathways, such as VET, and whether the costs of their participation outweighed the overall benefits. This is more challenging to answer, and the Productivity Commission was not able to do so conclusively with available data. However, it is reasonable to infer the investment would have paid off for many given the high proportion of additional students who found highly-skilled work, and the fact that earnings grow by a much greater extent over

⁴⁷ Overall, including those who tried university and dropped out.

the career of higher-skilled workers (chapter 1). The demand-driven system also helped a larger share of young people, particularly disadvantaged students, to acquire skills that were valuable to the Australian economy.

This is further supported by international analyses that more directly estimate the benefits of higher education for 'marginal' students.⁴⁸ These studies generally find that returns to university attendance for marginal students are similar to or greater than returns to other students (box 3.1) — results that, to the extent they are generalisable to Australia, imply the benefits of expanding access are well in excess of the costs.⁴⁹

Dropout rates for marginal students are the greatest concern. However, it is difficult to determine from the outset which students are likely to succeed, and, for many, there can still be some benefits from partial completion of studies, even if it is not the optimal outcome (chapter 4). Policy reforms have the potential to reduce the costs of attrition through better support and quality teaching or, if dropping out seems highly likely, facilitating 'failing fast' (chapter 4).

In the short term, given the upcoming growth in the university-age population, most additional students are likely to be quite similar to many current students in terms of academic preparedness. In the medium term, expanded access is likely to include a broader base of additional students.

Box 3.1 – The returns to education are high for students at the margin of attendance

The magnitude of the total social returns from 'marginal' students depends on their lifetime outcomes from participation in higher education compared with an unobserved counterfactual. This is different from the comparison of marginal students with those who would have attended anyway. For example, a marginal student with lower innate ability may well obtain a lower lifetime income than other students, but also have a greater lifetime income than they would have had they not attended (for example, because they would have been employed in a precarious low-paid low-skill job).

International evidence provides estimates of the effect of higher education for marginal students using various natural experiments (although which students are 'marginal' will differ depending on the context and empirical approach). These studies, in effect, allow comparisons between students who are identical in every respect, except that some have attended university and some have not. This research generally finds that benefits for marginal students are similar (and sometimes higher) than for other students (Deming 2022).

For example, gaining attendance to the worst-ranked public university in Florida increased marginal students' earnings by 22% (Zimmerman 2014). Marginal students at 4-year universities in China saw attendance increase their earnings by 40-60% (Fan et al. 2010). Gaining admission to 4-year colleges in South Korea increased hourly wages by about 68% (Kim 2021). In these studies students who were not admitted typically attended other tertiary institutions — which may differ from VET institutions in Australia.

Other studies use natural experiments resulting from funding, financing, or dismissal policies to focus on the effect of university completion, rather than attendance. These studies also find substantial earnings benefits for students who would not be able to complete their studies but for these policies (Bettinger et al. 2019; Black et al. 2020; Chu and Cuffe 2021; Denning, Marx and Turner 2019; Ost, Pan and Webber 2018).

⁴⁸ Marginal students are on the margin of attending — those who attend university but would not if access were slightly narrower, and those who do not attend but would if access were slightly broader. This cohort will differ in each context.

⁴⁹ Noting the empirical evidence suggests that signalling explains, at most, a modest share of the returns to education (chapter 1).

One risk of an unconstrained system is that it could encourage ‘overskilling’ or ‘overeducation’ — additional education that may be unnecessary and merely a form of credentialism.⁵⁰ However, if and where this is occurring, it is unclear how much this is being driven by tertiary education policy (and concerns over credentialism typically relate to post-bachelor education, which is not directly affected by demand-driven funding). Other culprits could include increasing regulatory barriers to entry in certain professions and labour market conditions.

Funding allocation may inhibit competition

Across both VET and higher education, funding is often capped and allocated to providers based on historical grant allocations, rather than contestable arrangements.

- In VET, TAFEs receive significant block funding in some jurisdictions, but a lack of transparency on funding arrangements (and a lack of comparability across jurisdictions) makes this difficult to estimate.
- In higher education, the majority of funding for teaching is allocated through grants under the Commonwealth Grants Scheme, equivalent to \$7.7 billion in 2020, or 42% of total Australian Government financial assistance (DESE 2021a).⁵¹ Under the Commonwealth Grants Scheme, a university holds a funding agreement with the Australian Government, with a maximum basic grant amount (MBGA) set for each year based on the funding for student places the university received at the end of the demand-driven system in 2017.⁵²

The impacts on competition vary across the tertiary sector.

In the VET sector, although many students do not receive government funding, those that do tend to study at TAFE (figure 3.2). As a result, a small number of providers receive the majority of government funding. Despite this distribution of funding, there is a reasonable degree of competition within VET, with 87% of students having a choice of registered training organisation (RTO), 30% of students studying in highly competitive markets and 20% in moderately competitive markets (PC 2020a, p. 94). This reflects the emphasis since the 1990s on reforms to increase competition between RTOs. Indeed, about 4000 RTOs service VET markets, compared with the 194 higher education providers delivering qualifications (TEQSA 2022c).⁵³ However, there is scope to increase the role of contestable funding given that some jurisdictions still prioritise public providers (PC 2020a, pp. 290–294).

⁵⁰ Concerns regarding the poorer labour market experience of recent graduates might point to issues with overskilling, given evidence of higher rates of underemployment, lower average incomes and less employment in high-status occupations, compared with previous graduates (de Fontenay et al. 2020; PC 2020d). However, falling *average* labour market outcomes of graduates do not imply that the marginal student would not benefit from attending education. Rather this points to the importance of macroeconomic stabilisation policies.

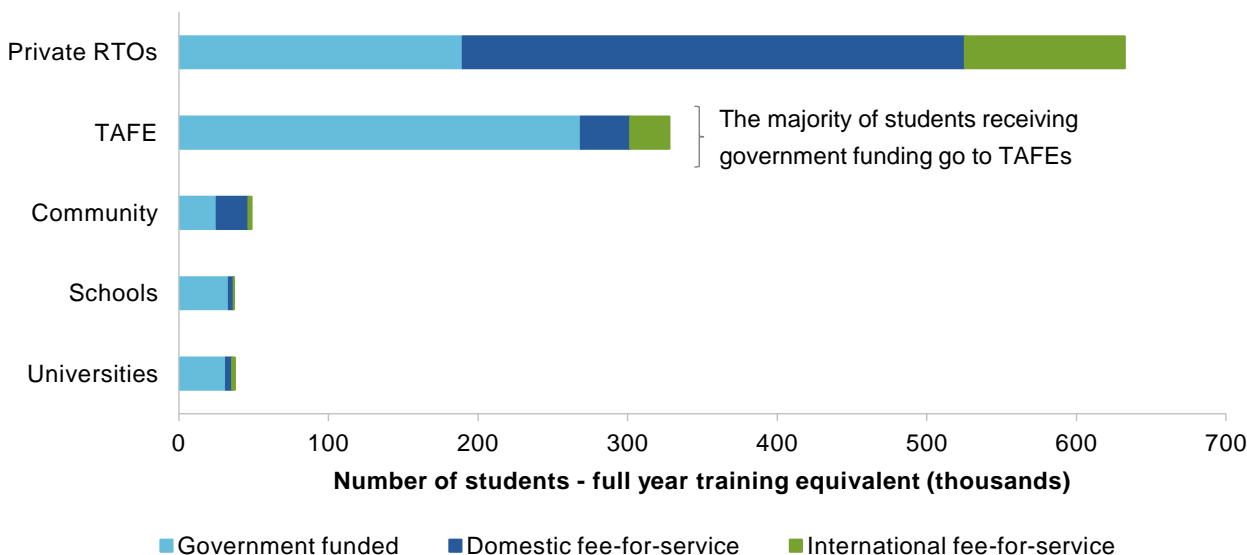
⁵¹ An additional \$6.1 billion of assistance is provided to universities through loan schemes, equivalent to a further 33%. While the loan component is somewhat ‘activity-based’ (albeit constrained by universities’ maximum grant amount) and the majority is ultimately paid by the student, the total value of the CGS and loan contributions account for over 75% of total government assistance provided to universities (including government funding for research).

⁵² 7.5% of CGS funding is also intended to be performance-based, discussed further in chapter 4.

⁵³ Based on the national register of vocational education and training (training.gov.au) as at January 2023.

Figure 3.2 – Private RTOs deliver more VET, but the majority of government-funded students attend TAFEs^a

VET program student enrolments, by funding type

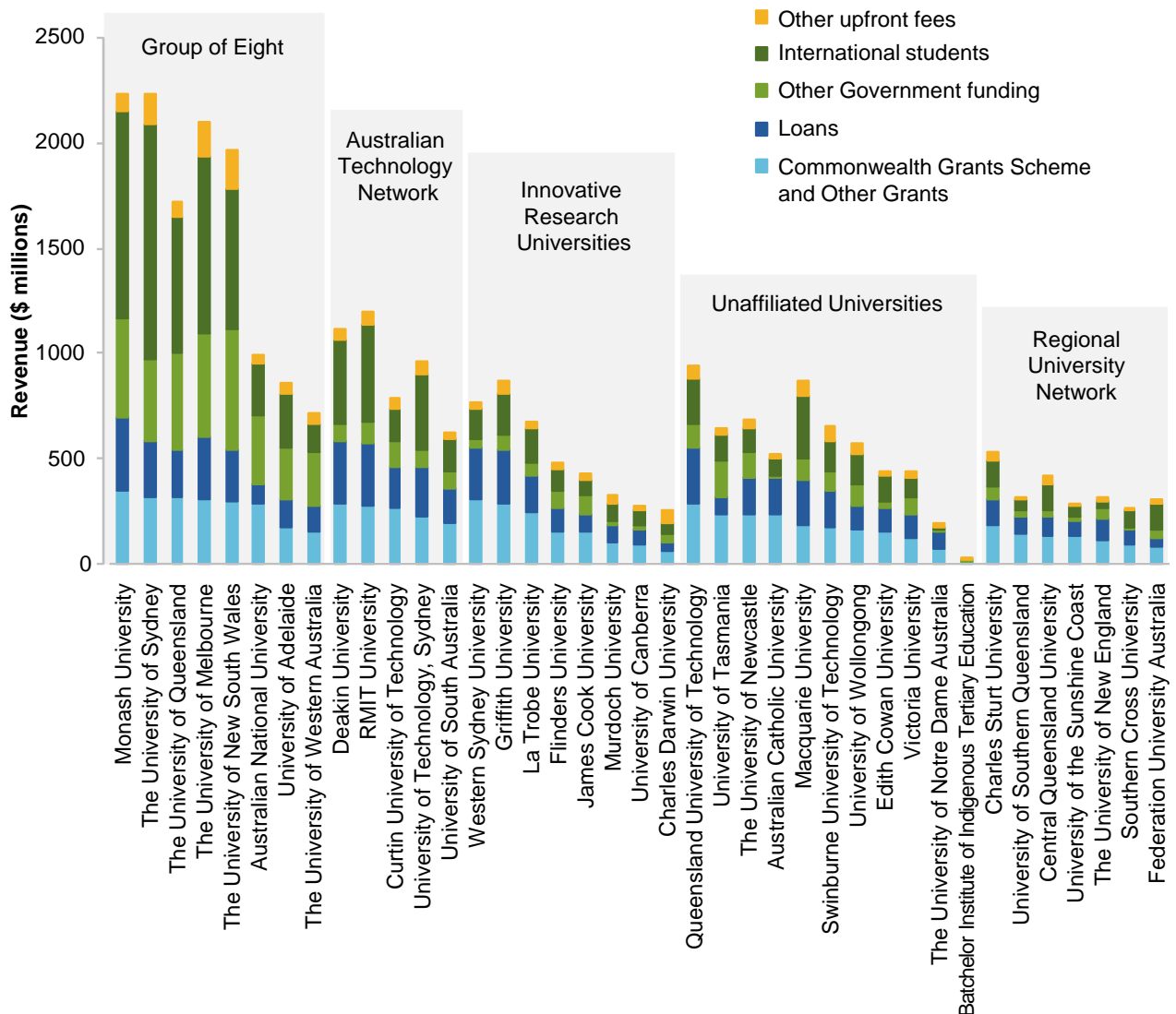


a. For government-funded students, the amount of subsidy provided for each course varies by State or Territory, depending on the specific subsidy program in each jurisdiction.

Source: NCVET (2022c) VOCSTATS — Total VET Activity data.

In the university sector, the spread of funding allocated through the Commonwealth Grants Scheme across the 37 public universities appears more evenly distributed than in VET (figure 3.3). But the spread of *total* funding is more concentrated after accounting for research funding and revenue from international students. Given the powerful branding of research-intensive universities, this may further entrench incumbency. And unlike VET where there is a broad diversity of providers in the fee-for-service market, non-university higher education providers service less than 10% of full-time domestic enrolments (DESE 2022d).

Figure 3.3 – A small number of large universities
Total university revenue by source, 2020



Source: DESE Higher Education Finance Statistics (2021a).

Unlike VET subsidy programs, funding is not contestable between providers in the higher education sector. While allocating funding based on historical arrangements provides certainty for governments and providers, it can also limit competition. There is little incentive for higher education providers to innovate, improve their quality (chapter 4), or differentiate their offering from others, and little opportunity for new providers to enter the market. Block funding also prevents the sector from adjusting to changes in demographics or skill needs.

The impact of this lack of contestability is worsened when supply is capped at a level far below demand both at the system-wide and provider level — as will likely be the case in coming years when the population of school leavers is expected to increase by about 15%. Accordingly, providers may be able to maintain their student intake even if their teaching quality is mediocre. In this way, funding caps undermine the financial incentive for high quality teaching. The floor to quality is only reached if TEQSA steps in or if the quality of education is so low that some students opt out of higher education altogether.

In contrast, in a system where the money follows the student, providers' ability to receive this funding hinges on their ability to attract students. Notwithstanding that many factors aside from teaching quality influence students' choices, removing caps on funding creates an incentive for providers to provide a high-quality education. Indeed, inquiry participants attending the Productivity Commission's roundtable on tertiary education reported the previous demand-driven system created an impetus to focus on the quality of the student experience, as students were more able to leave and go to an alternative provider if they were dissatisfied.

The extent to which a demand-driven system increases contestability is partly a function of which providers can participate in it. Previously, it was only accessible to public universities.⁵⁴ Other options are to include not-for-profit universities, all universities, or all higher education providers. There may be some benefit from the position put by Independent Higher Education Australia that Commonwealth supported places should be extended to all higher education students in national priority fields delivered by any TEQSA registered provider (IHEA, sub. 120, p. 5). The more expansive the scheme, the more contestability will increase, particularly if the smaller but more numerous and geographically dispersed non-university providers are included. However, a more expansive scheme will need to be weighed against the costs and risks of including new types of providers.

Cross-subsidisation would be a concern if Commonwealth supported places are available at private providers. It is difficult to reliably estimate course costs for universities, and costs vary significantly by university (section 3.3). If other providers receive the same level of subsidy as universities, it is likely that this will exceed their costs — leading to subsidies going directly to profits and risking entry of unscrupulous providers into the market. Accordingly, there are significant risks if subsidies are provided on the same basis as they are currently, and it should not occur without measures to ensure they are appropriate given potential differences in delivery costs. Even then, fiscal costs would likely rise as more students pursue higher education, and further analysis is needed to determine if the students brought in by this change would experience similarly positive outcomes to those brought in by the expansion of university places.

Caps on funding distort providers' incentives

While the intent of recent university funding reforms was to encourage students to take courses linked to skill needs and 'national priorities', the reforms had the unintended consequence of creating an incentive for universities to enrol students in some courses that the reforms intended to discourage, particularly at the margin.⁵⁵ The government contribution was set with reference to priority skills. However, universities respond to the total funding level (including both the government contribution and student contribution).

Universities cannot receive more government funding than their MBGA, but different students contribute different amounts toward this cap based on the government subsidy for their course. This means that if a university has \$30 000 left in its MBGA, the university could either offer a place to one agriculture student, or to 27 humanities, commerce or law students based on the regulated pricing structure. Accounting for the student contribution, the former would result in about \$31 000 in total revenue, yet the latter would result in about \$425 000 in revenue (based on 2022 rates) (Department of Education 2022c).

This creates a strong incentive for providers to channel students into the cheaper 'chalk and talk' subjects like commerce, humanities, and law, and away from the more expensive fields such as agriculture, engineering,

⁵⁴ Technically, Table A universities (*Higher Education Support Act 2003* 30-1(1)(a)(i)).

⁵⁵ Each university's block funding amount was based on the number of student places offered at the conclusion of the demand-driven system. While this determines the maximum funding envelope, it does not specify any course or student mix. This means that universities can choose which students to enrol, with funding provided based on the fee structure (the sum of the government and student contribution) set by the Australian Government for each field of study (Ferguson 2021a).

and science. This is a significant distortion that would prevent some students from studying courses to which they are best suited, where they may be the most productive, and where skill needs are greatest.

This is exacerbated by universities' ability to 'over-enrol' students — taking on more students than can be covered by their MBGA (although in doing this they must forego these students' government contribution). This can still be profitable if the student contribution alone is greater than the cost of supporting these additional students, which will only be the case for select courses, such as the cheaper subjects mentioned above. For the expensive and/or low student contribution courses such as engineering, nursing, or teaching, over-enrolment would likely have to come at great cost.

These perverse incentives could be ameliorated by reducing the drastic differentials in student contributions established by the Job-Ready Graduates package (section 3.2), but this would not remove this issue entirely. Even under a flat student contribution, when nearing a cap more students could be enrolled in cheaper courses than more expensive courses, for a greater total amount received by the university.⁵⁶ When exceeding a cap, over-enrolment still could make financial sense for cheap courses.

Ultimately, perverse incentives result from any capped system and cannot be fully avoided without removing the cap itself.⁵⁷

The way forward

Given growing skill needs, the significant productivity benefits for marginal students, and the perverse incentives and constraints on competition imposed by caps, the Australian Government should revert to a demand-driven system for university funding. Without such a system, many students — disproportionately those facing disadvantage — who would have their lives enriched and be made more productive by higher education will be denied this opportunity.

If fully demand-driven funding is not implemented, at the least, MBGAs should increase annually, with the growth rate adequately accounting for the cost associated with the growing population of school leavers.⁵⁸ Although this would be an improvement on current arrangements, it would mean retaining existing pitfalls, including inhibited competition and perverse provider incentives at the margins. This would sacrifice many of the benefits to productivity that could be achieved by a return to demand-driven funding.

Other recommendations in this volume will also need to be implemented to ensure a demand-driven approach works effectively. In particular:

- the costs of expanding access can be contained by increasing the proportion of course costs paid by students (recommendation 8.5). Depending on the size of this increase, the transition to a demand-driven system could be budget neutral

⁵⁶ Assuming a flat \$10 000 student contribution, a university with \$30 000 left in its MBGA would be able to enrol 1.4 agriculture students or 5.2 humanities, commerce, or law students. The former would result in \$44 000 in total revenue, yet the latter would result in \$82 000 — a lesser distortion than under Job-Ready Graduates, but still a potentially damaging one.

⁵⁷ That said, it is possible to cap the number of places rather than the quantum of funding. This would remove any incentive issues resulting from cost differentials. However, this presents its own problems by creating significant budget uncertainty — for example, the cost of supporting 10 000 places could be anywhere from \$11 million to \$272 million depending on what students choose to study (based on current funding structures at 2022 rates).

⁵⁸ Under current settings, MBGAs will grow by 1% for low-growth metropolitan, 2.5% for high-growth metropolitan and 3.5% for regional universities (DESE 2021c). Even the highest of these growth rates may be insufficient to meet the demand from the expanding school leaver population. And these growth rates will not be fully phased in until 2024. Additionally, MBGAs are indexed using outdated forecasts of inflation, reducing the number of places that will be able to be supplied. If a capped system is retained, this will need to be addressed (Norton 2022, p. 33-35).

- prices should be based on the cost of delivery with estimates refined over time (recommendation 8.6)
- higher education will not be the most suitable pathway for all students. Providing access to VET qualifications on a more equal basis — as well as being beneficial in its own right — will limit the expansion of higher education coming at the expense of VET (recommendation 8.7)
- the quality of education for additional students under the previous demand-driven system was sufficient for them to experience reasonable outcomes, and demand-driven funding improves incentives for quality teaching. However, as the diversity of students grows and as the resources flowing into higher education rise, there remains a strong need to improve quality and support completion (through the recommendations in chapter 4)
- it will be of increased importance to ensure more school leavers possess the necessary foundational skills to succeed in further study (through the recommendations in chapter 2).

Government funding alone is not sufficient for places to be supported in many courses. Inquiry participants indicated that providers are constrained by a lack of placements for courses such as nursing and allied health, which limits the number of places that can be offered (sub. 153, sub. 154, sub. 182, sub. 184). Where placements are required for graduates to work in their field of study, governments should ensure an adequate number are available and funded to meet skill needs.⁵⁹

There could be phased implementation of a demand-driven system if it appears that universities would expand places rapidly before they can adjust resourcing to cater effectively to larger cohorts. This may not be necessary if demand for university places is reduced by strong labour market conditions, as has been the case recently.



Recommendation 8.4 **Grow access to higher education over time**

The Australian Government should adopt an improved demand-driven model for providing Commonwealth supported places to domestic undergraduate university students, subject to measures outlined in other recommendations that: contain fiscal costs (recommendation 8.5); and ensure all students are adequately supported (recommendations 8.13 and 8.14).

3.2 Improving governments' subsidy allocations

Governments use a range of inter-related controls to influence investment in tertiary education, which in turn affects human capital and skills acquisition. Typically, governments:

- set limits on the availability of subsidised student places (discussed above)
- set maximum prices (course fees), or maximum loan amounts
- subsidise course costs based on a determined government contribution and/or student contribution
- offer student loan programs to improve education access and affordability

⁵⁹ Another issue is medical places, which under the previous demand-driven system was the one course to have a designated funding level. Expanded access to medical places may be warranted given the shortages of doctors in many geographical areas and areas of practice. However, this would require further consultation.

- offer other funding programs and incentives, for example to support capital investment or equity group participation.⁶⁰

Governments' investments in tertiary education aim to support equity of access and efficient skill acquisition to meet labour market needs. However, the suite of subsidies, funding allocations and prices set by governments can undermine these goals (table 3.2).

Table 3.2 – Incentive problems affect the efficacy of government investment

	Investment levers	Incentive problem	Recommendation(s)
Subsidy setting	<ul style="list-style-type: none"> • Subsidies set to encourage students into courses that align with skill needs. 	<ul style="list-style-type: none"> • Subsidies to influence student choice are ineffective and inequitable. 	<ul style="list-style-type: none"> • Student contributions should be set more equitably, based on private benefits. (section 3.2)
Price setting	<ul style="list-style-type: none"> • Prices and loan caps set to incentivise efficient service delivery, limit market power and support fiscal sustainability. 	<ul style="list-style-type: none"> • Provider incentives to enrol in high margin courses, rather than meeting labour market demand. 	<ul style="list-style-type: none"> • Improve estimation of costs of provision. (section 3.3) • Using estimated costs, set annual prices (and loan caps) to approximate the median efficient cost of delivery. (section 3.3)
Financing	<ul style="list-style-type: none"> • Financing is available to most higher education students, unlike VET students. 	<ul style="list-style-type: none"> • Policies may distort student choice based on financing availability rather than where skill acquisition may be the most efficient or desirable. 	<ul style="list-style-type: none"> • Loans should gradually be made available to more VET students, starting with expanding eligibility for courses at a Diploma or above level. (section 3.4)

Setting government subsidies

Governments have used various (and changing) subsidy models to influence student incentives (box 3.2). The range of models used historically — coupled with the lack of consensus amongst stakeholders — calls into question the approach that would best support efficient skill acquisition. The more recent model has been a partial subsidy that differs by course type, combined with an income-contingent loan (ICL) available to almost all higher education and some Diploma students. ICLs also have an implicit subsidy as many students do not fully repay their loan (section 3.4).

The Productivity Commission proposes that subsidies be greater, on average, and set in line with the private benefits of different degrees — with higher student contributions for high-earning degrees such as medicine. Requiring a larger student contribution for high-earning degrees is both equitable (as those students receive greater benefits, on average) and efficient (as it frees up more funding to expand access to higher education). Income-contingent loans prevent any serious adverse consequences for an individual who undertakes a high-earning degree but has poor outcomes.

⁶⁰ Loan and subsidy arrangements vary across the sector. University undergraduate degrees receive a Commonwealth supported place, and have the costs of their education subsidised by the Australian Government, with the remainder of the cost deferred through an income-contingent, interest-free loan (HECS-HELP). University students that do not receive a Commonwealth supported place — for example, those undertaking a master's degree — are also often eligible for another income-contingent loan, FEE-HELP. Conversely, many VET students are not eligible for an income-contingent loan (section 3.4).

Box 3.2– Governments use different models for subsidy setting

Different principles have informed subsidy determination at different times. At the extreme ends of the spectrum, a student may be:

- **fee-for-service (full private cost)** — the full cost is paid by the student. This is the case for students who do not receive a government-funded place, including international students, some postgraduate students, and non-university undergraduate students as well as students undertaking many VET qualifications not on skill lists, or those not eligible for a subsidised place
- **fully funded (full public cost)** — the full cost is incurred publicly, as occurred in 1974 when tuition fees were abolished. However, demand pressures and a growing fiscal burden led to the introduction of fees through the Higher Education Contribution Scheme (HECS) (PC 2019b, p. 20). More recently, some governments have offered ‘Free TAFE’ programs, but only for students at public providers — a policy that undermines the viability and competitive role of private providers (PC 2020a, p. 97).

However, most courses have some combination of a subsidy and private contribution (either an up-front fee or a loan). To determine how large each contribution should be, governments usually consider:

- **private benefits** — there are significant private benefits to tertiary attainment (chapter 1).
- **public benefits** — in principle, without subsidies that reflect the social benefit of education, there could be underinvestment as individuals only account for the private costs and benefits of study.
- **skills shortages or labour market needs** — all governments use skill lists to differentially allocate subsidies, with higher subsidies applied for apprenticeships in particular. The Australian Government’s Job-Ready Graduates package also revised subsidies to encourage demand for courses deemed to meet skill needs.

Governments fund courses based on public benefits and skill needs ...

Subsidy setting policies across VET and higher education aim to encourage uptake of training that is socially desirable or in demand in the labour market — primarily through higher subsidy rates for select courses. In VET, governments subsidise qualifications with differential rates depending on whether the qualification is a deemed priority (PC 2020a, p. 256).⁶¹ In higher education, the 2020 Job-Ready Graduates package also altered government subsidies to better align with ‘industry and community priority’ (box 3.3).

⁶¹ Jurisdictions usually use a combination of quantitative and qualitative labour market analysis (including industry forecasts, mapping qualifications to occupations, industry consultation and labour market testing) to make a judgement on the qualifications demanded in the labour market, and therefore, the extent of subsidy. Typically, governments target subsidies to the areas deemed to have high returns, either to the public (such as foundation skills courses) or to the individual (such as apprenticeships). Subsidies can also differ depending on whether a student studies at a public or private provider, the level of the qualification, and the mode of study (e.g. apprenticeships). However, there is limited transparency regarding how these criteria influence subsidy setting.

Box 3.3 – How did Job-Ready Graduates alter subsidies for university courses?

The 2020 Job-Ready Graduates package (JRG) altered the student and government contribution to courses in different fields of study. Subsidies were increased for certain fields deemed to produce more ‘job-ready’ graduates and decreased for fields where graduates were deemed less employable. These changes were partly aimed at improving matching of students to skill needs and therefore, productivity:

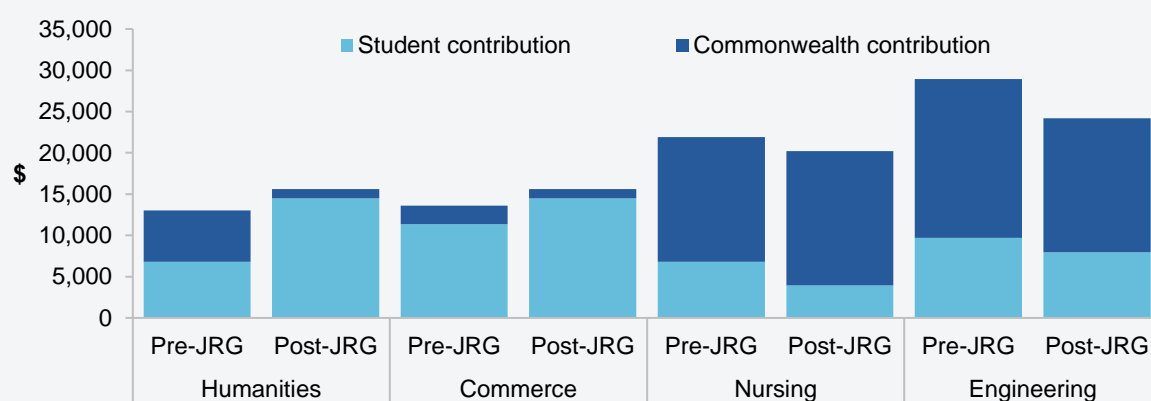
... encouraging study in fields most necessary for the jobs of the future and positioning Australia to capitalise on opportunities to increase productivity and national prosperity in the decades ahead. (DESE 2020, p. 23)

The objective was to direct funding ‘... to areas of expected employment growth, as well as industry and community priority’, by encouraging students to make more job-relevant choices (Tehan 2020). However, there is little public information about how the choices of fields receiving more (or less) in subsidies were made. For example, JRG encouraged students to take up the study of some fields, such as English and Foreign Languages, with some of the lowest estimated public and private benefits. Conversely the four fields with the highest estimated public and private benefits had their student contributions either remain similar or increase significantly (DESE 2020 pp. 17–20).

The package also changed Commonwealth Grant Scheme payments to universities. Previously, universities received less than the cost of delivery for some courses and significantly more for others (DESE 2020, p. 21).

The overall outcome was that total resourcing for each degree was changed, comprising changes to both the student contribution and the government contribution.

Job-Ready Graduates made large changes to prices and subsidies for some courses^a



a. Initial changes. Amounts will vary over time due to CPI indexation.

Sources: DESE (2020); Ferguson (2020a); Tehan (2020).

... but these rationales are flawed, particularly given income-contingent loans

While economically intuitive, the case for differential subsidies to encourage uptake of courses — in areas of labour market need or social priority — is flawed for three key reasons.

The public benefits of different courses are difficult to estimate

While there is strong evidence that public benefits exist, this does not extend to using them as a basis for determining subsidies.⁶² This is because changes to subsidies do little to induce student demand above counterfactual levels ('additionality') when students have high private benefits for choosing to study and will likely do so irrespective of the size of the subsidy. Norton (2017) for example, warned against using public benefits to estimate subsidies, noting that:

... the presence of public benefits does not of itself lead to sub-optimal levels of education. This will only happen if the total net private benefits are too low to justify enrolment. In those cases, tuition subsidies reduce costs and make it easier to get to positive net private benefits. ... Even though market failures are possible, with income contingent loans there are only limited empirical circumstances in which they actually exist.

As well as concerns regarding additionality, attributing public benefits by level of education is not clear cut. While tax benefits are likely to be larger for higher education qualifications, other social benefits, like reduced crime or addressing intergenerational disadvantage, are likely to be higher for Certificate I and II qualifications (PC 2020a, p. 112). Moreover, attributing public benefits by field of study is even more problematic — either requiring normative judgements about what professions are socially beneficial, or conceptually weak assumptions about the economic contribution of different sectors.

Similarly, there are significant limitations in the methods used to estimate skill needs (box 3.4). There is little evidence that differential subsidies effectively address skills shortages, particularly as some occupations have remained in persistent shortage for over a decade, irrespective of subsidy settings (PC 2020a, p. 113). A range of jobs, including hairdressers, arborists and panel beaters, have been deemed in persistent shortage for most years in the decade to 2018 despite subsidised courses on offer (PC 2020a, p. 329).

Box 3.4 – Skills shortages are a poor basis for setting subsidies

Governments set subsidies and available places to favour courses relevant to skills that are, or are predicted to be, in short supply. In VET, all State and Territory governments use skill lists to determine the courses eligible for subsidies, with the subsidy rate based on deemed skill shortages. Similarly, government subsidies for university courses vary by field of study depending on estimated employment prospects (box 3.3). This reduces the relative price of courses in these fields, encouraging enrolment.

⁶² While there is a consensus on the existence of public benefits of education, estimates of their magnitude — and therefore implications for subsidy setting — are more complex and long debated. Previous reviews have taken different perspectives on how subsidies should be set, from the Wran report (Committee on Higher Education Funding 1988) which established the design of the HECS system, to the more recent Bradley review (2008), Lomax-Smith review (2011), and Kemp-Norton review (Norton and Kemp 2014). Work by the Grattan Institute (Norton 2012) and Deloitte (Deloitte Access Economics 2016) — while proposing novel methods to estimate the public benefits of tertiary education — do not provide robust methods to inform subsidy determination.

Box 3.4 – Skills shortages are a poor basis for setting subsidies

However (apparent) skills shortages are a poor basis for setting subsidies both theoretically and methodologically.

- Subsidy differentials have little effect on behaviour (for reasons discussed further below).
- Market sector areas with genuine skills shortages elicit rising wages. Forward-looking students therefore already have incentives to study courses with strong employment and wage prospects. Course subsidies can therefore act as an ineffective and potentially inequitable transfer to people with good long-term prospects.
- The delay between training and working in the profession may be significant, such that the ‘shortage’ may have disappeared before a student graduates. Migration is likely a faster and more efficient mechanism for addressing skills shortages.
- To the extent that subsidies change behaviour at the margin, this may still be undesirable as it presupposes that students cannot make good choices themselves (discussed below).

There are also significant concerns about the methodology, currency, and underpinning conceptual framework of skills lists that suggest they are a poor basis for allocating subsidies (PC 2020a, p. 116). Skills lists are broad in nature and may not accurately reflect local skill needs (CCF, sub. 38, p. 5). For universities, which are less vocational in orientation, there are more fluid and ambiguous links between future jobs and the fields of study that might be relevant. For example, digital technologies like gaming require graphic designers and artists as much as software programmers.⁶³

Students are unlikely to respond to price differences

The overall demand for university enrolment in Australia is unresponsive even to significant price increases given ICLs and existing subsidies (Dawkins and Dixon 2015, p. 3).⁶⁴ This also appears to hold for the VET system (PC 2020a, p. 282). Students’ price insensitivity can be rational given the experiences, careers, and earnings resulting from a given field of study differ substantially, and compared with this, fee differences will have a far smaller impact on a student’s life.

The income-contingent and interest-free nature of Australian student loans mean that higher fees only affect a student’s finances at the date when they would have otherwise paid off their debt. For example, under changes made as part of the Job-Ready Graduates package, the student contribution for a humanities degree in 2021 doubled from \$6803 to \$14 500 per year. While this was a major change in price, its effect on additional loan repayments by the median humanities student with an ICL would only occur between ages 33 and 40 years, or some 15 years into the future (Chapman and Khemka 2022, p. 57). Indeed, early evidence of applications suggested little change, even in courses with large fee increases (Norton 2021).

⁶³ Inquiry participants have similarly raised concerns about Australia’s (similarly-derived) skilled occupation list for migration — discussed in this inquiry’s companion volume *‘A more productive labour market’*.

⁶⁴ A global meta-analysis of the responsiveness of enrolments to university tuition fees found price elasticities of close to zero, although the policy settings across countries are different (Havranek, Irsova and Zeynalova 2018).

This implies that, in the context of ICLs, very large changes to course subsidies would be needed to induce material increases in overall tertiary enrolments.⁶⁵

There is less evidence on the extent to which varying subsidies by field or course affects the choices of students who have already decided to attend a tertiary institution. However, early evidence from JRG suggests the effects for individual university courses are low due to the same moderating effect of HELP loans. This was borne out by a study which measured student responsiveness to price changes, treating the Job-Ready Graduates package changes as a natural experiment. This found that reducing a course fee by 10% would result in a trivial 0.4% increase in demand (Yong 2022a, p. 23).⁶⁶

Moreover, choices for specific tertiary education courses often reflect students' underlying interests and aptitudes, as well as factors like the courses' perceived quality, and how and where they are delivered (Brown 2017). Offering greater subsidies for a course of little interest to a student will not elicit a change in demand.

Students make good choices

Students appear to make good choices of their own volition. They have the best information about their own abilities and interests, making them well placed to make decisions about what they will enjoy — and benefit from — studying. During the Victorian Training Guarantee — which gave students a reasonably free choice in what to study — this 'improved the alignment of course enrolments with measures of prevailing skill needs, including enrolments of disadvantaged groups' (Polidano, van de Ven and Voitchovsky 2021, p. 1).

Policies that limit students' choices may lead some into training that does not align with their interests, which may be harmful to their careers in the long term. Some international evidence points to the benefits of students studying in line with preferences given that a student's comparative advantage is highly relevant to their labour market outcomes. For example, a Norwegian study examined students who were just above and below the admission score for a course in their preferred field, finding that their earnings usually increased when they were admitted to their first choice of course, even if it led them to study in a course with lower *average* earnings (Kirkeboen, Leuven and Mogstad 2016).⁶⁷

As such, it is important that financial incentives are broad and not limited to particular sectors, industries or skills, to support education that is best suited to each individual as well as the needs of the economy.

⁶⁵ Students *are* more responsive to subsidies where loans are not available. Evidence from the entitlement scheme implemented in Victoria points to significant VET uptake where there were few restrictions on course selection or caps on places (Polidano, van de Ven and Voitchovsky 2017, 2021). This program removed the significant financial barriers posed by limited loan availability, restrictions on government-funded places and large out-of-pocket costs associated with fee-for-service enrolments. The demand response was also particularly strong from disadvantaged groups, such as the long-term unemployed, for whom affordability is a greater concern.

⁶⁶ If anything, this is likely to overestimate student responsiveness. A necessary assumption (acknowledged by the author) is that nothing changed between cohorts enrolling in 2019 and 2020. Of course, this is not the case. COVID-19 likely affected student choice in many ways, in particular seeming to increase interest in health courses, with a spike in nursing applications. This may have upwardly biased the estimated response to the lower fee for nursing.

⁶⁷ For students whose first choice was science and second choice was social science, studying science increased their early-career earnings by \$70 000 USD. For students whose first choice was social science and second choice was science, studying social science rather than science increased early-career earnings by \$56 000 USD (Kirkeboen, Leuven and Mogstad 2016, p. 1091).

Options for improving subsidy allocation

‘Free’ tertiary places carry a fiscal cost and are unlikely to improve outcomes

Australia has required student contributions for tertiary education since the 1980s, when free tertiary education was gradually replaced by the current system of ICLs through HECS and HELP. This shift reflected concerns about the mounting taxpayer costs of fully subsidising a rapidly expanding system (PC 2019, p. 20). Moreover, it was recognised that free university involved a large transfer from all taxpayers to a predominantly socio-economically advantaged group with better career prospects. Put simply, free education transfers costs from those who study to those who do not. It is preferable to recover this cost more directly from those who benefit. As one commentator remarked, ‘it is not equitable for the average taxpayer to pay for trust-fund students’ law degrees’ (Yong 2022b).

A similar logic applies today. To offer free or cheaper courses, the Australian Government would have two options, neither of which meet sound equity or efficiency criteria. It could cut places to accommodate the higher costs, which would favour students with higher Australian Tertiary Admission rankings (ATARs) as this is the principal mechanism for rationing places. This would disadvantage students from lower socio-economic backgrounds who tend to have lower ATARs (Manny 2020) and would involve larger transfers from taxpayers to students with high expected lifetime earnings. Alternatively, the Australian Government could meet the costs of free university by raising taxes (which tends to discourage economy-wide labour supply and investment) or by cutting other government spending.

Free TAFE policies are also unlikely to provide community-wide benefits as suggested by the outcomes of this policy in Victoria (PC 2020a, pp. 94–97).

- Although enrolments increased at TAFEs, this probably reflected substitution from students who would have otherwise studied at private and community providers. For example, there were fewer enrolments in the Diploma of Nursing at non-TAFE providers, against the trend of previous years. Some private providers claimed that many students were feeling a financial pressure to study at TAFE.
- It weakened competition as the market share of TAFEs increased at the expense of private and community providers, diverging from the national trend. In some courses, TAFEs increased their already dominant market share, raising the concern that this limited contestability by other providers.

There is also no evidence that the quality of delivery is higher at public than private providers (PC 2020a, pp. 102–103). Students are equally satisfied with public and private RTOs, while employer satisfaction is higher for private RTOs. Therefore, free TAFE is not a means to increase quality of outcomes.⁶⁸

In that context, the additional cost of funding free TAFE would be better spent elsewhere, potentially on widening access to VET, other forms of skills acquisition or other ways of improving the education system.

Mass loan forgiveness of HELP (as well as VET Student Loans and remnant VET FEE-HELP) debt is sometimes seen as a desirable approach to alleviate financial costs on young people with large outstanding debts. As such a policy relates to already completed education, it could not enhance skills, and would be a purely redistributive measure. As in the case of free education, it would be regressive, benefiting those who have attended university and tend to have higher incomes, with the largest payments going to those who have completed courses with higher expected lifetime earnings, such as medicine, law, and engineering (DESE 2021b). At June 2022, the fair value of this debt was about \$50 billion.⁶⁹ For the same cost as

⁶⁸ Other levers are better deployed if quality is the major problem, for example in the first instance identifying poor performers and attempting to rectify their quality issues, regardless of ownership status.

⁶⁹ The ‘fair’ value of HELP debt reflects that a share of students will never pay off their debt.

cancelling all student debt, the Australian Government could give about \$5100 to every household (AIHW 2022; Commonwealth of Australia 2022b; Ferguson 2021b).

Nevertheless, there may be merit in free or heavily subsidised Certificate I and II courses given their large public benefits from developing foundational skills and the relatively low lifetime incomes of students. Debt forgiveness is also appropriate in some circumstances, for example where a student has undertaken a fraudulent course, as was frequently the case throughout the life of VET FEE-HELP. Indeed, many loans under that scheme have been forgiven (Commonwealth Ombudsman 2020).

Instead, subsidy rates should be changed to reduce the fiscal cost of additional places

The low responsiveness of students to course fees, particularly in the context of ICLs, suggests lower subsidy rates — and therefore higher student contributions — would have only negligible effects on demand for tertiary education. For a given funding envelope, higher student contributions allow a greater number of places to be supported. Therefore, in the presence of fiscal constraints, fee increases promote, rather than detract from, expanded access to education.

Additionally, as discussed above, it is also more equitable for students to incur a higher proportion of the cost of their education. Students receive substantial private benefits from tertiary education. They disproportionately come from socio-economically advantaged families and have good career prospects. And student contributions reduce the proportion of higher education that is funded through the general tax base.⁷⁰ Students are also protected if their education does not pay off. If they go on to earn only a low income, they may not repay all or even part of their loan.

This does not extend to VET. Under existing policies, the majority of VET students are not eligible for ICLs and providers are not subject to price caps (section 3.4). Any future recalibration of subsidies for VET to transfer more of the costs to those that benefit should only occur if ICL access is significantly expanded; and should be mindful of interactions with loan caps. Otherwise, there is a risk of undermining access to VET by imposing larger upfront fees. The Productivity Commission previously proposed methods to simplify subsidy setting in the VET sector, in place of the highly granular rates used in some jurisdictions (PC 2020a, p. 285). These recommendations remain relevant.

The student contribution should be set based on private benefits, with remaining course costs paid by government

Although the average level of the student contribution (and therefore the average subsidy level) is the primary determinant of the affordability of the system, how student contributions vary by field of study also affects the equity of funding arrangements and the share of debt that is expected to be repaid.

There are several options for subsidy setting. The simplest is a uniform subsidy for all courses, which could be either the same dollar value or the same share of costs. While price insensitivity means students would be unlikely to have their choices distorted by differences in course costs, this would still arbitrarily burden some students with far more debt than others, given differences in course costs by field of study (section 3.3). A higher proportion of debt would not be repaid, and the costs of higher education would be less equitably shared.

A superior model is to vary fees by private benefits, with students studying fields with higher expected earnings paying higher student contributions. Unlike the public benefits of tertiary education, which are difficult to quantify, information on the lifetime income profiles of students provides reasonable estimates of the private benefits of

⁷⁰ Including, for example Goods and Services Tax (GST) which is paid by all consumers, including those on low incomes.

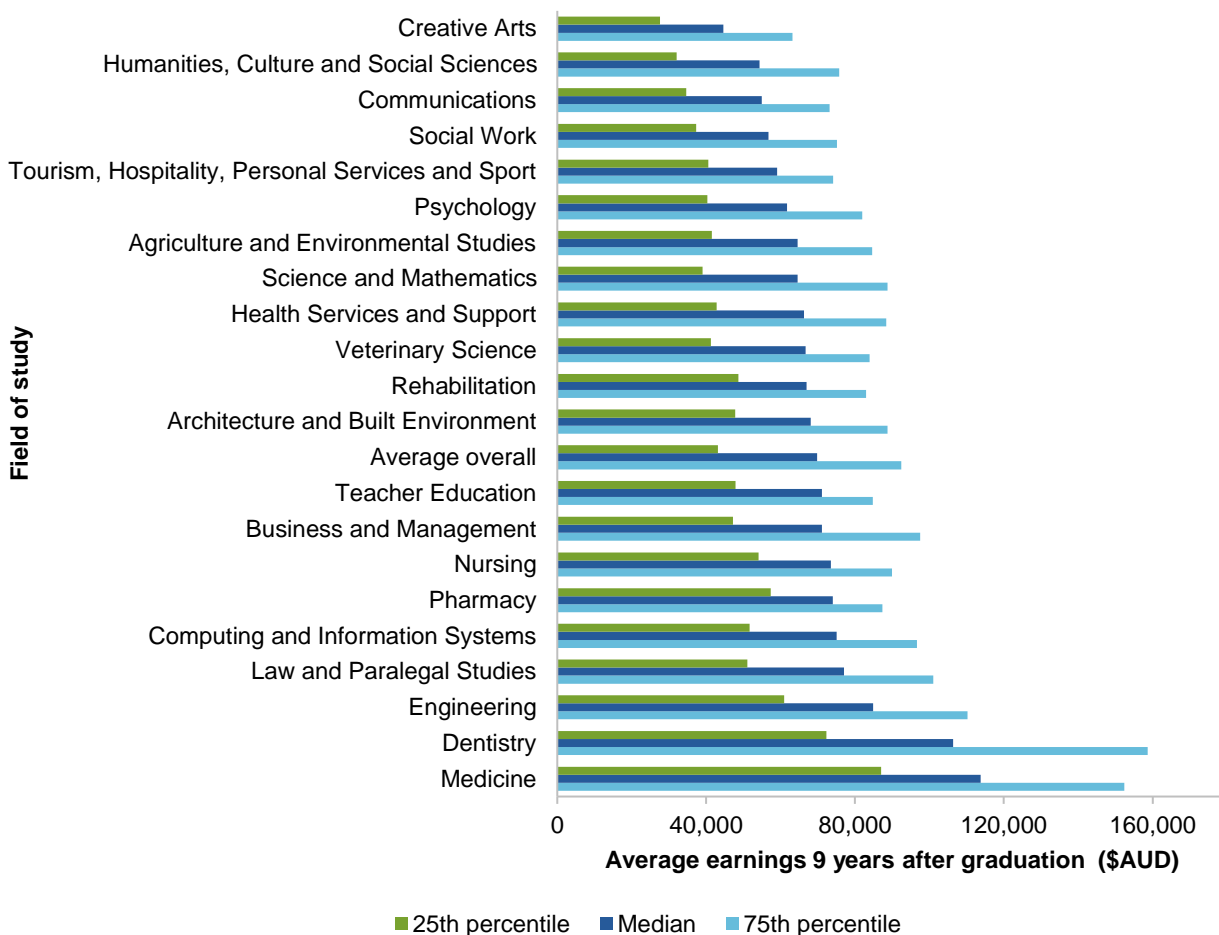
tertiary education (although these will not capture any non-financial private benefits). Employment rates and lifetime incomes are increased by greater levels of education — particularly from university (chapter 1). The high lifetime earnings of higher education graduates for certain fields suggests that many receive large government subsidies despite significant private benefits and strong incentives to attend (figure 3.4).

However, private returns are not high across all fields of study and there is significant variation in average incomes even nine years after completing study.

These benefits are not strongly related to the prices paid by students. In higher education, engineering, dentistry, and medicine students pay only moderate student contributions despite having the highest graduate earnings. And students in some of the lowest-paid fields of study pay the highest possible student contribution — even though the mismatch between their fees and their earnings means much of this debt may never be repaid. Better aligning student contributions with private benefits would create a more progressive system.

Figure 3.4 – The private benefits of education vary by field of study^a

Average earnings 9 years after university graduation, for those graduating in 2008



a. This provides only a weak proxy for earnings benefits, as it is difficult to attribute the earnings differentials directly to education. This chart contains data for those who graduated in 2008, and reflects their average income 9 years after graduation, in 2017-18.

Source: SRC (2021).

Three issues must be considered when setting higher student contributions for courses with higher private benefits. First, private benefits to education are not always financial and other factors — such as more favourable working conditions — cannot readily be quantified. This means that earnings are only a proxy for private benefits.

Second, some fields with comparatively low incomes — such as nursing and teaching — have wages that are heavily regulated and controlled by governments. To the extent that the real problem is excessive wage bargaining power by governments, the solution would be to set wages that would be offered in a more competitive labour market rather than to provide higher course subsidies. Of course, from a government fiscal perspective, payments to students that target new enrolments into the profession will cost less.⁷¹

Finally, ICLs already provide additional subsidies for students undertaking courses with lower lifetime incomes. This is because they reach the income threshold for repayment later (or never) and, as such, pay back a smaller share of their loan than other students. This provides additional grounds for extending ICLs to more qualifications in the VET sector (section 3.4).

The way forward

Currently, differences in student contributions by perceived labour market needs fail to meet their goals while arbitrarily increasing debt burdens on some students, and high levels of government subsidies challenge the sustainability of expanding access to higher education. To remedy this, the variation in student contributions should be lower and based on expected future earnings by field of study, while the level of student contributions should be higher, on average.

- This would mean a greater proportion of the costs of higher education will come from higher-earning students who will be less affected by repayments.⁷²
- Increasing the average student contribution would also support more fiscally sustainable demand-driven funding (recommendation 8.4). Depending on the magnitude of the increases, this could be budget-neutral.

The Australian Government should leverage the Australian Universities Accord process to consult the sector on this funding model. Given the design flaws of the Job-Ready Graduates package outlined above, the panel leading the Accord should progress this new funding model as a priority.

Student contribution arrangements should be grandfathered for students who have already commenced their study. Depending on the extent of changes in student contributions for particular fields of study, the Australian Government could consider phasing in new arrangements over a number of years.

Finally, while ICLs do not incur interest, they are indexed to inflation. This can mean that loans grow more than graduates' incomes during periods of low wage growth and high inflation (as has been the case recently). If student contributions are to increase, as a further protective measure, the Australian Government could amend loan indexation to move in line with the lesser of inflation and real wages growth.

⁷¹ Governments should be cautious in attempting to encourage students into particular fields of study. However, any efforts to promote study in certain areas would be more effective and efficient when involving cash payments to students, as proposed in the National Teacher Workforce Action Plan, rather than reducing course fees as with Job-Ready Graduates (Department of Education 2022a, p. 9).

⁷² Better matching student contributions to lifetime earnings would have a further benefit of reducing the share of debt that is not expected to be repaid.



Recommendation 8.5 Better targeting investment in higher education

The Australian Government should introduce a new university funding model to better target investment while facilitating wider access to higher education.

- Total university funding per student by field of study (comprising the student contribution and government contribution) should continue to be the cost of delivery for that field (reflecting a median estimate of efficient costs with the methodology to be refined over time as outlined in recommendation 8.6).
- The student contribution should be set based on average expected earnings for each field of study, with students with a greater capacity to repay incurring more debt. Student contributions should be higher, on average, to recoup a greater share of the costs of university from those who benefit from attending university, rather than recouping this from the broader tax base. This would also help to fund the return to a demand-driven system.
- The government contribution should make up the gap between the student contribution and estimated cost of delivery for each field of study.

3.3 Setting prices based on efficient costs

Poor price setting leads to poor provider incentives

Governments use price and loan caps to influence how funding is used within tertiary education. Unlike students, education providers are responsive to prices, which are set by governments for undergraduate degrees and for some parts of VET.⁷³ In instances where fees are *not* government regulated (such as for VET courses in most States and Territories), subsidy rates are applied to an estimated cost of delivery for a particular qualification — a form of ‘price’ (NSC 2021b).⁷⁴

Governments use estimates of the ‘efficient’ cost of delivery to set price caps, loan caps, and to calculate the base cost to which subsidy rates are applied.⁷⁵ Poor price setting can have major adverse impacts.

- **Prices set below efficient cost** may compromise the quality of courses offered, or — in the case of loan caps on VET courses — result in significant out-of-pocket costs for students by increasing upfront fees. As a result, other regulatory tools and provider performance indicators are important complements to ensure providers are not reducing service quality in the context of regulated prices.
- **Prices set above efficient cost** may undermine incentives to operate efficiently, reducing productivity. Price caps set higher than the efficient cost may not deter students from enrolling in the context of

⁷³ The ‘price’ of a course is the amount that a provider charges for education and training services. For government-funded courses, the price paid to a provider has two parts: a subsidy (paid by the government, also known as the government contribution) and a student fee (paid by the student or an employer, known as the student contribution).

⁷⁴ Where prices are not regulated, loan caps are also often used by governments as *de facto* price regulation to reduce the risk of unduly high prices, although providers can charge more than the loan cap, resulting in up-front fees.

⁷⁵ In a perfectly competitive market, the efficient price is the marginal cost incurred by the producer, or the cost of teaching the *next* student. This will of course differ based on the current number of students and the resources involved (staff, rooms, equipment, digital technology) — the cost of teaching the first student will almost certainly be higher than the cost of teaching the twentieth.

income-contingent loans, but would result in increased debt burdens and additional costs for the Australian Government associated with greater subsidies and non-repayment on the larger total debt.

Prices set below efficient cost in some courses and above in others pose further issues. Providers will have a financial incentive to encourage students into, and expand places in, courses for which they will receive a surplus, in favour of those where prices do not fully cover costs. For example, it has been argued that the cost estimates used to determine university funding overestimate the costs of commerce, humanities and law courses while underestimating the costs of science and engineering courses (Dodd 2020). If this is correct, this poses a significant risk to productivity by compounding financial incentives to channel students into fields that are mismatched to skill needs.

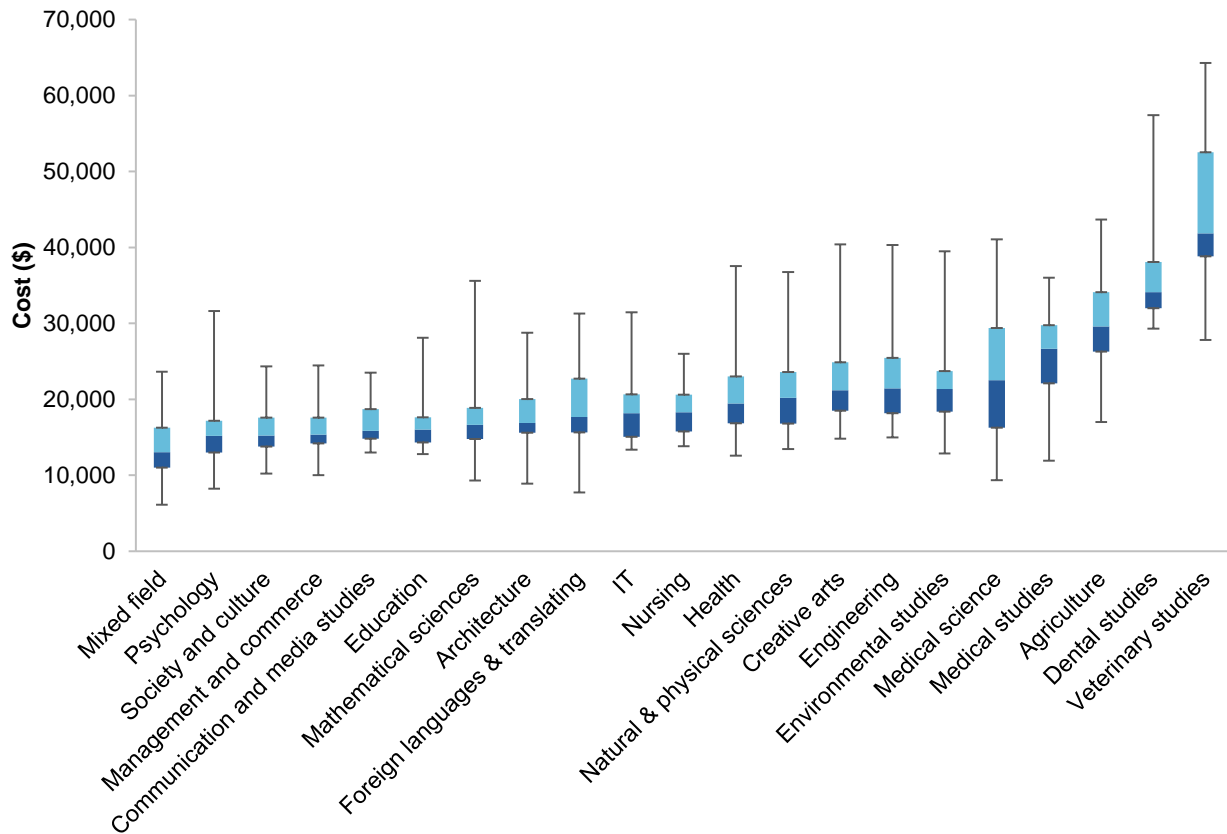
No pricing model is straightforward in practice.

Ideally, prices would be set at the minimum cost of teaching each additional student at the desired level of service quality. However, this ideal is challenging to achieve in practice. 'Marginal' costs will differ for different students and providers, the quality of education is difficult to accurately measure, and the link between specific costs and outcomes is not always clear.

Average cost pricing (that is, the average cost across all providers) may be easier to implement but has its own shortcomings. Marginal costs are likely to be lower than average costs, which means that offering more places leads to a surplus that can cross-subsidise other activities (such as research). Furthermore, the difference between marginal and average costs will vary by field of study (depending on the mix of fixed and variable costs). This creates an incentive to enrol more students in courses where the difference is greater — and fewer where it is smaller, such as science, engineering, and medical fields where the need for equipment, practicals, or placements means there will always be significant costs to enrolling more students.

Estimating 'efficient' costs introduces further difficulties despite its strong appeal as an incentive mechanism for providers. There are very wide differences in the estimated costs of delivery by different universities, only some of which will reflect differences in efficiency (figure 3.5). In this context, an average cost derived from historical expenditure provides a practical benchmark for moving toward efficient pricing, although historical costs may deviate from the theoretical 'efficient' cost. Median (rather than mean) costs, as are currently used, can limit the impact of some providers having unusually cheap or expensive courses.

Figure 3.5 – Costs of course delivery vary substantially by institution^a
Distribution of estimated costs per student (EFTSL) by field of study in 2020^b



a. The boxes represent the universities with costs between the first and third quartiles, with the colour change marking the median cost institution. The 'whiskers' show the institution with the highest and lowest cost. For some fields of study, data are available for 37 institutions, for others there are as few as six. Three outliers were not included in the graph: a Mixed Field course costing \$67 994, an Environmental Studies course costing \$60 494, and an Agriculture course costing \$93 831. Each was more than 50% higher than the next most costly course. b. EFTSL is equivalent full-time student load. Source: Deloitte Access Economics (2022).

Cost data can (still) be improved

The Productivity Commission has previously highlighted the importance of cost-reflective resourcing for Commonwealth supported places in universities (PC 2017c, p. 2). Since then, the Australian Government revised the maximum price in line with estimated costs of delivery as part of the Job-Ready Graduates funding reforms. This major change — the first to explicitly separate the costs of teaching and research — was a crucial step toward cost-reflective resourcing for universities (box 3.5). The Australian Government also increased the frequency of an exercise to collect data on the costs of teaching at universities, known as the *Transparency in Higher Education Expenditure* (Deloitte Access Economics 2022).⁷⁶

Similarly in VET, the Australian Government introduced reforms to provide a national evidence base to estimate the costs of delivering VET qualifications, coordinated through the National Skills Commission (NSC) (now replaced by Jobs and Skills Australia) (Ferguson 2020b). A core part of the NSC's functions involved collecting better data on the cost of delivering qualifications, given significant variability in the

⁷⁶ This initiative establishes common cost allocation methods to estimate the cost of delivering different qualifications.

methods used across jurisdictions, which often rely on poor or outdated data (PC 2020a, p. 279). This information could then inform State and Territory governments' VET subsidy determinations. This process should be continued, and is likely to be best placed within the remit of Jobs and Skills Australia.

Box 3.5 – Breaking the nexus? Separating research and teaching costs

A key change from the Australian Government's 2020 reforms to university funding was the explicit separation of teaching and research funding, and the alignment of funding to the costs of teaching:

Better aligning funding with the cost of teaching will fix distortions in the funding system and ensure universities can respond to student preferences ... (DESE 2020, p. 14)

However, many stakeholders from the university sector claimed the importance of the research-teaching nexus (NTEU, sub. 36, p. 7), stating that these core activities were not separable from a funding perspective. There is limited evidence to support this claim (chapter 4). Rather, as the Productivity Commission previously noted (PC 2017c, p. 41):

... various empirical studies in Australia and elsewhere have found little evidence to support a positive relationship between teaching outcomes and research capabilities ... [e]vidence that finds no reliable link between research and teaching quality does not mean that universities should forgo trying to nurture a link, however. If a university can succeed in raising teaching quality through synergies with research, then it increases its attractiveness to students ...

A key benefit of separating research and teaching costs for funding is that it provides a better basis for establishing the actual cost of each activity, where prior evidence points to ongoing cross-subsidies (Norton and Cherastidham 2015). Moreover, separating research and teaching for funding purposes can improve comparability across tertiary institutions, as VET and non-university higher education providers do not typically hold research functions.

While these developments improve the transparency and reliability of data on the costs of delivering tertiary education, further analysis would be beneficial, including:

- **better cost allocation methods** — there may be an opportunity to improve the robustness and comparability of future cost exercises by including greater granularity of cost attribution (for example, allocating costs between undergraduate and postgraduate education within faculties) and using more realistic assumptions about allocation of staff time. There may also be scope to better account for the costs of scholarship, capital, and research (Higher Education and Research Group 2020; Massaro 2020)
- **greater breadth of collection** — the most recent exercise has expanded to include all Table A public universities (Deloitte Access Economics 2022).⁷⁷ Extending a comparable exercise to a broader sample of VET providers would also improve accuracy of cost estimates and scope for benchmarking efficient costs. This could take place as part of a consolidated costing exercise across sectors through a central function within government, such as Jobs and Skills Australia

⁷⁷ Although, current funding levels are based on the previous costing exercise which included only 32 out of 37 Table A public universities.

- **a linked cost exercise for research activity** — despite previous government commitments, data on the cost of delivering research is deficient.⁷⁸ A cost exercise for research is essential to improving cost estimates of both research and teaching and for providing a basis to understand appropriate funding levels for research. Overseas examples suggest this is feasible, as in the UK’s Transparent Approach to Costing, which covers research and teaching costs.⁷⁹ It is also necessary to consider research costs when adjusting funding for teaching, given many institutions currently rely on cross-subsidies from teaching to cover indirect costs of research
- **introducing greater benchmarking over time** — using historical cost data for regulated prices can create an incentive for providers to inflate costs over time to increase revenue (‘gold-plating’). In this context, benchmarking the cost of provision between providers in Australia and overseas is an important safeguard (Houghton, Bagranoff and Jubb 2021). Benchmarking can be also inform an understanding of ‘efficient’ costs when services vary substantially between institutions.

Governments have implemented policies that lay the foundations for reliable cost estimation exercises in recent years, but the adjustments described above would improve current arrangements. Costing exercises need to consider the biases that can occur if they do not adequately capture variations in quality. Failing to adjust for quality could undermine the funding of productivity-enhancing, but more costly services. While useful for price setting, cost exercises are only one aspect of understanding provider performance and the sector more broadly (as explored in detail in chapter 4).

Given the significance of cost estimation for funding decisions — and that misestimation can pose a risk to quality or distort providers’ incentives — it is essential to cultivate greater confidence in tertiary education cost data. Depending on the accuracy of current figures, improvements could remove an impediment to the efficient matching of student to courses, improving education and labour market outcomes.



Recommendation 8.6 Improve price setting in tertiary education

The Australian Government should conduct regular costing exercises to estimate the cost of delivering tertiary teaching and research. The methodology underpinning these cost exercises should be periodically reviewed and refined to inform more accurate cost estimates, and should aim to ultimately reflect only efficient costs. These cost estimates should inform funding as well as price and loan caps, to encourage efficient delivery of quality education and research by tertiary institutions.

⁷⁸ The ABS conducts the Higher Education Expenditure on R&D (HERD) Survey every two years. However, expenditure is reported in high-level categories and is not reported on an institutional basis.

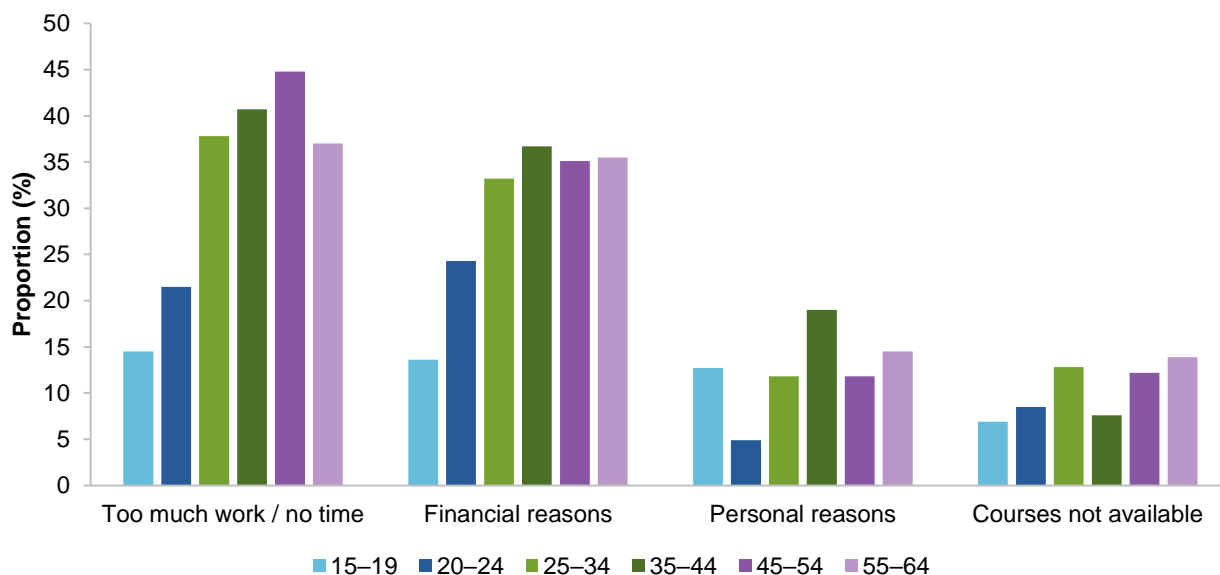
⁷⁹ The United Kingdom Government’s Transparent Approach to Costing focuses on the share of total costs that are incurred by teaching, research, and other activities. It provides an example of the simultaneous measurement of teaching and research costs, and allows for analysis of drivers of costs, although it does not attempt to estimate the costs of delivery for different courses (Office for Students 2018). In the United States, the Higher Education Research and Development (HERD) Survey collects information on research costs at 910 (as at January 2023) universities and colleges, providing extensive information on cost components and how they change over time (NSF 2020). The University of Delaware also collects annual data on university teaching costs across multiple disciplines at nearly 700 institutions (Hemelt et al. 2018; University of Delaware 2022).

3.4 Harmonising loan settings to increase access to tertiary education

Financial barriers prevent some Australians from pursuing education (figure 3.6). About 7% of Australians aged 20-54 years who did not participate in formal study in the past year wanted to, but could not, with one third of them listing financial barriers as a reason (ABS 2022g). About 60% of those who listed financial barriers wanted to enrol in a qualification below the bachelor level, suggesting financial barriers are greater for VET.

Time constraints alone limit students' capacity to fund their study by working, yet many do not have access to enough savings to fund study. ICLs are generally available for higher education and overcome the barrier of upfront tuition costs. However, such loans are highly restricted for VET students.

Figure 3.6 – Financial barriers prevent many people from formal study^a
Reasons those who wanted to engage in formal study could not



a. Multiple options could be selected. This survey was undertaken during COVID-19, and there was an unusually high proportion of respondents choosing 'Other' reasons why they could not access study. This has been omitted in this chart. The respondents include those wanting to enrol in a higher education qualification, although barriers were more likely for those wishing to undertake vocational education or training.

Source: ABS (*Work-Related Training and Adult Learning, Australia, 2020-21 financial year, Cat. no. 4234.0, table 14*).

This is problematic as vocational education is a reliable path to employment in many areas at risk of skill shortage or with high projected employment growth, from the trades to aged care. The former NSC projected that while 53% of newly created jobs over the next five years will require higher education, 39% will require vocational education (NSC 2022a). Ensuring access to VET for students at initial career stages and for those upskilling and reskilling is important. For many students, VET is their best chance at a fulfilling and productive career, whether due to their strengths, their interests, or their desired career path.

Income-contingent loans are an effective tool to reduce course costs, but current policy settings create distortions

ICLs provide students with credit to pay course fees. They differ from conventional 'mortgage-style' loans in that repayments are deferred until the borrower earns more than a set threshold. Repayments are calculated

as a percentage of income above this threshold and on a sliding scale. ICLs allow students who could not otherwise afford to pay course fees to defer payment to a time when they have higher incomes. ICLs have been successful in higher education, but their rationale applies equally to VET, where their use is highly limited. The VET Student Loans (VSL) program is available for only some courses at Diploma level and above. In 2019, only 277 of 635 Diploma courses were eligible for VSL, despite many ineligible courses having strong employment outcomes (PC 2020a, p. 301). And VSLs are not available for any course below the Diploma level. This means that VET students, unlike higher education students, often face upfront fees.⁸⁰

The lack of harmony in funding arrangements between higher and vocational education can mean poorer matching of skill formation with skill needs. This arises for a few reasons.

- Upfront costs may discourage some people accessing VET altogether — meaning they miss out on any kind of post-school study despite its growing necessity. This is costly for students and society, as completing VET courses improves students' earnings (Polidano and Ryan 2016). These damaging effects may be larger for more disadvantaged students for whom an upfront fee is more burdensome.
- Students may elect to undertake lower cost VET courses even if these produce lower returns.
- Students unable to meet the upfront costs of VET may opt for university instead even when it is not efficient for them to do so (Norton, Cherastidtham, and Grattan Institute 2019). Some higher education students have poor outcomes, either not completing their qualification or not finding relevant employment, with costs to the students and government. At least some of these students would have completed their studies and entered their desired job if they had been able to undertake a VET qualification. The likelihood that differential access to ICLs leads to switching between university and VET providers will probably mostly relate to Diploma courses.

The VSL scheme has succeeded in removing financial barriers to VET for the eligible courses. Almost all VSL students (94%) reported that, without their loan, they would not have been able to afford their course fees (KPMG 2020, p. 104). But this also suggests that financial barriers are significant for students unable to access a loan.

Expanding loan access to more VET courses

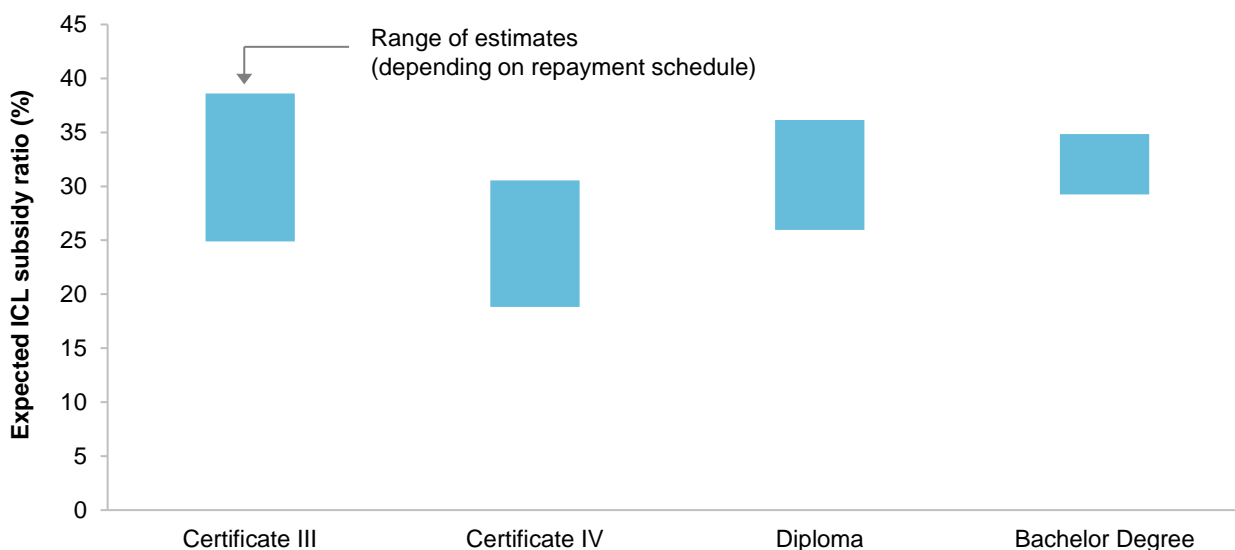
For these reasons, there is merit in expanding VSL to more Diploma-level courses, as well as potentially to Certificate IV and III courses. Certificates IV/III provide comparable increases in earnings and other employment outcomes as Diplomas (Polidano and Ryan 2016a, p. 31), and these courses are often shorter and cheaper, meaning debts are likely to be smaller. While their lower costs mean that the barriers posed by upfront fees will typically be less than for Diplomas, the costs can still be significant for some cohorts. If students are only able to access loans for Diplomas, they would be financially encouraged to take higher-level VET courses even if these suited them less well.

⁸⁰ Students that are accepted into university for undergraduate degrees receive a Commonwealth supported place, and have the costs of their education subsidised by the Australian Government, with the remainder of the cost of the qualification deferred through an income-contingent, interest-free loan known as HECS-HELP. University students that do not receive a Commonwealth supported place — for example, because they are undertaking a master's degree — are also often eligible for another ICL, FEE-HELP.

Some participants in this inquiry argued ICLs should not extend to Certificate III. For example, JCSF Consulting submitted that rather than ICLs, full public subsidy may be justified due to poorer employment outcomes⁸¹ and as Certificate III is also undertaken by students enrolled in school (sub. 97, p. 3).

Repayment prospects appear to be qualitatively similar across AQF levels, including Certificate III (figure 3.7).⁸² Nonetheless, expansion of loan arrangements poses some budgetary risks, particularly as the share of VET students undertaking Certificate III courses is significant.⁸³

Figure 3.7 – Repayment prospects are reasonably similar across AQF levels^a
Expected ICL subsidy ratio by qualification under various repayment scenarios



a. Original modelling results were separated by gender; they have been pooled according to the gender split at each level. The upper range estimate corresponds with 2015 HELP repayment terms, and the lower range estimate corresponds with 2015 HELP repayment terms plus 3% of income between \$50 000 and \$54 000, 2% of income between \$40 000 and \$50 000, and 1.5% of income between \$35 000 and \$40 000.

Source: PC (2020a, pp. 312–314).

Expansion of VSL should be gradual and informed by evaluation

A gradual and cautious approach to expansion is warranted, as students and RTOs may not always respond to ICLs as expected; and students undertaking Diploma and above courses can have differing characteristics to those undertaking certificate courses.

The Australian Government, in consultation with State and Territory governments, should extend VSL eligibility. Initially this should include all Diploma and above level courses with minimal exclusions. Rather

⁸¹ Note that Certificate III completers have poorer employment outcomes compared with Certificate IV completers, however the *uplift* in income relative to not having the Certificate is similar for both cohorts (as Certificate III completers may have done worse in the absence of the certificate) (Polidano and Ryan 2016).

⁸² While the modelling underpinning the estimates appears to show that ICL recovery rates are more positive for Certificate IV level courses than bachelor degrees, this may not be a robust result for two reasons. First, the estimated average loan size for Certs III and IV may be too low, and second, the modelling does not exclude Trade Support Loan Students, who already have access to ICLs, and have positive repayment prospects. A full summary of these issues is discussed in box 10.2 in the Commission’s review of the Skills and Workforce Development Agreement (PC 2020c).

⁸³ In 2021, the highest number of VET qualification enrolments were at the Certificate III (39%), followed by Certificate IV 20%, and Certificate II (19%) (NCVER 2022b).

than current eligibility restrictions (which exclude more than half of Diploma and above level courses), only courses that are primarily undertaken for leisure or that yield poor employment outcomes should be excluded. After monitoring and evaluating this change, assessing impacts on participation and employment outcomes, VSL could progressively be extended to Certificate IV courses. Subsequently, an expansion to Certificate III could also be considered, based on an assessment of whether expansion to Certificate IV was successful and the latest information about repayment prospects for Certificate III.

Before each stage of expansion, the Australian Government Actuary should be tasked with investigating more thoroughly how different repayment settings would affect debt recovery. As in the case of HELP loans, the precise income thresholds for repayment will need to be assessed as a necessary component of any ICL scheme is to not require full repayment if future income is low.

The argument to expand loans to shorter courses is less compelling. Certificates I/II generally provide smaller and less consistent earnings benefits (Polidano and Ryan 2016), and they are also heavily subsidised. And while microcredentials contribute to lifelong learning, they are generally cheaper and more likely to be undertaken by those already in the workforce and funded by employers or by private means (section 3.5).

Controls are needed to avoid another VET FEE-HELP debacle

Many in the VET sector are wary of extending ICL to more VET students due to the rorting that occurred under VET FEE-HELP (VFH), the predecessor to VSL. The implementation and regulatory oversight of an expansion would need to be mindful of avoiding the unscrupulous behaviour seen under VFH, although the regulatory framework underpinning VSL has addressed many deficiencies of VFH. In particular, VSL involves: stricter compliance measures for providers; a ban on loan brokers; students regularly reporting their engagement; and, payments to RTOs being made in arrears (rather than in advance under VFH) (PC 2020a, p. 298). These measures have seen VSL successfully avoid the pitfalls seen under VFH. Strong regulation, with ASQA playing an active role, will need to continue to ensure the integrity of an expanded VSL scheme over time.

The gradual expansion approach outlined above will also assist in mitigating the risks, as lessons can be learned — and adjustments made — after evaluating each phase of expansion.

In the recent review of the Skills and Workforce Development Agreement (NASWD), the Productivity Commission recommended that upfront loan charges be levied on students so that they have ‘skin in the game’ when choosing a course. However, in practice, when contemplating a course, the time commitment and opportunity cost is likely to be a more important factor in decision making than a nominal upfront fee. Further, upfront fees have not been needed to protect students taking up HELP or VSL loans. The risk of poor decisions by students seen under VFH were likely largely attributable to aggressive marketing strategies that have now been banned. Controls on unscrupulous behaviour are more effectively placed on providers, rather than through upfront fees for students. Students would also benefit from the Commission’s recommendation to address information gaps, including relating to student fees and RTO quality (PC 2020c, p. 210).

Finally, loan caps are necessary to limit costs to students and the Government. As ICLs reduce student sensitivity to course fees, their wider application means that providers may be able to increase course prices well above their delivery costs. Under a loan cap arrangement, RTOs are not prevented from charging fees higher than the cap. However, as the student pays the difference, they must be convinced that the additional cost is justified. In its review of the NASWD, the Productivity Commission recommended that the number of loan caps be expanded, and reformulated based on efficient delivery cost data (PC 2020c, p. 322).

Loan fees should be applied equitably to all tertiary loans

A loan fee is a charge added to a student's loan to increase cost recovery across the cohort, limiting government spending. The loan fee is added to the value of the loan; upfront payment is not required. This means that loan fees are unlikely to impact student choices about what to study.

However, they are not currently applied equitably. A loan fee of 20% applies to VSL students receiving training from a fee-for-service provider and students at (non-university) institutes of higher education. There is no compelling reason why this fee does not apply to students in subsidised places (or, for that matter, university students). There is no evidence that repayment risk varies between these student cohorts. Some participants advocated for consistent loan fees (JCSF Consulting, sub. 97, p. 3; IHEA, sub. 120, p. 4).

Loan fees are progressive as higher income graduates cross-subsidise lower income graduates who repay more slowly or do not fully repay. Spreading loan fees to a broader student base would be more equitable and could allow for the loan fee to be levied at a lower rate. For example, the Grattan Institute suggested a universal loan fee for all HELP loans could be levied at 15% (Norton and Cherastidham 2016). The Productivity Commission found a loan fee of about 9% applied to all VSL would be budget-neutral (PC 2020c, p. 324), although this may need to be adjusted for any expansion of VSL.⁸⁴ Ideally, loan fees should apply equitably to all tertiary students, and at a lower rate that accounts for the repayment risk across the full cohort.

Finally, even with loan fees, some share of debt will not be recovered. ICLs are provided by the Australian Government, while VET subsidies are borne by State and Territory governments. Accordingly, expanding loans may encourage State and Territory governments to reduce VET subsidies. To mitigate the risk of this type of 'cost-shifting', both levels of government will need to negotiate to either extend current sharing arrangements for VSL debts not expected to be recovered (and concessional interest costs) or offset this cost by adjusting the Australian Government's funding component.

⁸⁴ Further, as this only accounted for VSL, a uniform loan fee across all higher education and VET loan programs could be budget-neutral at an even lower rate (given the large share of undergraduate university students compared with students attending other providers).



Recommendation 8.7 Expand loan eligibility to more students

The Australian Government, in consultation with State and Territory governments, should gradually expand VET Student Loan eligibility.

- Access should expand to more Diploma and Advanced Diploma level courses. Instead of current criteria, all courses should be eligible except those that are primarily taken for leisure or have demonstrated poor labour market outcomes. This expansion should be evaluated after a suitable period, including observed effects of the earlier expansion on student participation, course decisions and employment outcomes; and any evidence of rorting by providers. Following this evaluation, and addressing any implementation issues, eligibility should also be considered for Certificate IV and Certificate III courses.
- Loan fee arrangements should also be equalised across the tertiary sector, levied on all students regardless of type (that is, extended from fee-for-service VET students and non-university higher education students to include subsidised VET students and university students). The loan fee rate should also be lowered reflecting application to a broader base of students.

3.5 A culture of lifelong learning for an agile workforce

Lifelong learning, however achieved, is critical to stable employment, wages and the adaptability of an economy (PC 2020c, p. 416). Labour market trends suggest a growing need for upskilling and reskilling given changes in the nature of work and structural shifts in the economy, particularly the rising importance of digital, dynamic, and service-oriented skills.

Participants emphasised the role of lifelong learning and the need for digital skills in the workplace.⁸⁵ Some estimate that workers (between 2018 and 2040) will need to spend an additional three hours of learning per week, which is about a 33% increase (AlphaBeta 2018, pp. 3–4). The average Australian worker is expected to change occupations 2.4 times by 2040 and have the nature of their work tasks change by 18% every decade (AlphaBeta 2018, pp. 3–4). It has been asserted that ‘the days of relying on an increasingly dusty certificate or degree over a 40 to 50 year career are long gone’ (BCA, sub. 181, p 12), although this probably underestimates the degree to which lifelong learning has been important in the past.

Like all forms of education, learning in adulthood can improve worker productivity by building on and expanding skills, and enabling movement to new industries with greater demand and higher wages. Increasing job related skills and job prospects are the two main reasons for participating in formal study (ABS 2022g).⁸⁶ Indeed, research has found that mature-age education has positive (though modest) impacts on wages, job satisfaction, retention and higher use of skills in workers’ jobs (Coelli, Tabasso and Zakirova 2012). There is some evidence that completing vocational qualifications that are no higher than the highest level of education already attained does not improve labour market outcomes (Polidano and Ryan 2016).

⁸⁵ See for example: BCA, sub. 181; Internet Association of Australia, sub.168; JCSF Consulting, sub. 97; The Software Alliance (BSA) sub. 134; Australian Investment Council, sub. 135; AHRI, sub. 54, ASBFEO, sub. 64.

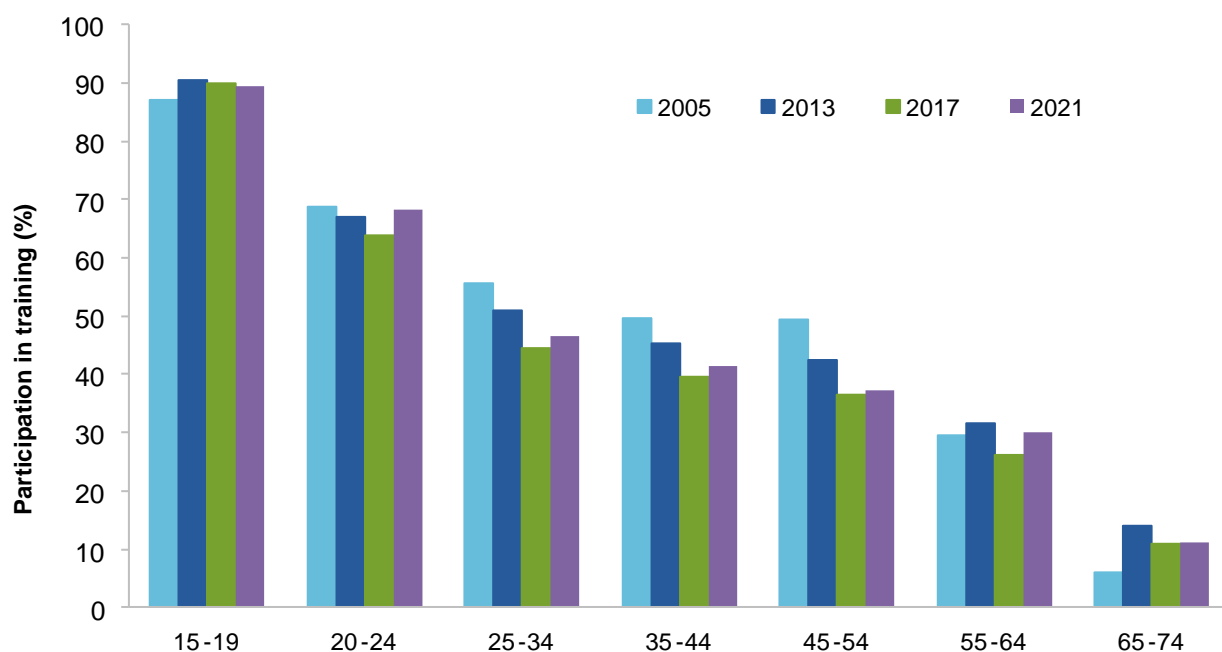
⁸⁶ That said, increasing job prospects is a more important motivator for learning earlier in life with an average of 48% of 25-44 year-olds reporting it as their main reason for study compared with adults aged 45-64 (34%). Individuals have various private motivations to study later in their careers, including higher salaries and greater work satisfaction.

Positive spillovers from lifelong learning are likely to increase as working lives lengthen and as evolving skill needs require upskilling or reskilling (chapter 1). For example, it can help displaced workers transition to new occupations and industries. This could help to avoid or shorten unemployment spells and lower transition costs, particularly in some regional areas where an inadequate skills base is an impediment to economic transition (PC 2017b, p. 73).

Lifelong learning also has broader benefits beyond improving employment outcomes — such as personal empowerment, engaged citizens, improved health outcomes, financial literacy and wellbeing — a point noted by practitioners in the Adult Community Education sector (Mason and Carr 2021, p. 129).

Australia has relatively high adult participation in formal training among OECD countries. Australia has the equal highest rate of enrolment for people aged 40–64 years (3 times the OECD average), and equal third for people aged 30–39 years (2.3 times the OECD average) (PC 2020c, p. 417). Adult learning occurs in many contexts — formally, at universities, VET providers and more informally at work, from local communities and libraries. Some 42% of Australians aged 15–74 years have participated in formal or non-formal training in the past 12 months (ABS 2022g).⁸⁷ But there has been some decrease in training since 2005 among people aged 25–55 (figure 3.8). Demand for lifelong learning is difficult to cultivate, and requires equipping young people with the skills to learn early, as well as a collective acknowledgement of the benefit and value of ongoing learning.

Figure 3.8 – There has been some decrease in learning by 25–55 year-olds since 2005^{a,b}
Participation in formal or non-formal learning by age group



a. Comparison between 2005 and other years should be made with caution due to different methodology, scope and sample size. In particular, 2005 data (SEW) was based on a household interview with any responsible adult on behalf of all persons aged 15–74 years in the household. Whereas 2013 onward (WRTAL) was based on an interview with one randomly selected person aged 15–74 years in the household. **b.** Participants interviewed were asked if they had undertaken learning in the previous 12 months, although the relevant 12-month window varied between iterations of the survey (2017 and 2021 refer to the 2016–17 and 2020–21 financial years respectively).

Sources: ABS (*Work-Related Training and Adult Learning, Australia*, for Apr 2013, 2016–17 and 2020–21, Cat. no. 4234.0); ABS (*Education and Training Experience, Australia, 2005*, Cat. No. 6278.0).

⁸⁷ Formal training results in a qualification or certification.

Current government support is focused on initial skill acquisition

Governments also support lifelong learning through a range of programs and funding mechanisms (box 3.6). While most programs are neutral in respect of the life stage of the person, much of this investment is directed at formal qualifications and initial skill acquisition completed earlier in life.

- In VET, a greater proportion of younger students are government-funded, with 51% of students receiving government funding aged between 14–24 years in 2021.⁸⁸
- In the university sector, higher-level degrees typically have far fewer Commonwealth supported places than undergraduate courses. More generally, older individuals are less likely to enrol in university than in VET (Coelli, Tabasso and Zakirova 2012).

This reflects the importance of education in the first 18–25 years of life as younger people require broad foundational skills and credentials to secure early-career jobs (PC 2020c). Earlier investment in education and training can also create larger economic benefits and positive spillovers. A person who completes their degree, certification, or apprenticeship early in life may spend 50 years in the workforce, contributing to the Australian economy and its productivity (Polidano and Ryan 2016).

Moreover, early educational attainment is important for teaching people how to learn and improve their ability to pick up new skills and is one of the strongest predictors of further training and learning (OECD 2021a). On average, across the OECD, individuals with tertiary education were twice as likely to engage with adult learning than those with secondary education or below (OECD 2021a). Starting a culture of lifelong learning requires a strong foundational education and the skills and attitudes needed to support a curiosity and interest in further training throughout life.

Box 3.6 – A range of government policies support learning later in life

A number of policies support learning later in life. Key Australian Government policies are outlined below, and other policies exist at the individual State and Territory level.

Income-contingent loans available for higher education courses and some diplomas are not limited by age. Total caps on loans are sufficient to enable most learners to undertake initial qualifications as well as further learning later in life. Subsidies for tertiary education are also available to people of all ages, although there may be fewer places for postgraduate courses.

Personal education expenses may be eligible for a tax deduction if courses result in a formal qualification, relate to current work activities and skillsets, and will likely result in higher wages. A minimum threshold of \$250 for deductible expenses was removed in December 2022 to account for cheaper, shorter courses (ATO 2022a).

MicroCred Seeker, an online marketplace for microcredentials funded by the Australian Government and built by the Universities Admissions Centre (UAC) in 2022, provides potential students with comparable information on microcredentials offered in Australia. Australian higher education providers registered with TEQSA are currently able to list their courses.

In the 2020-21 Budget, the Australian Government funded an additional 50 000 **Commonwealth supported short course places** in national priority areas (Department of Education 2022b).

⁸⁸ Commission estimates based on VOCSTATS data, 2021.

Box 3.6 – A range of government policies support learning later in life

The **Small Business Skills and Training Boost** (announced but yet to be legislated), encourages small businesses to invest in ongoing training. Under the boost, businesses with less than \$50 million in annual turnover that invest in eligible courses for their employees will receive an additional tax deduction of 20% of the training expenditure between 2022–2024 (ATO 2022b).

Targeted employment programs also support further training.

- Workforce Australia (replacing Jobactive from 4 July 2022) helps underemployed and unemployed individuals to navigate and subsidise training and reskilling to improve labour force outcomes (DEWR 2022f). There are a suite of programs under Workforce Australia including the Employability Skills Training program that support people finding jobs and improve industry specific skills (DEWR 2023).
- The Skills Checkpoint for Older Workers program helps people aged 40 years and over who are employed or recently unemployed to get career advice and subsidised training (with reimbursements up to \$2200) (DEWR 2022c).⁸⁹

There may be underinvestment and barriers to lifelong learning

The wide-ranging benefits of lifelong learning mean that all parties — governments, businesses and individuals — should have an interest in supporting it.

While individuals contribute to the cost of adult training, most costs are borne by others. An adult learning survey found that 87% of people aged 15-74 completing work-related training in 2020-21 did not incur personal costs (ABS 2022g). Individuals often have many supports to pursue training either provided by government or paid for by employers. Nonetheless, higher proportions of people working in some industries report incurring personal costs for work-related training. For example, 19% of survey respondents working in the health care and social assistance industry said they incurred personal costs for training compared with 6% and 7% in the manufacturing and financial services sectors respectively (ABS 2022g). Moreover, 33% of people working in smaller firms (less than 20 employees) reported having personal costs for training as opposed to 6% in firms larger than 100 employees (ABS 2022g).

While businesses pay for a sizeable share of existing training, they arguably tend to underinvest in general and more transferrable skills as they face the risk that they will not recoup their investments in skills if their employees leave. There may also be more general spillovers from training that are not captured by the business or the employee if the skills accelerate innovation.

In 2020-21, 5% of Australians aged 15-74 wanted to take formal training in the preceding 12 months but were not able to (ABS 2022g). Similarly, 7% (down from 11% in 2016-17), wanted, but were unable to take non-formal courses (which can be both work related or for personal interest) (ABS 2022g). As people age, they are less likely to report barriers to learning. This may reflect a lack of demand for, or culture of, lifelong learning, as well as an increased ability to pay for any further study.




⁸⁹ Mid-Career Checkpoint, a separate program piloted in New South Wales, Victoria and Queensland ceased operation in December 2022. It gave participants customised skills and training plans and career advice, and access to a training incentive of up to \$3000 recommended by the training plan and targets skill gaps in the economy. This was available for people re-entering the workforce, carers returning to work, and workers at risk of unemployment (DEWR 2022e).

It is important to consider the barriers people face when seeking adult learning to inform whether and how government support should be provided. Those facing barriers to training most commonly reported insufficient time or financial barriers as the main obstacles. Barriers varied by age, gender, employment status, family structure, household income and relative socio-economic disadvantage (ABS 2022g). As household income increases, fewer people report financial barriers as hurdles, but a lack of time to undertake training becomes more important. More generally, people who were unemployed, single parents, or lived in more disadvantaged areas were more likely to report barriers to formal learning.

Governments can only act to address some of these barriers. In particular, they have limited ability to help those lacking the time to study as providing them with the equivalent of their wages would be fiscally untenable. While imperfect, increasing flexibility in course provision and accreditation pathways may help those facing time constraints. Reflecting these difficulties, current policies mostly create financial incentives to complete work-related training (box 3.6).

Some policy-relevant barriers and opportunities for reform remain. There may be underinvestment in lifelong learning, particularly for general skills and for low-income workers. The challenge for government is devising policy instruments that could address such under investment without crowding out investments that would be otherwise funded by businesses or people themselves. Policy in this space should aim to target barriers, bolster transferrable skills and support reskilling (figure 3.9).

Figure 3.9 – Lifelong learning policy should aim to be additional

Additionality is central to effective government policy in lifelong learning		
Targets barriers	General skills	Not crowding out
<p>Alleviates real barriers to uptake of further learning, like insufficient funds or time</p> 	<p>General and transferable skills are more likely to have positive spillovers</p> 	<p>Individuals and businesses who can pay for training privately to continue to do so</p> 

A consolidated effort to support lifelong learning

There are a myriad of programs and supports offered by Australian, State and Territory governments that target different subgroups, encourage or create awareness for pathways into learning in adulthood. Most either target financial barriers or help people who are unemployed, underemployed or out of the labour force train to improve their job prospects. But there are many policy overlaps and some gaps. Moreover, the number of options can be overwhelming and difficult to navigate and while some programs offer career advice and caseworkers to help navigate the policy tapestry, others, do not.

A consolidated and strategic approach to lifelong learning should focus on policies and incentives that target barriers to uptake. To achieve this governments should evaluate the effectiveness of supports available, as well as pilot new approaches to inform a strategic and prioritised policy program.⁹⁰

⁹⁰ The Tasmanian government has developed an Adult Learning Strategy for 2020-2023 which aims to expand literacy and numeracy programs; improve coordination of available services and the information available for learners; and, increase community engagement with adult learning through a variety of policy initiatives and supports (Tasmanian Government 2020).

Evaluate and assess effectiveness of financial supports

Some existing policies help those who are unemployed and outside the labour force to gain training and career advice while others, such as the Small Business Skills and Training Boost subsidise business training costs. These policies have eligibility criteria that create gaps at the margin and some overlaps (though often eligibility in one program can sensibly nullify eligibility in another – for example students funded by CSPs are not eligible for the self-education tax deduction).

There is little formal analysis of the success and additionality of financial and tax-based policies in Australia and overseas and so it is difficult to reform and prioritise policies to increase their effectiveness.

However, there are good grounds for some policy changes and instituting an evaluation program that aims to develop a consolidated and strategic approach to financial supports for lifelong learning, including rigorous assessment of any programs with major budgetary implications.

Incentivising individual investment in training through tax deduction

The self-education tax deduction provides incentives for lifelong learning but is too narrow in its current form. Reskilling in areas that do not relate to or increase income in one's *current* employment is not eligible for a deduction — this could include general skills such as digital skills.⁹¹ These constraints exist partly because it is easier to determine what skills are work-related, reducing the administrative burdens, and partially to avoid government paying for personal interest learning, which is less likely to create positive spillovers. Despite the relative complexity, broadening training to include reskilling efforts that may increase future income might be desirable (RUN sub. 154 pp. 4–5). For example, it may allow people to retrain before being made redundant reducing unemployment spells for people exiting declining industries.

It is difficult to define the boundaries for a greater capacity for self-education tax deductions. Avoiding fraudulent behaviour and maintaining the integrity of the tax system would be important considerations in designing this policy. Treasury has run a consultation process to assess broadening the deduction to reskilling efforts. They noted that identifying how a course links to an individual's future earning capacity is difficult in some circumstances but that one way of limiting the deduction is to courses recognised by regulatory bodies (Treasury 2020, p. 7).⁹² However, this approach may be overly limiting. There are many courses not provided by registered domestic providers that deliver useful forms of education, especially later in peoples' careers.

Some Australians have few resources to fund their training — such as unemployed people, those outside the labour force, and people earning low incomes. Existing programs target many of these groups (box 3.4), although there may be a gap in supporting the training of older lower-wage workers — including those who are standard contractors or working in the gig economy.

A new self-education tax deduction is of limited value to people on low incomes as they pay little or no tax. Not surprisingly, a Dutch study found that income tax deductions are usually taken up by higher earners with almost no take up by single people with relatively low incomes (van den Berge, Jongen and van der Wiel 2022). A voucher that funds low-wage workers to undertake training (including training that targets general skills and reskilling to shift across industries) overcomes the financial barriers better than any deduction. One voucher program in Victoria increased mature-age VET participation (though the magnitude of this effect depended on how many voucher recipients substituted away from fee-for-service VET) (Polidano, van de Ven and Voitchovsky 2021, pp. 1031–1033).

⁹¹ Expenses eligible for tax deductions are for training that either:

- maintain or improve the specific skills or knowledge you need to perform your current employment activities
- or are likely to result in, an increase in your income from your current employment activities.

⁹² That is, TEQSA, ASQA, the Victorian Registration and Qualifications Authority (VRQA) and the Western Australian Training Accreditation Council (TAC).

Targeting business co-investment in training

The yet-to-commence Skills and Training Boost (the Boost) is a potential mechanism for stimulating training in businesses, which requires co-investment through a 20% tax deduction. The Boost is a costly program (with an expected budgetary cost of about \$550 million over the forward estimates) (Commonwealth of Australia 2022a, p. 26). While targeting small businesses may increase additionality, there is still a substantial risk that considerable taxpayer funding will support activity that would otherwise have occurred. This means there is an imperative for rigorous evaluation of the *net* impacts of the Boost on valuable training.⁹³ A further challenge is that while a business tax deduction presents a convenient mechanism to incentivise training — especially as it requires co-investment from businesses — the policy is still limited to people who are employed and is likely to encourage training in skills that relate to employees' *current* jobs. This may limit the spillovers and potential additionality of such spending. Evaluating the Boost can help better understand whether to continue or adapt the program.

Increase accessibility, awareness, and flexibility of available options

Increasing access to lifelong learning involves tackling the financial and time barriers to study (but also ensuring that people know about available supports). For many, taking on any kind of training hinges on the flexibility of courses as time constraints present a central barrier. More flexibility, not only in the delivery of courses but also in transferability and recognition of skills acquired allows students to tailor study to their changing needs. Currently, there is a dizzying array of learning options — microcredentials, formal qualifications, informal courses, local and international options, work-experience opportunities, and internships among others — as well as a number of supports depending on individual circumstance. Increasing uptake might also rely on raising awareness of the pathways available, as well as the potential benefits of upskilling and reskilling to spur proactive action.

Flexibility in learning can be improved by broadening recognition of skill acquisition. Indeed, about half of employers used unaccredited training in 2021 (NCVER 2021a). One way to provide flexibility in learning pathways is to introduce more exit points in formal study which give students the option to get recognition for study they have completed even if their circumstances or career goals change (chapter 4). Another is by increasing the incidence and recognition and the benefit from completing microcredentials and more informal training options. Making publicly-funded universities' lecture materials available online can increase access to learning materials that can support informal learning and stimulate interest in subsequent formal education (chapter 4).

Recognition of prior learning can help students move through training pathways more easily. Some positive changes are in train. The 2019 Review of the AQF recommended that the framework be revised to encourage credit recognition within and across sectors. The key recommendations included simplifying the levels of the AQF to acknowledge different pathways; avoiding unnecessary hierarchical structures; and, developing guidelines for translating microcredential into credits for AQF qualifications (Noonan 2019, pp. 12–15).

Formal recognition of microcredentials is complex. Microcredentials cover different skills at various AQF levels and do not cohere to current bands (Noonan 2019, p. 58). Moreover, a central benefit to microcredentials is their ability to adapt to innovation quickly; this may be stifled by AQF requirements and added administrative burdens (Noonan 2019, p. 58). Other concerns include inconsistent quality and the associated risk to other qualifications recognised by the AQF (Noonan 2019, p. 58).

The National Microcredentials Framework was developed to provide an integrated approach for informal recognition of microcredentials, and to develop a microcredentials marketplace (DESE and PwC 2021, p. 6).

⁹³ Some interested parties are concerned that its effectiveness will not be apparent by the time it is scheduled to end in 2024 (BCA, sub. 181; MYOB, sub. 198).

MicroCred Seeker was launched in late 2022 and aims to provide consistency of information to enhance student choice and facilitate better recognition of microcredentials.

The Productivity Commission has previously noted that comparator websites need to be impartial, curate information to suit students with differing circumstances, continuously update and assess the information presented to minimise misleading consumers, and avoid oversimplifying (PC 2020c, p. 195). Informed choice requires support and good quality, complete, comparable and accessible information (PC 2020c, p. 195). While still in development, MicroCred Seeker does not provide complete information, not only because many providers are yet to upload their course offerings, but also because, currently, only TEQSA-registered providers are able to upload courses. While there may be an intention to expand this, such limited scope (which excludes not only international providers but, importantly, many domestic providers including those registered with ASQA) risks the website failing to achieve both of its aims — to provide clear information of available options, and a consistent format and language that enables better cross-accreditation.



Recommendation 8.8 **Consolidate support for lifelong learning**

The Australian Government should consolidate and examine the effectiveness and accessibility of available programs to support lifelong learning and to reduce gaps and increase uptake. In doing so, it should evaluate the effectiveness of targeted programs to inform and prioritise policies for a consolidated lifelong learning strategy by:

- trialling policies that target support at employed lower-income people, including vouchers for career planning and work-related upskilling and reskilling
- evaluating the incoming Skills and Training Boost to assess its effects on the uptake of additional overall training, the skills it develops, productivity, labour mobility, and the characteristics of the businesses most responsive to the measure. Government linked administrative datasets will be useful for such an evaluation but might need to be supplemented
- extending the existing capacity for self-education deductions to education that is likely to lead to additional income outside of the employee's existing employment. This change should be evaluated after a suitable period, and pursued subject to assurance that strong integrity measures can effectively reduce the risks of fraudulent claims
- examining the effectiveness of training programs delivered to people who are unemployed and those transitioning to work such as Employability Skills Training programs, particularly for people later in life.

Government should also increase the accessibility, flexibility, and coherence of available pathways by:

- extending income-contingent loans to more VET courses (recommendation 8.7)
- providing alternative exit opportunities through the provision of nested qualifications (recommendation 8.13)
- requiring publicly-funded universities to make their lecture materials available online, with consideration of extending this to some aspects of government-funded VET where that is practically feasible (recommendation 8.9)
- ensuring that the Australian Government's MicroCred Seeker extend beyond courses supplied by TEQSA-recognised providers to the VET sector and where possible, to other private and well-recognised domestic and international course offerings
- constraining regulations that make acquiring new skills and moving to new occupations overly onerous. Most particularly, through regular review of occupational licensing policies and addressing issues in scope of practice (reform directive 10).

4. Boosting learning outcomes for tertiary students

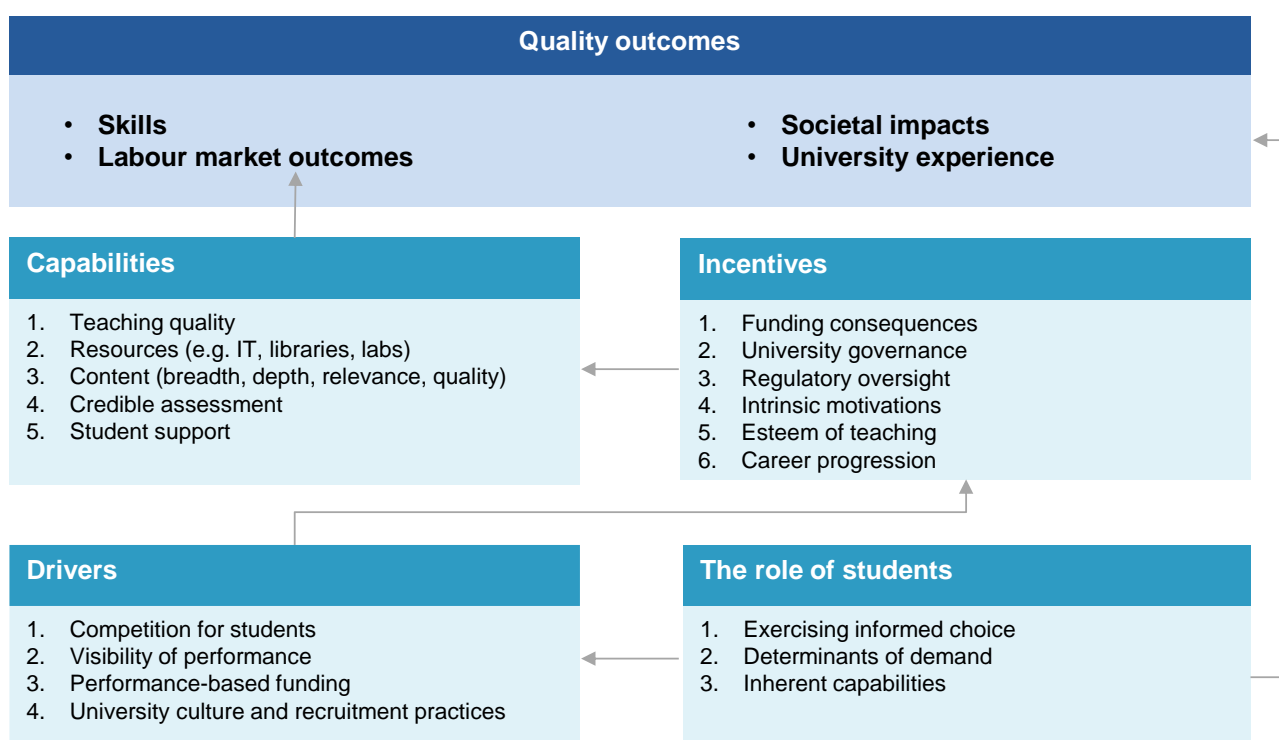
Key points

- ✳ **Getting the most from mass investment in post-secondary education will rely on lifting its quality, especially with the growing role of the sector in raising the skills of new generations of Australians.**
 - There are large variations in provider performance and a significant minority of higher education students do not rate their educational experience well.
 - Universities have weak financial incentives to raise their teaching quality and tend to favour research over teaching. Some non-financial factors counter these perverse incentives, but not by enough.
 - More needs to be done to promote quality teaching and leverage the opportunity presented by the shift to greater online delivery in recent decades, accelerated by COVID-19 pandemic restrictions.
- ✳ **Due to the variety of motivators at play, improving teaching requires a multi-pronged approach. The Australian Government should:**
 - bolster the visibility of teaching by requiring universities to share all lectures online and for free.
 - improve evidence and indicators of performance by: facilitating external teaching quality assurance; extending the evidence gathering role of the Australian Education Research Organisation to cover both vocational education and training (VET) and higher education; and, refining and validating quality indicators of tertiary education.
 - improve teaching prestige by funding research and innovation in teaching.
 - hold off implementing the proposed performance-based funding of universities, instead exploring the option of financial rewards to providers that have made successful efforts to improve their teaching quality.
- ✳ **Better student supports and guidance by universities would lower non-completion rates and avert the associated waste, loss of talent, and debt. The costs for those who exit can also be reduced.**
 - A new government grant program would help fund experimentation with new retention strategies.
 - Students who exit their university studies early are obliged to incur debt if they miss an obscurely-worded deadline. Making it clear what the deadline means would help students make informed decisions.
 - Providers should include at least one nested qualification in all bachelor's courses so that those exiting early could still meet criteria for a credential and have their prior learning more easily recognised if they choose to study later.
- ✳ **VET sector reforms currently underway will help secure its relevance, but rely on successful implementation, as well as prioritising cross-sectoral skills, prompt training package updates, supporting the VET workforce, and testing more flexible models of provision.**

The tertiary education sector’s contribution to productivity depends on the number of graduates and the quality and relevance of the skills they acquire. In turn, the sector’s capacity to deliver student outcomes depends on its capabilities and incentives, which are shaped by government funding and regulation (figure 4.1).

From a student’s perspective, a quality education includes course delivery (content, teaching, assessment, and student collaboration) and interactions with providers (faculty, student support services and university administration) that open up career opportunities and the capacity to contribute to society generally. Education is also a good in its own right. People value the networks and the campus experience, which, by stimulating demand, have an indirect effect on increasing skill levels and productivity in the economy.

Figure 4.1 – Delivering quality in tertiary education



While tertiary education providers perform well on many dimensions of quality (section 4.1), Australian governments have considerable scope to improve the functioning of the tertiary sector’s training role, a need accentuated by the increasing diversity among students, changes in modes of delivery, and rapid changes in skill needs. This chapter concentrates on two key policy dimensions of the learning experience:

- **teaching and course quality:** enhancing incentives to improve quality and relevance so that tertiary study yields more valuable skills (sections 4.2 and 4.3)
- **retention and completion:** ensuring the system provides quality supports for students struggling to complete their studies where retention is in their long-term interest, or where not, to facilitate early exit to limit waste of time and other resources (section 4.4).

This chapter gives less prominence to the policy issues in the VET sector, including those relating to quality and completions. This reflects that the Productivity Commission’s recent review of the National Agreement for Skills and Workforce Development (‘NASWD review’) identified a suite of reforms to improve VET quality, relating to student experience, course content, and course delivery (PC 2019a, chapters 6 and 7). Moreover, governments have commenced a VET reform agenda that is likely to make the VET sector more responsive to changing skill needs, more open to innovation, and shift it away from its prescriptive competency-based approach (discussed further in section 4.5). As a result, this chapter is focused on improving quality in the

higher education sector, particularly universities, which teach over 90% of higher education students, although issues relating to the VET sector are also raised, where relevant.

4.1 How big are the quality problems facing higher education?

As with schools (chapter 2), quality teaching is essential for getting the most from mass investment in post-secondary education for students and the community. There are multiple avenues for considering the quality of teaching delivered by tertiary education providers, which entail a hierarchy of indicators from the direct to the increasingly indirect:

- post-education outcomes for students in terms of skills acquired (say, the capability of treating cataracts or writing code to perform some computational task), lifetime employment outcomes, wages, job satisfaction, and the capacity to innovate and be creative
- inputs that are likely to affect those outcomes, such as teaching and course quality, and facilities (like laboratory equipment and access to academic journals)
- the extent to which tertiary institutions have the incentives to provide quality teaching.

Each indicator has its advantages. If it were possible to know the *causal* influence of higher education on outcomes with any assurance, then the first indicator would provide a good measure of the relative performance of institutions by subject area and time. It would also provide useful information to prospective students and a basis for performance-based funding.

However, even if causal effects could be measured, which is challenging (discussed in chapter 1 and appendix A), this provides little information about the ways in which an institution or the system could lift performance. Knowing the link between inputs and outputs helps make choices about investments in teacher quality and other supports.

Moreover, as teaching quality has many unobservable and subtle aspects, the financial and non-financial incentives for quality are central. That is, if universities and their teachers suffer no ill consequences from poor teaching, then it is less likely that teaching will be of high quality. In effect, the concern is that if mediocrity is cheap, then mediocrity will be abundant. Hence, it is important to assess the strength of the various financial or other incentives for teaching excellence. Changing these should be a key preoccupation of government policy.

Accordingly, gauging the ability of universities to improve people's skills should consider a suite of imperfect indicators.

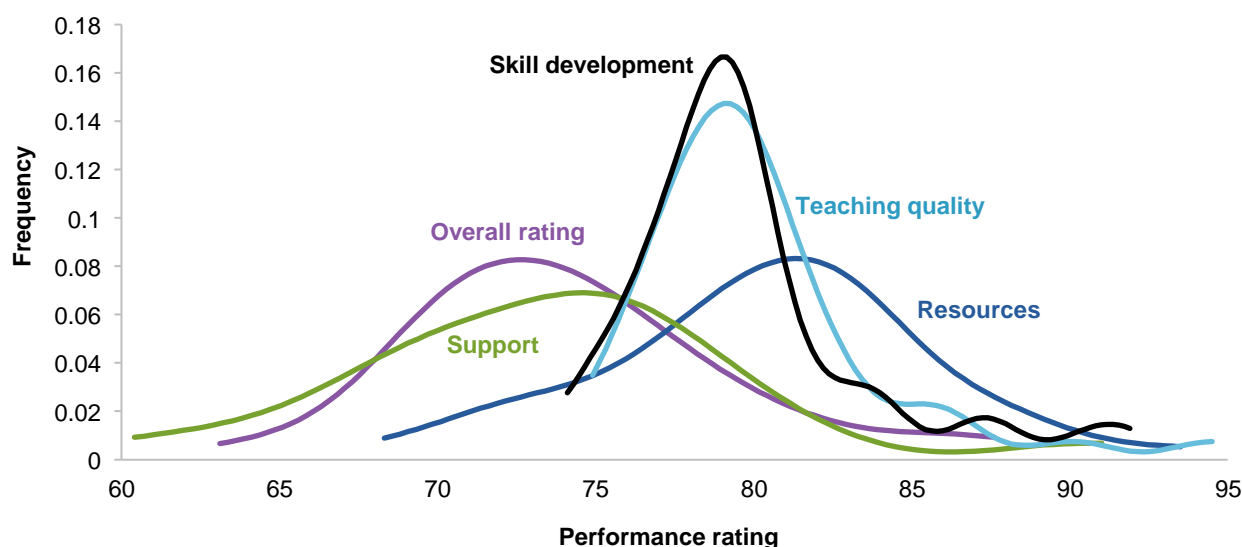
The outcomes from university training are generally high, but student perceptions are mixed

Over the medium term, university graduates have good labour market outcomes compared with those who acquire skills via VET or school alone (chapter 1 and appendix A). Graduates almost all participate in the labour market, having strong employment outcomes and low unemployment rates. They are likely to be in high-skill occupations and, associated with this, earn high wages. Employer satisfaction rates with graduates are high (chapter 1). While some of these outcomes could be determined by the inherent capabilities of those who attend university, the evidence still strongly supports a causal impact of attendance.

Nevertheless, the existence of these confounding factors, especially at the individual university level, makes attributing outcomes to the actions of any given university hard, and is a key challenge to workable performance-based funding (section 4.3).

There are no objective measures of the teaching performance of higher education providers or of the degree to which they raise skills, engage well with their students or provide adequate resources. Accordingly, student perceptions based on the Quality Indicators for Learning and Teaching (QILT) are used to assess performance along these dimensions, as imperfect as these are (appendix A and section 4.3). The picture is one of mixed performance, with outcomes in 2020 and 2021 particularly affected by the shift to online learning associated with COVID-19.

Figure 4.2 – Distribution of education quality across universities, 2021^a



a. The data relate to 42 universities with the performance rating densities estimated using a Gaussian kernel. The domains exclude learner engagement, which shows much greater variation in performance than shown here. However, regression analysis shows that learner engagement (which includes facets like feeling prepared for study, a sense of belonging to the university, and the nature and level of interaction with other students) has very little impact on students' overall rating of their university experience.

Source: Productivity Commission analysis based on SRC (2022c).

There are marked disparities in university performance on key domains of their educational functions, which is a major motivator for finding policy approaches that raise standards amongst 'laggards' (figure 4.2). The overall quality of teaching is the most influential explainer of the variations between students' perceptions of the overall quality of the entire educational experience, although student support and resources play a residual role.⁹⁴ Surprisingly, while students' *perceptions* of skill acquisition are linked to *perceived* overall teaching quality, the subjective assessments of teaching quality have weaker links to observed labour market outcomes. For instance, the medium-term full- and part-time employment outcomes of graduates do not vary much across universities (SRC 2022d, pp. 12–16).

⁹⁴ These results are based on analysis of student ratings across universities, and so seeks to explain the variations in the overall ratings at the university level. This analysis is relevant to any model of performance-based funding. Further analysis — not undertaken — could use student level data. This could inform the determinants of student ratings of their overall university experiences for each university and whether these were uniform across universities (which, given the nature of their student intakes and varying vocational orientation, is unlikely). This is a fruitful area for future analysis.

Providers have mixed incentives to invest in teaching quality

In most markets, providers are financially motivated to focus on quality where consumers value this. This dynamic is weakened in tertiary education for multiple reasons but not to the extent that some suggest.

The nature and funding of the ‘service’ limits conventional pressures for quality

Students do not know in advance how well a course is taught or whether it matches their specific interests and capacities, but have to wait until they have commenced — that is, any specific course is an ‘experience’ good (Quiggin 2016).⁹⁵ While this problem might be addressed by providing students with information, existing information lacks the required granularity to inform choices at that level. Higher education is not a single good, but a multiplicity of services provided simultaneously and sequentially by numerous institutions and staff. Even if there are some measures about the average teaching quality, that does not provide information about specific courses and the people who teach them. QILT only provides subject-area information and average provider quality measures, but, as discussed above, even this lacks much correspondence to the ultimate career outcomes.

Instead, student choice often relies on other aspects of the institution, such as a vague perception of overall quality or location. Most students expect to be able to physically attend university, and given the high cost of rent, often prefer to stay at their parental home, reducing their options to the few universities in their city. While there are many more VET providers in any major city, the VET system places little competitive pressure on higher education providers except for a very few vocationally-oriented courses.

Moreover, given that part of the benefit of education is its signalling value (chapter 1), reputation and prestige are likely to play a larger role in student choice than teaching quality. Indeed, the US experience suggests there is no evidence that learning quality determines an institution’s success in the marketplace. Instead the market favours selectivity, brand names, visibility and major research portfolios (Probert 2013).

Funding arrangements also affect competitive pressures. Fixed or capped fees for domestic undergraduate degrees (and some VET courses) reduce incentives for providers to compete on quality as there is no premium for doing so.⁹⁶ The majority of Commonwealth Grant Scheme (CGS) funding is block-based and capped, referencing each university’s historical level (chapter 3). This effectively sets a cap on student places for each university, which, given demographic pressures, will soon start to bind. So long as a university can attract enough students up to its cap at its existing course quality, it has no financial incentives to further improve quality. (The Productivity Commission’s recommended return to a demand-driven system (chapter 3) would ameliorate this problem.)

Moreover, the upfront price of university is low due to the Higher Education Loan Program (HELP), so the usual salience of prices for motivating careful choice is weakened.

The primacy of research may have some effects

The incentives to invest in quality teaching are weakened if teaching is regarded as a less prestigious and important role of university staff than academic research (PC 2017c, p. 13). International rankings play an

⁹⁵ In principle, so long as university places are not overly constrained, there can still be strong incentives for producers of experience goods to signal the quality of the product because if they can do so they can capture market share from competitors or expand the market. However, universities have little capacity to issue service warranties given the difficulty in objectively defining a defective service. The same problems affect the capacity of students to make use of the Australian Consumer Law or the common law.

⁹⁶ However, fees are not regulated for postgraduate courses and education provided to international students.

important role in attracting students, particularly international students, but all ranking systems give a disproportionate weight to research outputs and the fame of a few stars rather than teaching quality (Hou and Jacob 2017).⁹⁷ The Academic Ranking of World Universities (the Shanghai rating) includes no measure of teaching quality, with the rankings determined solely by prestigious prizes, citations, and publications in *Nature* and *Science*. In contrast, the Times Higher Education rankings give more weight to teaching quality, including through an academic teaching reputation survey, whose score contributes 15% to the rating. The other dominant ranking system — the QS World University Rankings — has no explicit ratings of teaching quality but uses faculty teacher ratios and employer reputation as elements of the rankings, which provides, at best, indirect measures of teaching performance.

The weight given to research capacity may not matter much if high research quality leads to high teaching quality, but the evidence for this link is tenuous (Cherastidtham, Sonnemann and Norton 2013). Indeed, across universities, QILT survey data suggests that for every 10 percentage point increase in the research-only share of academics in a university — a measure of their research orientation — students' teaching quality and skills development ratings *fall* by about 2 percentage points. (This explains about 30% of the variation in quality and skill development scores between universities). This may not reflect an adverse impact of research but may be attributable to other aspects of universities that tend incidentally to have a research focus (the Group of Eight predominate among research-oriented universities). However, the results do not support a positive nexus.

Notwithstanding the positive link between the teaching orientation of a university and students' ratings, commentators often cast a bleak light on the teaching role. Teachers may be stigmatised as 'not research-active' (Probert 2013, p. 4) or in need of relief from its burden:

... academics seek 'relief' from teaching in order to pursue research as they would take medication to relieve a headache. ... The situation is not helped when resources for teaching are continually squeezed and it can be exacerbated in mass systems that require academics to manage ever increasing numbers of students with changing and diverse needs, backgrounds and attitudes to study. At the same time, ever-higher levels of competition in research make it harder for researchers to devote scarce and valuable time to teaching. (Coaldrake and Stedman 2016, p. 96)

It is also easier for academics to signal their research capabilities, for example through successful grants, academic publications and citations. There are emerging ways for academics to demonstrate their teaching excellence, but they are recent (Olga Kozar 2021).

The internal labour structure of universities also suggests that research staff are given more primacy — having more secure employment and better career prospects. In 2021, about 70% of teaching only roles in Australian universities were casual.⁹⁸ This was only 6% for research-only academics and 2% for traditional teaching-and-research academics (DESE 2022e). While academics engaged in *both* teaching and research still account for the majority of teaching roles (63% in 2020), this share was higher in the early 2010s (at about 70%). By definition, teaching-only academics only teach, and so contribute far more to teaching hours (about 70%) than their teaching-and-research counterparts (NTEU, sub. 36, p. 3).

⁹⁷ Universities may mislead students in their use of such international indicators. In marketing its teaching quality, one prominent university indicated that it was first in Australia and 32nd in the world with the implication this related to teaching. However, those rankings had barely any link to teaching quality, but to a wide range of performance metrics that gave little weight to teaching. Using QILT measures, the university rated at the bottom or close to the bottom for all of the aspects relating to the student experience, such as teacher quality, skills development, and learning resources.

⁹⁸ Including full-time and fractional full-time. The share of staff employed on casual contracts does not account for an additional group that is employed on a sessional basis but counted among full-time (or fractional full-time) staff.

Does casualisation itself lead to worse teaching?

Putting aside the lower prestige that casualisation of teaching roles signals, its impact on teaching quality depends on its impact on attracting talented people to teaching roles and acquiring teaching skills.⁹⁹

On face value, the uncertainty of long-term job continuity and interruptions to employment during semester breaks make a casual teaching role unattractive. Contracts can be terminated with little notice. The vulnerability of such workers has been highlighted by widespread unlawful underpayment of casual academic staff (TEQSA 2022a) and the mass layoffs of them during the COVID-19 pandemic (DESE 2022e).

Nonetheless, several factors at least partly offset concerns about the effects of the precarious employment of teaching roles. For postgraduate students, casual teaching roles provide income while they study and, as such, a financial incentive to perform well to keep their jobs while training. Other non-pecuniary incentives to perform well are also at play — discussed below. And notwithstanding some of the negative aspects of the job, nearly 50% of casual sessional academic employees were employed for 6 years or more in 2019 (NTEU, sub. 36, attachment B, p. 6). This suggests some capacity for retention of a core group of staff to provide stability for students and to develop teaching capability.¹⁰⁰

Productivity Commission analysis of the NTEU and QILT data also suggests that casualisation of teaching-only roles does not appear to weaken undergraduates' perceptions of teacher quality. Based on QILT data, across universities, a ten percentage point increase in the casual share of teaching-only roles decreases student perceptions of teacher quality by about 0.4 percentage points, a tiny and imprecisely measured effect that is statistically indistinguishable from a zero or even positive impact. Casualisation has even smaller effects on perceived skills development.

Students have little recourse to independent complaint mechanisms

The capacity for 'customer' complaints can also provide incentives for quality. However, there are few powerful avenues for complaints by university students. The Tertiary Education Quality and Standards Agency (TEQSA) is not a complaints resolution body, and so only uses student complaints as background information to inform systemic assessment of providers' compliance (TEQSA 2022d). TEQSA takes a high-level view of providers, seeking to assure itself their internal institutional quality assurance arrangements are robust, effective and sustainable (TEQSA 2017b).

Universities have their own complaints handling processes and are given advice about how to manage these, but these are not independent from the university (ACTO, CO & OSO 2016). Very few complaints are lodged by students and most do not relate to teaching quality, but instead to appeals about grades, behavioural matters, and mental health. For example, notwithstanding the tens of thousands of enrolled students, the Australian National University recorded just 61 concerns about program, course or teaching quality in 2020 (ODS 2021, p. 46), which was a small fraction of total concerns and, given the QILT results, must only be a negligible share of dissatisfied students.

⁹⁹ While this chapter primarily relates to the higher education workforce, the teaching role in the VET sector has some other unique dimensions. In particular, given its job-ready focus, facilitating flexibility for individuals temporarily moving from industry into teaching, or to work part time in both, could be beneficial — particularly in VET, which works closely with industry to maintain relevance of skills (PC 2020c, p. 242).

¹⁰⁰ The ABS Census Longitudinal dataset between 2011 and 2016 indicates that 45% of tertiary education teachers in 2011 were still in this occupation in 2016 (though these values also include VET tertiary teachers). This is considerably lower than for school teachers and many other skilled occupation (such as trade and healthcare occupations), but greater than for the many unskilled occupations.

As tertiary education providers increasingly operate in a commercial environment, competing for students and marketing their services, they can more clearly be said to be ‘acting in trade or commerce’ and therefore subject to the provisions of the Australian Consumer Law (ACL) under the *Competition and Consumer Act 2010* (Cth). In principle, providers could be liable — on several grounds — to pay compensation for breaches of the ACL or for negligence (Cohen 2016; Corney & LindLawyers 2020; Corones 2012; Goldacre 2013).

There has only been one notable case in Australia where a provider paid substantial costs for allegedly inadequate training. In 2022, the Box Hill Institute settled for \$33 million in a class action mounted by about 500 students undertaking an aviation Diploma (Preceel 2022). The class action was based on alleged failures of the Institute to guarantee the delivery of its services with ‘due care and skill’ and in a ‘manner fit for purpose’, and on claims that it had engaged in unconscionable conduct and misleading and deceptive conduct — all avenues for legal redress under the ACL. While a settlement provides no precedent value about which, if any, aspects of the ACL apply, a settlement would not have occurred if there was doubt about the capacity of the court to hear the matter. Nonetheless, unlike the competition regulator in the United Kingdom (Competition and Markets Authority 2015),¹⁰¹ the ACCC has not provided accessible explicit guidance to students and universities on the implications of the ACL.¹⁰²

Nevertheless, few consider that the consumer law provides substantive protection. Guidance and clarity on the application of the ACL would likely only partly ameliorate that.

Consequently, unless the problems were significant and systemic, universities and other educational providers have little legal ‘skin in the game’ in terms of penalties for poor teaching quality or student outcomes. So long as the student continues to study past the ‘census’ date (section 4.4), universities are fully paid for their services, even if their offerings are inadequate.

It is also unlikely that creating a specialised body to hear students’ individual complaints, like the UK Office of the Independent Adjudicator, would be worth the cost. The latter body covers all higher education students in England and Wales. The Office spends about \$10 million annually (in Australian dollars) and finalised about 2600 complaints in 2021 of which 43% were found not to be justified (OIA 2022, pp. 5, 11, 49). Only 3% of complaints were fully justified. Given the much smaller population of higher education students in Australia, the number of justified complaints would likely be very small were Australia to emulate the UK model. The most valuable aspect of such a body is that its existence alone may encourage universities to lift their performance, but this effect is unlikely to justify a new agency.

The Productivity Commission’s approach has accordingly given substantial weight to prevention of poor teaching rather than difficult-to-apply remedies after poor service.

Existing review processes set a weak floor on quality teaching

The Higher Education Standards Framework requires providers to undertake a comprehensive review of course delivery at least every seven years, supported by more frequent monitoring at a unit level. These review activities are expected to encompass external referencing against comparable courses (including student performance data) and incorporate student feedback. TEQSA (2017b, p. 3) notes ‘external referencing’ can take the form of benchmarking, moderation or peer review. While this approach is appropriate for risk-based regulation, it largely leaves each provider to manage quality assurance independently (alongside relevant professional bodies and any accrediting organisations). In practice, although providers have public institutional

¹⁰¹ A recent UK House of Commons Committee report into the deficiencies of online learning during the COVID-19 pandemic has made explicit students’ rights under the consumer law (HoC 2020, pp. 12–16).

¹⁰² Although, the Australian Government has made clear to international students that their rights are protected under consumer protection laws (Study Australia 2022).

review frameworks, the depth and impact of these internal reviews is not clear or likely to be consistent and does not serve as a useful basis for informing students or ‘disciplining’ providers.

However, there are powerful non-pecuniary incentives for quality teaching

While there are many incentives for universities to underplay their teaching role, there are other factors that suggest that universities and teachers have considerable interest in delivering quality, and evidence of their behaviours are consistent with this.

- Intrinsic motivations for excellence in any profession are often high, regardless of weak external pressures. And no one gets peer esteem from being known as a bad teacher.
- Early career STEM academics in teaching-only positions report the highest level of satisfaction with their workplace compared with teachers undertaking both teaching and research (Christian et al. 2021), which would tend to make teaching-only jobs a fulfilling option.
- Academia is a global industry, with many academics seeking jobs abroad in a highly competitive market. Adding teaching excellence (if it can be verified) to a research publication record improves job prospects.
- Academics looking for promotion domestically in research-teaching roles often need to demonstrate their teaching skill. For instance, teaching performance contributes 15% to the overall promotion assessment at the Australian National University. While this is not high, getting a poor assessment may well stymie career progression. As Melbourne University put it: ‘We want you to be research active and see no point whatsoever in teaching, said no academic job ad anywhere’ (ArtsUnimelb 2018). So while there may not be strong incentives for excellence, there are incentives to not be bad.
- Universities are making efforts to reward quality teaching and signal its value — through awards for excellence. Some universities have also developed capabilities to promote higher quality teaching. For example, in Melbourne University, there is a year-long program of support and professional development for teachers, the Curriculum Design Lab was created in the Faculty of Arts to support teaching innovation, while the Melbourne Centre for the Study of Higher Education has a repository of material for higher education teachers. These kinds of initiatives are still imperfect and ad hoc. For example, while universities are active in enrolling diverse student groups, there is evidence that their policies for genuine engagement are often more aspirational than substantive (Baker et al. 2022).
- Providers routinely and voluntarily use a range of approaches to evaluate and assist teaching performance — including student questionnaires, peer review and professional development. It is hard to reconcile the widespread use of these with a lack of interest in quality. For example, the Teaching Innovation Unit of the University of South Australia offers its teachers a 10-week blended course in teaching excellence and has several types of collegial peer reviews (‘Peer Partnerships’ and ‘Teaching Squares’) and a formal summative review process (UNISA 2023). A sample of other universities showed many had similar programs.

The growth in online learning poses challenges and opportunities

Online delivery is now a ubiquitous feature of higher education. Online learning has three broad formats. The most common and basic form — ‘Optional-online’ — gives students the *option* to miss in-person lessons and access them more conveniently at another time through recordings. The novel forms are ‘External-online’, with all learning and assessment online, and ‘Multi-modal’, which requires some in-person training or assessment, with the remainder being exclusively online.

Online delivery offers greater access for people who might otherwise be unable to take classes in person, such as people with childcare and work responsibilities or who are living in regional areas where there is no

physical campus (Stone 2017). It also expands options so that students living in one city can study in another, which may increase competitive pressures in this market segment. Online formats also enable uptake of innovative technologies to improve student learning, such as the use of virtual and augmented reality in health science instruction (Barteit et al. 2021; Canty et al. 2019; Chen et al. 2020), and more student control over classroom dynamics, such as more student-led interaction (Paul and Jefferson 2019).

Pandemic-related restrictions in 2020 accelerated the uptake of online delivery as in-person delivery was prohibited or discouraged.¹⁰³ In the VET sector, a smaller proportion of registered training organisations (RTOs) shifted to fully external learning and assessment, given requirements for face-to-face work placement. Still, many VET providers moved instruction to blended or external formats — the percentage of fully face-to-face providers fell from 49% to 18% during the pandemic (ASQA 2021).

This transition was not smooth, particularly in the higher education sector. The first year of the pandemic saw a spike in student complaints to TEQSA (TEQSA 2022b). A mid-2020 survey of 787 students at an Australian university reported that 75% of respondents found it more difficult to study online than in-person (Dodd et al. 2021). However, these problems will at least partly reflect that the sudden onset of the pandemic gave universities little time to plan for exclusive online delivery.

Putting aside these transitional problems, the effectiveness of online teaching and learning depends on the student, the course, the mode of delivery and the outcome being measured. A literature review of online learning in US college courses found that most students anticipate compromised learning in entirely online courses (Xu and Xu 2019, p. 29). However, these impressions do not appear to systematically translate to poorer academic performance. Multi-modal delivery saves time for students while yielding similar average academic performance as face-to-face delivery (Alpert, Couch and Harmon 2016; Bowen et al. 2013). The effect of the purely external format versus face-to-face delivery on student grades is more equivocal. In some studies, it fares worse than face-to-face delivery (Alpert, Couch and Harmon 2016; Figlio, Rush and Yin 2013) and some much the same (Paul and Jefferson 2019).

The effectiveness of online learning also depends on the level of investment by the institution. One possible reason for the mixed results of purely external delivery is that the quality varies greatly by provider.

At the top end, developments in online provision have the potential to increase the overall quality of tertiary teaching. These allow bundling in-person tuition with innovative digitally-supported instruction and integration of MOOCs from other institutions (for example Wang and Zhu 2019), while also providing a resource for professional development of teachers (Despujol, Castañeda and Turró 2022). Taking advantage of these developments requires universities to invest in complementary resources and staff with online expertise.

At the other end of the spectrum, learning could be worse if the online delivery simply reproduces in-class lectures, but with a less engaged lecturer and class. One subject at an Australian university offered 'online lectures' that consisted of the class slides accompanied by an automated voice program reading them. If providers view online delivery as a cost-saving device, allowing them to save on lecturer time, then quality is likely to fall.

The flexibility afforded by online learning also depends on educators making their courses accessible for those with disability, particularly the vision- and hearing-impaired (Pittman and Heiselt 2014; Prytz 2020). Regardless of the form of online provision, students without stable internet access or adequate technology

¹⁰³ The progressive expansion of online learning in Australia began long before the pandemic. Large private providers have emerged online, such as Coursera and edX, and universities have recognised the potential to scale up offerings through massive open online courses (MOOCs). In the years leading to the pandemic, about 30% of higher education enrolments were already external or multi modal (Lodge et al. 2022). The proportion of individual VET subjects delivered fully online grew from 6% to 13% between 2010 and 2017 (Griffin and Mihelic 2019, p. 10).

do not have an equivalent learning experience to their peers — a disparity the pandemic highlighted (Means and Neisler 2021). These are not reasons for reducing online delivery, but rather for improving digital services¹⁰⁴ and accounting for the need to vary how courses are delivered to students with diverse needs.

In-person teaching will return, as students value the ‘campus experience’ and the personal networks built with other students. But this will not crowd out ‘optional-online’ delivery, while external-online and to a lesser extent, multi-modal, delivery will wane in importance but persist, as will innovation in the use of these modes (Richard Caladine, sub. 113; Universities Australia, sub. 195). In a survey of VET providers, 62% of RTOs who moved instruction online stated they would use more blended learning in course delivery (ASQA 2021).

Where their pay structures do not already do this, allowances paid to teaching academics for professional development to acquire online skills and for the additional time to prepare innovative online content may be justified. There is some anecdotal evidence that as online delivery ramped up during the pandemic, academics’ workload substantially increased (Zhou and Tariq 2021). To sustain innovative online delivery in a post-pandemic world, these additional workloads may persist, especially for new academics without experience in online delivery. Failing to adequately remunerate teaching staff for the time to prepare quality online material would likely lead to lower quality online teaching.

4.2 Leveraging information to promote quality

Revealing the performance and content of teaching provides incentives for universities and teachers to improve, can facilitate peer learning, and in its own right serve to educate the wider community. However, existing approaches are out-of-date, and metrics that might guide students need further development.

Making the invisible visible

Most university lectures are now either posted or delivered online. This material is an under-exploited resource for students, peers and faculty leaders, and there are few reasons for its use to be confined to the students attending the specific class. Divulgence of the material to other students, peers and the public more generally has several social and economic advantages:

It encourages higher quality teaching — teachers can gain insights into the approaches taken by peers and will be motivated to improve their own teaching because it is more widely observable by students and their peers (including senior academics). In this respect, it has elements of formative assessment, but mediated by technology. In turn, academic leaders would have greater incentives to ensure adequate professional development as teaching quality would be more obvious to external parties.

It improves matching efficiency and empowers students — students contemplating a course could observe the difficulty and relevance of the content and the pedagogical style of the teacher to see if it suited their needs, while also giving them insights into quality. In effect, it would be a ‘try before you buy’ option that would partly address the fact that a university education is an experience good. It would be a complement to information provided through QILT and other quality measures. The approach is consistent with the general shift toward a consumer-centric focus by government-funded and regulated services — which recognises that services should accommodate people’s different preferences and capabilities and help them make choices. In turn, the revealed preferences of students would strengthen faculties’ incentives to adapt their approaches to professional development, appointment of tertiary teachers, teaching and support.

¹⁰⁴ As discussed further in this inquiry’s companion volume ‘Australia’s data and digital dividend’.

It assists in lifelong learning — for people who do not want to or cannot afford to go to university, and who do not need accreditation. Open access would pull into the system a new group of students consuming virtual lectures at zero cost but, as noted below, without cannibalising university revenues. At no budgetary cost, this would stimulate skill acquisition and productivity, especially for older people already in jobs for whom the cost of a university education is less likely to be deferred (as HELP loans would be immediately repayable if income thresholds were exceeded).

There are several choices about who could get access to the material and the extent of divulgence.

In a completely open model, all online lectures would be available for free to anyone — student or not. Free provision is consistent with large public subsidies given to higher education and the non-rivalrous nature of ideas (one person's consumption of an online resource does not reduce the capacity of anyone else to consume it). The same principle underpins the requirement that research funded by government be shared openly (for example, as in the NHMRC's and ARC's Open Access Policy), so extension to lectures is a logical progression. An open model would assist all teachers and all would-be students regardless of the institution because it would demonstrate excellence in teaching across all of them.

Universities may have some concerns that an open model would reduce their income from fee-based online courses, and in particular from the international student online market. Income losses would be a risk if prospective students could consume course material for free and sidestep universities via some other reputable method for accreditation. That seems doubtful on several grounds. First, there are very limited options for accreditation outside universities, which is an essential and exclusive function of universities. Second, the university experience goes beyond the material presented in classes and includes assessment and feedback, individual interactions between students and staff, and (for in-person students) the amenities and experiences of university. It is notable that one of the world's best universities, the Massachusetts Institute of Technology (MIT), has made all its lectures available online for many years.¹⁰⁵ There is little evidence that free courses undermine enrolments in fee-based courses (for example, Johansen 2009), and indeed, they may increase enrolments if the university demonstrates its quality.

Universities may claim that the material is their Intellectual Property (IP). Resistance to change based on that claim ignores that government is an implicit shareholder in universities and could quite reasonably seek to maximise the public returns of the investments it makes (noting that reverting to a demand-driven system will further expand the Australian Government's stake in the sector). But any class content drawn from another IP source (such as MOOCs) should not be included.

Concerns about student privacy (for example, where they give presentations in class) can also be averted by seeking consent for the inclusion of their material or for selective publication of the lecture.

There are accordingly strong grounds for universities to be required to provide their lectures online to the public on an open-source basis, but with no requirement that the universities accredit any training. The requirement would be for the most simple least cost way of presenting the information.

An inferior option, but that would still improve teacher quality and assist informed choice by students, would be online divulgence of a few randomly selected lectures of any given course to all students and teaching peers in a university.

¹⁰⁵ MIT highlights the benefits of its long-running open access provision of thousands of MIT courses for improving teaching quality and supporting lifelong learning (MIT 2023).

Strengthening performance measures

Information about the quality of higher education providers' teaching may improve performance through three primary avenues. Higher performance ratings may increase student demand and revenue, which creates financial incentives for universities to improve their performance if they can divert students from competitors, or, in a demand-driven system, attract new students. Moreover, universities themselves may respond to benchmark data to the extent that their relative status is a motivator for performance. The regulator, TEQSA, may also use indicators of lacklustre performance for investigations of quality.

The capacity for metrics to have these effects depends on many criteria: Do students use ratings, and if so, in an informed way? Is the data readily accessible? Do ratings meaningfully and accurately measure what matters to students, government and the community generally? Does demand respond to ratings and do universities attempt to increase their performance if their ratings are poor? Do they succeed? No comprehensive assessment has been made of existing metrics based on the above criteria and doing so is best achieved by giving that task to the Australian Education Research Organisation (AERO) (as discussed below). However, the Productivity Commission has assessed the available metrics against some of the key criteria.

Current performance metrics could be improved ...

The dominant Australian performance measurement framework draws on QILT, which has strong *face* validity. It is similar in aspiration and design to the UK's National Student Survey, but more comprehensive. It covers most of the domains that are relevant to students — skill development, engagement, resources and teacher quality (appendix A). Survey responses are, by contemporary standards, high at about 40% for the Student Experience Survey module (SRC 2022b, p. 2). QILT follows students after they graduate, measuring labour market outcomes, employer satisfaction and whether skills acquired in training are used. There is also relative stability in university ratings over time, which suggests some degree of reliability.¹⁰⁶ Stable results are necessary if ratings are to inform the choices of prospective students.

However, QILT has several deficiencies when evaluated against standard criteria for any performance assessment tool — accuracy, precision, reliability and validity (AERA, APA & NCME 2014). The validity of QILT — the extent to which it measures what is intended — is of particular concern. For example, it does not predict labour market outcomes well (appendix A). A large-scale meta-analysis of the connection between student evaluation and student learning found no robust correspondence (Uttl, White and Gonzalez 2017).

In principle, another deficiency of QILT is that it is implemented at the overall field of study level for each institution, and so does not provide information about how individual components are delivered or of the performance of any of the many teachers engaged in providing the training. However, overcoming that flaw would need to address the significant problems associated with student assessments of individual classes and teachers. The evidence suggests that student ratings of teaching quality are systematically biased indicators, for example being biased against teachers who are female, ethnic minorities, or not from an English-speaking background — or reflect dissatisfaction with a bad grade (Boring and Ottoboni 2016;

¹⁰⁶ On many important metrics of performance, the correlation between an initial year's scores and the next year is well above 0.8 (the threshold for good reliability) and typically decays slowly for future years. For instance, using the share of students who say teaching quality is excellent, the correlation between 2017 and 2018 scores is 0.95, and only falls to 0.86 between 2017 and 2021. Accordingly, *to the extent that the metric is valid*, 2017 score results would generally have helped students make an informed choice for attending a university in the years 2018 to 2021. However, analysis of the QILT data shows that rankings are less reliable and so should not be used as measures of prospective university performance. This has also been found for the various global rankings of universities. These results are based on Commission analysis of unpublished QILT data on shares of students rating teaching quality as poor and excellent from 2017 to 2021.

Kreitzer and Sweet-Cushman 2022; Stroebe 2020). Students claim to have learned more when they are given cookies or chocolate in class (Hessler et al. 2018; Youmans and Jee 2007). Moreover, student evaluations, even if using a valid instrument, suffer from high levels of inaccuracy: teachers are frequently rated by students as poor when they are good (a false positive), or rated as good when they are poor in achieving good learning outcomes for students (Esarey and Valdes 2020).

Overall, all assessment tools have shortcomings, and even if QILT is not a perfect way of assessing a provider's performance, providers with lower ratings across a range of dimensions could treat these as red flags for further investigation, as could students considering their choice of provider. It is also notable that there are some fields where there are consistently low performance scores across all universities *and* with particularly large deviations between them.¹⁰⁷ This suggests possible attention to the teaching of some fields more generally. The problems of survey bias and high false positives and negatives are greatest if test results are used for assessing individual teachers, but as QILT is published at the field and institutional level, inaccuracy is reduced through averaging, while bias is not such a problem if it is common across institutions. Furthermore, as QILT relates to the overall experience of the student rather than an average of their class evaluations, it may be less affected by the biases of individual class evaluations described above.

There is scope for refining QILT by:

- periodically re-validating the survey instrument. This would be achieved by surveying a sample of classes using the existing QILT survey and an appropriate range of new questions that also probe quality and then identifying the questions (and their weights) that lead to the greatest correspondence to a 'gold standard' measure of performance as given by independent expert assessment of quality. This is the usual approach for creating and validating psychometric and other similar screens. This could bring QILT results into closer alignment with expert assessment, which given its costs, can only be sparingly applied.
- linking QILT to administrative data to provide a more comprehensive measure of employment outcomes over longer periods to supplement survey data on graduate outcomes.

Refinement should only go so far. In principle, it would be desirable for QILT to measure the value-added of higher education providers by controlling for student characteristics and other factors that might confound the links between teaching quality and outcomes. If feasible this would isolate the *causal* effect of provider quality on students' experiences, their dropout rates, and their acquired knowledge, skills, work-readiness and personal development (York, Gibson and Rankin 2019). However, attempts to measure learning gain have generally stalled or been abandoned due to methodological flaws and high costs. The OECD ceased work on the Assessment of Higher Education Learning Outcomes project (colloquially referred to as 'higher education PISA') after governments withdrew support; the UK Office for Students has no further research into learning gain planned after reports highlighted methodological issues; and Australian Government plans to use the Collegiate Learning Assessment were dropped a decade ago (Coaldrake and Stedman 2016; Office for Students 2018a). Coaldrake and Stedman (2016, p. 99) observed:

Unfortunately in practice we do not have standardised definitions of what students are supposed to learn (and with constant changes in knowledge this is not a bug, it is a feature) and disentangling the various factors that influence student learning is a formidable task. As a consequence, we have to weigh very carefully the costs and benefits of seeking inevitably imperfect answers.

The academic who oversaw the UK's 'Learning gain pilot project' commented more pithily that learning gain is 'Like dark matter, we know it's out there, we just could not pin it down' (Kandiko Howson 2022).

¹⁰⁷ Based on QILT data for 2022 extracted from the Good Universities Guide.

... and dissemination to students enhanced ...

Regardless of the quality of any information on comparative provider performance, students need to be able to access the information, interpret it well and use it to inform their choice about a provider or course. The task for students is hard because of the confusing and contradictory set of performance measures promoted by universities, various global rankings, and media. A major stumbling block is that all of the material is curated by third parties who do not know what any given student expects from a course or subject (unlike open source lectures, discussed above, which could provide a more direct line of sight).

The global and Australian evidence shows that university ranking and other third-party performance measures have a mixed impact on students' choices. For example, in the United Kingdom, only 23% of university applicants in 2019 reported awareness of the Teaching Excellence Framework — a rating of higher education providers' teaching — and less than half of them used the ratings to inform their choice of provider (DfE and UCAS 2021). A Canadian study found students rarely consulted ranking publications, basing choice on information from peers and family (Milian and Rizk 2018).

The implication is that government and providers should raise student awareness of resources that can inform better choices. For example, resources could be included prominently in career guidance and at the time students enter their course preferences as part of the Universities Admissions Centre application process. The Australian Government has taken steps to enhance informed decision making. Some of the detailed data from QILT is accessible to prospective students through the ComparED website, which allows potential students to search for a subject area, find all providers offering courses in that area, and view summarised QILT measures.¹⁰⁸

However, ComparED enters a crowded space and competes with some other non-government-funded sources of information (such as the Good Universities Guide — the GUG). The GUG publishes material on course availability and content, costs, careers, scholarships, open days, and a key set of QILT indicators. In comparison, ComparED publishes a slightly more comprehensive set of QILT data, but does not provide any broader information about providers.

Moreover, the guidance to students provided by ComparED may be misunderstood. For example, a person wanting to know where to study applied econometrics will find high student satisfaction rates in non-universities such as the Christian Heritage College (89%) and the Australian College of Physical Education (88%). These are not the best places for obtaining the relevant skills compared with alternatives, such as the notionally lowly-rated University of Melbourne (50%). The key problem is that the same satisfaction rates are provided for all of the subjects in a broader study area (like business and management studies), rather than shedding light on the capabilities of the provider in the specific areas of study of interest to students. Business and management studies can include subjects as disparate and unrelated as actuarial studies, sports administration and advertising and marketing communication.

ComparED should be adapted to address its ambiguous reporting. However, an alternative option would be to support the incorporation of the more comprehensive QILT data from ComparED into the GUG or other non-government guides given their broad coverage of many other facets of providers relevant to informed student decisions.

Some suggest displaying a single star rating prominently alongside qualification materials and at key decision points to inform a wider base of potential students and to simplify choices. However, the more complex a

¹⁰⁸ There are some parallel issues for the VET system, previously highlighted by the Commission (PC 2020c, p. 211). The study recommended addressing gaps in the availability of RTO-level information, including quality measures such as graduate outcomes, student and employer satisfaction, and indicators of teaching quality. Reforms are underway.

service, the less meaningful are single simple metrics. A single star rating fails to consider the multiple domains of performance that students care about, while applying fixed (and arbitrary) weights to multiple domains ignores the variations in student preferences about them. Moreover, providers offer thousands of courses across hundreds of subjects. This variety is too great to realistically and reliably use survey data to assess performance. Yet students are interested in the area of proposed study, not averages across unrelated areas. In any case, the methodological problems affecting QILT cast doubt on the validity of star ratings, a point also raised by participants in the Productivity Commission's roundtable on tertiary education.

... but ratings alone are not a strong motivator for improvement

Universities make some use of ratings. For example, good ratings are sometimes actively marketed to attract students and ongoing poor student ratings of given courses will typically trigger some response. However, the key question is whether universities improve their outcomes individually and whether there is some convergence among them as 'laggard' universities seek to catch up to top performers. The more that low QILT scores motivate university management in their own right to improve their performance (the 'shame' factor), the more that scores should converge between universities.

However, there is no evidence of strong convergence in performance across most of the dimensions of teaching performance, such as overall satisfaction, teacher quality, course relevance, and intellectual stimulation of students.¹⁰⁹ From 2017 to 2021, most higher-performing universities remained top-performers, while most lower-performing universities stayed in the bottom part of the distribution (figure 4.3).¹¹⁰

Drilling down to the level of the teacher and the lecture room

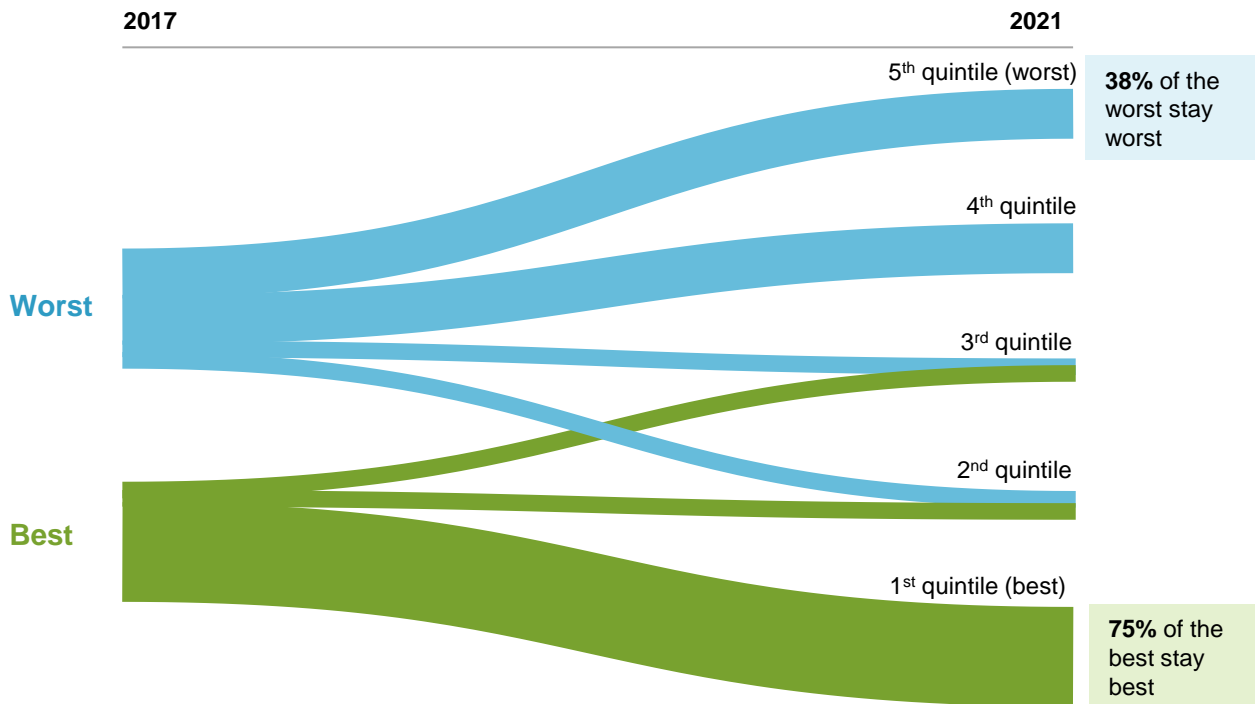
QILT does not seek information on the performance of any given teacher, which is the level where behavioural change is most desirable. Instead, higher education providers seek information on individual teacher performance through their own student evaluation surveys. Low student response rates often affect their usefulness for feedback to teachers and faculty leaders. This also means that the results are too unreliable to release to prospective students and, given non-uniformity in survey questionnaires across providers, such information cannot be used to compare teaching outcomes across them. They are also afflicted by all the concerns raised above about the bias, validity and accuracy of student evaluations, and to a greater extent than QILT because results are not averaged. The greatest value of student evaluations may be as a screening test for subsequent, more accurate review by colleagues or in promoting critical self-reflection, rather than as a basis for 'disciplining' notionally poor teachers.

There are alternatives to student appraisal that provide better insights into individual teacher and departmental teaching quality. In particular, direct observation of the performance of teachers by their peers or by external independent parties can avoid some of the biases that arise from surveys and the risks that students respond to irrelevant aspects of course delivery (the 'chocolate cookie' effect) or those with poor grades mark down their teachers. When accompanied by training of assessors, direct observation allows the consistent and considered application of a common assessment framework.

¹⁰⁹ Convergence is measured by so-called σ -convergence which is the trend in the coefficient of variation (or the standard deviation divided by the mean) across ratings by university from 2017 to 2021.

¹¹⁰ On the positive side, the share of students who rated teaching quality as 'poor' fell from 2017 to 2021 for 80% of universities, albeit by a small amount (mostly by about 0.2 to 0.3 percentage points from base levels of about 3.5%). Equally, most universities (almost 70%) demonstrated an increase in the share of students rating teaching quality as 'excellent', although again by a relatively small margin compared with base levels.

Figure 4.3 – The good stay good, the mediocre stay mediocre^a
Universities with the highest and lowest shares of students saying overall quality is ‘excellent’ 2017 to 2021



a. In the QILT survey, overall university satisfaction can be classified as ‘poor’, ‘fair’, ‘good’ or ‘excellent’. Considering only the distribution of the share students responding ‘excellent’ — the ‘worst’ universities are those with the lowest share of students (20th percentile and lower) saying overall university satisfaction levels are ‘excellent’ in 2017, while the ‘best’ include universities that have the highest share of students (80th percentile and higher) saying that overall university satisfaction is ‘excellent’ in 2017.

Source: Productivity Commission analysis of unpublished QILT data.

Peer review comes in many flavours — different methods, assessors and purposes (Johnston, Baik and Chester 2022). For instance, formative peer review relies on observation and appraisal of teacher practices by colleagues, and diffusion of best practice among them. Formative assessment has the value that both the reviewer and the reviewed benefit from the process (WSU 2020, p. 13). It is more closely related to coaching. In contrast, summative review is undertaken by an external party or a senior academic, often as part of a process for determining ongoing employment or promotion, although it too may have formative elements. Summative review may prompt improvement in teaching to avoid the consequences of an adverse review but is non-co-operative by nature and risks greater resistance by academics than co-operative models. Some universities have ceased summative assessment, such as the University of New South Wales (UNSW 2023).

Many Australian universities have active formative assessment peer reviews, although it appears these can be voluntary and vary in their rigor. There are grounds for an agency (discussed further below) to undertake a rapid review of the use of formative and summative review processes in higher education institutions and to encourage their development where needed.

While peer review is often an internal matter, there is also scope for complementary centralised reviews undertaken by a single agency. Such reviews can provide comparable indicators across different providers and subjects, and avoid any collegiate bias in assessments at the departmental level. However, full subject-level review is costly and administratively burdensome, requiring experts in each field and significant time. A program in England during the 1990s proved costly and may have been gamed (box 4.1).

Box 4.1 – Case study: England’s comprehensive subject review

The most comprehensive higher education subject review ran from 1993 to 2001 in England and Northern Ireland. The Quality Assurance Agency for Higher Education conducted subject-level reviews encompassing ‘sub-degrees’ to PhDs, and covered all departments at all higher education providers. Its two main goals were to ensure that teaching in the sector was of a satisfactory quality and to encourage further improvements. It did so by tying review results to funding outcomes.

Subject reviews were conducted by teams of at least three subject specialists and a review chair. Subject specialists were largely academics, although in some cases industry professionals were also included. All specialists received training before site visits. These visits lasted three to four days, and included meetings with subject staff, students, graduates and employers. They also included observing teaching and learning and reviewing samples of assessed student work.

Over its seven cycles, 2904 review reports were published. If a department received any inadequate grades, its subjects would be re-reviewed within a year. A further low grade at re-review could result in the partial or complete withdrawal of funding. Over its lifetime ‘the overwhelming majority (99%) of subject review visits resulted in the provision being approved in the first instance’ (p. 4). There was only one instance of a failed re-review (QAA 2003). Where there was improvement in outcomes, it was difficult to determine whether this reflected genuine quality improvement or learning to game the system (Cook, Butcher and Raeside 2007).

The program was replaced with a lighter-touch system in the early 2000s, owing in part to its public cost and the overhead burden to institutions. The ‘institutional audit’ system disentangled review from funding under the assumption that the comprehensive review program had made institutions’ internal quality assurance procedures more robust and hence more appropriate for the government to rely on. The institutional audit system was itself replaced in 2011. Quality assurance processes in England underwent several changes with the regulatory power of the Quality Assurance Agency diminishing over time.

Lighter-touch assessments of quality at the provider rather than course level are more attractive. For example, in Scotland, a central agency appoints a team of staff and students to review a subset of providers on a five-yearly basis. The review’s primary focus is whether the institution as a whole has effective arrangements for ‘enhancing the quality of the student learning experience and for securing the academic standards of its awards’ (QAA Scotland 2017, p. 14). The team determines this through meetings with staff and students. Individual review outcome reports are published along with thematic reports that collate findings from each review cycle about industry-wide trends and areas for development. Each institution must report a year later on how recommendations have been implemented.

The Australian Government should consider emulating these lighter touch approaches to spur continuous improvement across the sector, although the exact design of the arrangements would need to consider:

- the **type and depth of assessment** needed to effectively appraise teaching. For example, a centralised mechanism could involve observation, interviews, sampling of exam papers or external assessment of students
- the **unit of assessment**. For example, review at a subject level is likely to be most useful, particularly given the trend of providers allowing students to stack subjects to build their own degrees. However, this is also likely to be more costly
- **administrative burdens** on already encumbered teaching staff. Rolling or randomised targeting of specific institutions or subjects each year would reduce burdens by limiting the frequency with which a given faculty or

school is reviewed (for example, to every 5–10 years). Limiting the depth of reviews by taking sub-samples of assessments or externally assessing smaller random samples of students would also lower costs

- **the dangers of biased assessments.** A process for peer review of exams or assessments could be based on the double-blind approach used for research review to eliminate bias (although full anonymity may be challenging for smaller fields of study)
- **who undertakes assessments,** including the roles for academics, industry experts and students in supporting the assessment process
- **the consequences where teaching quality is found to be poor.** This could include requirements to initiate processes to remedy faults with re-assessment after an agreed period or, in extreme cases, the removal of course accreditation by TEQSA.

While TEQSA's current role is ensuring minimum standards, its remit (and funding) should be expanded to oversight these review processes, giving it a more active role in improving quality even among higher performers.



Recommendation 8.9

Leverage information to improve quality

The Australian Government should:

- increase the transparency of teaching performance by requiring universities to provide all lectures online and for free
- refine and validate new Quality Indicators for Learning and Teaching (QILT), and use these and other data to develop and publish more meaningful indicators of tertiary teaching quality and performance
- adapt the ComparED tool to address the risk that students may misunderstand its information and consider the option of abandoning it and providing additional QILT data to non-government funded websites that cover many other aspects of higher education providers relevant to student choice
- give the Tertiary Education Quality and Standards Agency (TEQSA) the responsibility to undertake external university teaching quality assurance review processes akin to those applied by the Quality Assurance Agency (Scotland).

4.3 Rewarding and spreading best practice teaching

There is little evidence that the higher education system is *systematically* failing to provide adequate training, but equally, universities and their staff have mixed incentives to perform their teaching function well and a significant minority of students say that many aspects of their training are only of poor or mediocre quality (appendix A). Given the pre-eminent and increasing role of higher education in raising the skills of new generations of Australians, improving the effectiveness of teachers in imparting skills has high potential productivity and social benefits (chapter 1).

Professionalising the tertiary workforce

School teachers are required to undertake years of training and professional development, and are supported by a range of institutions to fulfill their professional role. Professionalising the teaching role in tertiary education is, by contrast, in its infancy. Notwithstanding that higher education providers implement various strategies to improve teaching and promote collaborative peer review, there is uncertainty about the sophistication and resourcing of these strategies and the extent of take up by teachers. At least a few years

ago, the answer was not much (Norton, Sonnemann and Cherastidtham 2013). While comparable contemporary data are not available, other survey evidence suggests that higher education teachers do not get strong support in any of their functions (Christian et al. 2021).

Enhance capabilities

One avenue is to strengthen the capabilities of universities in offering support. Establishing a trusted evidence base about how to support high quality teaching and diffusing its lessons is one step (recommendations 8.9 and 8.11), as would be greater recognition of the value of the best teachers. Moreover, TEQSA should assess whether universities are making sufficient investments in the creation and use of, high quality, tailored professional development courses and materials for supporting teaching excellence, and if not, engage with universities to ensure this occurs, with encouragement of a collaborative approach between universities. AERO would contribute advice about what constitutes quality material (as discussed further below).

Research funding rewards for excellent teachers

Rewards, whether pecuniary or not, create incentives to perform better. But the form of the 'carrot' matters.

Notwithstanding enduring controversy over its effectiveness, there is at least *some* evidence from comprehensive meta-analysis that performance-based salary bonuses in school settings can improve outcomes, although its cost effectiveness and impact on student outcomes is context-dependent (Pham, Nguyen and Springer 2021).

However, there is no evidence base to assess the likely impact in a higher education setting, which, in any case, involves some additional complexities compared with schools. In particular, while quality school teaching is also hard to define, there is a greater capacity to monitor teacher practices and outcomes through standardised tests, which provide a more reliable benchmark for comparing performance. The problems plaguing student evaluation tests and the absence of standardised tests amplifies the difficulties of bonuses in higher education. *At this stage*, it would be risky for the Australian Government to fund or require performance-based pay for higher education teachers. This is especially so given that one of the most prospective avenues for raising teacher quality in higher education is the greater use of formative and peer assessment, which is based on co-operation rather than competition between educators.

Nevertheless, a different type of carrot may prompt improvements without the problems of pay bonuses. Awards for excellence are one, and have a strong evidence backing for their effectiveness (Frey and Gallus 2017a, 2017b). They can reinforce intrinsic motivations, encourage loyalty to the mission of the organisation, and can have bigger effects on performance than pay increases when the recipient's performance is hard to accurately monitor (though to work well, there has to be integrity to the process of bestowing the award to reduce debates about the merits of the choices). Standard academic awards are commonly used throughout the sector. Their profile and impact would be raised if they were used as a source of evidence for best practice (recommendation 8.11) and potentially, if more of them were given.¹¹¹

Linking awards to modest research funding for the award winner also looks to be a promising additional incentive. The Griffith Business School developed a Teaching Excellence Recognition Scheme (TERS) in 2014 that was explicitly designed to strengthen incentives for academics to invest in teaching (Berry and Guest 2018). Under this scheme, staff are recognised for their teaching excellence (drawing on a range of measures including student assessment, participation in peer evaluation, demonstrated innovation in teaching, and professional development among others) and then given funding for academic purposes (such

¹¹¹ One academic noted that in his institution, about one quarter of staff showed high levels of teaching performance, but at the rate at which awards were given out, might have to wait up to 25 years to be recognised (Berry and Guest 2018).

as for research or development of training resources). The scheme provides modest funding for a few candidates rather than providing a single ‘winner takes all’ prize, so motivating performance across most staff. A unique benefit of this model is that it combines the prestige of research with the teaching function. Canada has a range of small grants, which vary in their generosity and eligibility, but have similar features and aspirations to the TERS. The evidence suggests that the grants enhance the skills of recipients and lead to high-quality research (Hum, Amundsen and Emmioglu 2015).

There are compelling grounds for wider adoption of such micro-grants.

A new short-term grant to promote primary research into teaching

ARC grants usually provide for three to five years of funding for eligible projects, which is not suited to exploratory and short-term research into academic teaching excellence.

Accordingly, a complementary approach would be to create a modestly funded competitive grants scheme for shorter term projects of 6 months to one year into teaching excellence that academics could slot into their career plans without long commitments to research in this area. Such grants would necessarily involve less compliance burden than existing grants to justify the application costs for academics. A sequence of short-term grants for research by different scholars into teaching excellence would provide for the development of a body of evidence about teaching skills and the likely enhancement of the teaching skills of the researchers themselves. The evidence from an increasingly large group of researchers would feed into the relevant institutions’ practices and would also be disseminated by AERO (recommendation 8.11).

A prime benefit of such an initiative would be to help professionalise teaching as a function in a university as professions are typically characterised by the acquisition and application of expert skills, and such research would establish and legitimise the relevant skills. Success in competitive grants confers prestige on both the researcher and on the area subject to research. This halo effect would be amplified because universities tend to compete on their success in receiving ARC grants more generally, and so their relative success for this tranche of grants would also be a signal of their capability in this area of expertise.

The modest funding required for such grants could either come from the existing ARC funding pool or be supplementary, depending on government budget constraints. Given its novelty, a trial would be prudent.



Recommendation 8.10 Professionalise the teaching role

The Australian Government should bolster the incentives for, and prestige of, higher education teaching by:

- facilitating trials of additional funding for undertaking research and teaching development provided to individual staff based on their teaching performance, drawing on the Griffith Business School’s Teaching Excellence Recognition Scheme (TERS)
- trialling a modest Australian Research Council Grant that provides funding for teaching focused research for 6 months to a year
- enhancing preparation for higher education teaching, informed by the evidence collected by initiatives outlined in recommendations 8.9 and 8.11.

Learning about learning

While there are some academic centres for research into tertiary education teaching,¹¹² pedagogical research in tertiary education and clear guidance about best-practice is less developed compared with the school sector. Nevertheless, there is good evidence about the value of pedagogical training of higher education teachers (Chalmers and Gardiner 2015; Postareff, Lindblom-Ylänne and Nevgi 2007; Vilppu et al. 2019), which with synthesis and further research would provide better guidance about how to teach post-school students.

There is no body in Australia charged with synthesising and undertaking research into post-school teaching, promoting teaching excellence or sharing lessons about improving teaching quality in the tertiary education sector. The former Office for Learning and Teaching, which was responsible for supporting and incentivising effective teaching and encouraging innovation, was defunded in the 2016-17 Budget. In contrast, following the creation of AERO, there has been a renewed effort to create and diffuse an evidence base for excellence in early childhood and school teaching.

The differences between desirable teaching practices in school, VET and higher education have narrowed as the higher education system has shifted from an elite-only system to the primary destination of a far more diverse group of students. In any case, the process of learning does not radically change in one year as a student transitions from school to subsequent training.

Given the complementarity between teaching in all parts of Australia's education system, AERO should assume a broader role in developing an evidence base for all types of teaching, making it accessible to users and encouraging adoption and use of the evidence in teaching and education policy. Commensurate additional funding would be required for AERO to exercise this role.

In undertaking that role, one (of many) potentially useful sources of information for AERO would be any lessons from the Australian Government's Australian Awards for University Teaching. There appears to be little attempt to document and distribute the lessons from awardees' success to other academics throughout Australia or to exploit the observed practices of high-quality teachers as an evidence base. An added advantage of systematically examining awardee practices is that it also adds status to the role of teaching.

A question is whether AERO's remit should go further to include coordination of pilots of pedagogical practice across a sample of providers to evaluate what works best in different contexts. This would represent a significant shift in AERO's function and expertise though that should not ultimately rule it out. However, in the medium term, the highest dividends will probably emerge from synthesising best practice from the existing Australian and global evidence base, noting that there are other avenues for primary research about effective tertiary teaching (such as ARC grants and the National Priorities Pool Program).

¹¹² For instance, the University of Queensland Institute for Teaching and Learning Innovation, the Melbourne Centre for the Study of Higher Education, and the National Centre for Student Equity in Higher Education.



Recommendation 8.11 Develop an Australian evidence base

The Australian Government should extend the role of the Australian Education Research Organisation (AERO) to the collection and dissemination of evidence on best practice post-school teaching, covering both VET and higher education. As part of this new role, AERO should also:

- draw on the lessons from the teaching practices of awardees of the Australian Government's Australian Awards for University Teaching
- undertake a rapid review of the use of formative and summative review processes and professional development initiatives in higher education institutions.

Treading cautiously with financial rewards and penalties

In principle, financially penalising or rewarding providers based on performance creates incentives for them to lift the quality of their courses, resourcing and teaching staff. The Australian Government introduced a performance-based funding (PBF) scheme in 2020 that linked funding incentives to four measures (table 4.1). The scheme was put on hold due to COVID-19, although it is scheduled to re-commence.

Previous PBF schemes in education have proven problematic in Australia and globally, including encouraging gaming (such as enrolling fewer students from groups less likely to perform well), lack of impact, and unfairness.

- The most significant Australian PBF scheme was the Learning and Teaching Performance Fund, which overwhelmingly rewarded universities that were able to attract better-performing students. In 2006, 63% of funding went to the Group of Eight and 0% to the Australian Technology Network of Universities despite the two groups serving similar numbers of students. In later years these disparities were reduced, but still remained very large (Harvey, Cakitaki and Brett 2018).
- Most US states and many European countries also have PBF. Systematic reviews and a meta-analysis of US schemes have generally found no effects on graduation rates, the metric targeted by these schemes, but often found decreases in participation by racial minority and low-SES students (Kivistö and Kohtamaki 2015; Li 2021; Ortagus, Kelchen, Rosinger & Voorhees 2020).

The PBF model introduced in Australia in 2020 was designed to avoid some of the pitfalls experienced by similar schemes overseas. For instance, rewards for increasing access to equity groups, such as Aboriginal and Torres Strait Islander students, account for the desirability of a more inclusive higher education system. The approach reflects some desirable features for such a scheme previously outlined by the Productivity Commission in *Shifting the Dial*, such as incorporating student-reported experience and outcome measures and differentiating by student type and discipline (PC 2017c, p. 35).

Table 4.1 – Performance-based funding metrics and weightings^a

Metric	Weight	How is it measured?	How is it assessed?
Graduate employment outcomes	40%	The overall graduate employment rate four to six months after graduation for domestic bachelor students based on QILT data, adjusted for local employment rates.	A university's performance against its own 5-year average.
Student satisfaction	20%	Domestic bachelor student satisfaction with teaching quality based on QILT data, adjusted by study area.	
Student success	20%	Attrition rates adjusted for students moving providers/courses, and controlling for some factors that influence attrition: full/part-time study, mode of attendance, entry basis, field of education, and age.	A university's performance against its predicted outcomes after controlling for the listed factors.
Equity group participation	20%	Participation of Aboriginal and Torres Strait Islander, low-SES and regional students.	A university's equity group participation rates compared with sector averages. ^b

a. Funding is allocated based on incremental bands within each outcome metric category. Universities receive 100% of the total for high performance, down to 80% and then 60% for poor performance. There is further scope for the lowest band to be ratcheted down gradually where a university performs poorly year-on-year. **b.** For regional and Aboriginal and Torres Strait Islander students, participation at over one half of the sector average is sufficient for full funding, for low-SES students participation at greater than one standard deviation below the sector average is sufficient.

Source: DESE (2021c).

Nonetheless, PBF in its current form is not likely to achieve its objectives, and the prospect that more sophisticated versions will address its deficiencies is uncertain. QILT is a useful tool, but its flaws suggest that providers should not be penalised based on differences in their scores (and it is not clear why teaching quality is the only domain of experience that counts). Controlling for local labour conditions alone is not sufficient to isolate the effect of providers on employment outcomes. In any case, even more sophisticated models that control for other factors do not look sufficiently reliable. As discussed in section 4.1 and appendix A, even after accounting for a range of confounding factors, variations in labour market outcomes cannot reliably be attributed to the efforts of providers, and using outcomes only four to six months after completion ignores that outcome variations between universities can be reversed after longer periods. Equity group participation is a desirable goal, but will only partly be under the control of individual providers, especially as governments play a central role in encouraging such participation and retention through various funding and outreach programs. Further, it may be appropriate for different providers to have different enrolment rates of equity groups as their course offerings, vocational orientation and demographic catchments vary. Penalties for attrition rates ignore the desirability of dropping out for some students and also pose the risk that providers may 'mark easily' to reduce their financial risks.

There are possible alternative incentive mechanisms to PBF, including making universities liable for part of students' HELP debt or withholding part of CGS funding until a student completes their degree (PC 2017a, p. 107). But these have similar or other problems that suggest they too should be treated with caution.¹¹³

¹¹³ Both measures have similar drawbacks associated with attribution and would have a much greater time lag than current PBF arrangements, which blunts the incentives to improve relative to the PBF scheme. HELP debts take 7–10 years to be paid off on average (DESE 2021b), while students frequently take 6–9 years to complete their degree (DESE nd), meaning universities could be out of pocket for investments in quality improvements for years until they pay off. 'Completion bonuses' also serve the same purpose as including attrition as a metric in PBF, which explains over 90% of the variation in completion rates between universities and is far more timely (Wellings et al. 2019).

Possibly the lowest-risk option for using financial incentives to encourage higher quality teaching are modest rewards for providers that are identified as making genuine and successful efforts to improve and use formative assessment tools and professional development. Rewards for inputs are often inefficient, but if they are likely to be causally related to outcomes and if it is easy to measure their uptake, then this approach can be superior to rewards for outcomes that cannot reliably be attributed to the provider.

Furthermore, a return to a demand-driven system acts as a de facto performance-based funding model as providers who can successfully signal their quality will be rewarded through additional enrolments and revenue (chapter 3).



Recommendation 8.12

Favour light-handed and simple incentives over performance-based funding

The Australian Government should:

- put on hold the scheduled commencement of performance-based funding of universities in 2024 and only reinstitute if its risks are better managed and if other approaches to improving the performance of universities have proved ineffective
- explore the option of financial rewards to higher education providers that AERO identifies as having made successful efforts to improve and use formative assessment tools and professional development (drawing on recommendation 8.11).

4.4 Supporting retention and completion

Completion of valuable training, not enrolment, is the goal of education. While non-completers can acquire skills and will often still get jobs, completers tend to get better outcomes. This applies to both universities (PC 2019, p. 47) and VET (NCVER 2021c).

However, defining an 'optimal' level of completion is difficult because some level of attrition is inevitable, can be beneficial and can reflect factors beyond the control of providers:

Factors affecting an individual's completion are complex and can include the level of support from teachers and the institution, course content, course satisfaction, and the student's own expectations and personal circumstances. Institutions can influence some, but not all, of these factors to produce a more favourable outcome. On the other hand, some level of attrition must be expected and should be accepted. (Bradley et al. 2008, p. 19)

In 2019, the most frequently cited reasons for considering early departure from university were dominated by personal circumstances that largely lie outside the control of providers: 'health or stress' (46%), 'need to do paid work' (27%) or 'need a break' (24%) (SRC 2022c). However, others cited reasons related to their learning and teaching experience, such as 'workload difficulties' (25%), 'expectations not met' (22%) or 'academic support' (19%).

VET non-completers overwhelmingly cite employment-related reasons for leaving study. The most common of these are: leaving one's job or changing career, being made redundant, and having poor relations with their manager or workmates. In 2019, 73% of non-completers cited employment-related reasons, far outstripping the share who cited training-related reasons (11%), such as lack of support or being unhappy with the training (NCVER 2020).

The right pathway therefore depends on each student's individual circumstances. Giving students the best chance to follow through with their individual goals — whether this means completing their studies or having a go and dropping out swiftly — can help improve the efficiency and productivity of the tertiary sector.

Risk of non-completion is unevenly spread

Some students and institutions exhibit greater non-completion risk. For universities, equity group students — those from low-SES backgrounds, from remote areas or of Aboriginal and Torres Strait Islander descent — have below-average completion rates within six years of starting a degree (figure 4.4). And the share not completing has increased in recent years, particularly for low-SES and remote students. This partly reflects that the demand-driven system intended to encourage greater enrolments even though providing more opportunity involved a higher risk of non-completion (PC 2019, p. 9).

Lower university completion rates are also observed among part-time students, entrants with ATARs below 70 and those studying externally (that is, off campus or online); completion rates for these groups are very low and comparable to some equity groups. Students in these groups represent a sizeable proportion of the student population: in 2020, external students and part-time students represented 33% and 34% of the commencing domestic student body, respectively. In comparison, low-SES students, the largest equity group with below-average completion rates, comprised 19% of commencing students in 2020 (DESE 2022b). Persistently low completion rates among these non-equity student groups hints at structural factors that make completing an undergraduate degree more difficult for these students. Risks of non-completion are compounded where there are intersections between these groups and equity status (Edwards and McMillan 2015).

Non-completion also varies by institution. A student's choice of institution has the most influence over their chance of attrition, outweighing other student-level factors such as attendance type (part- or full-time), study mode, and equity group status (HESP 2017). Other evidence found similar variations in dropout rates across providers (Cherastidham and Norton 2018). Institutions with smaller student populations and low levels of senior academic staff also have higher first-year attrition rates (TEQSA 2017a). Such variance may reflect institutional-level differences in teaching quality and other capabilities (section 4.1).

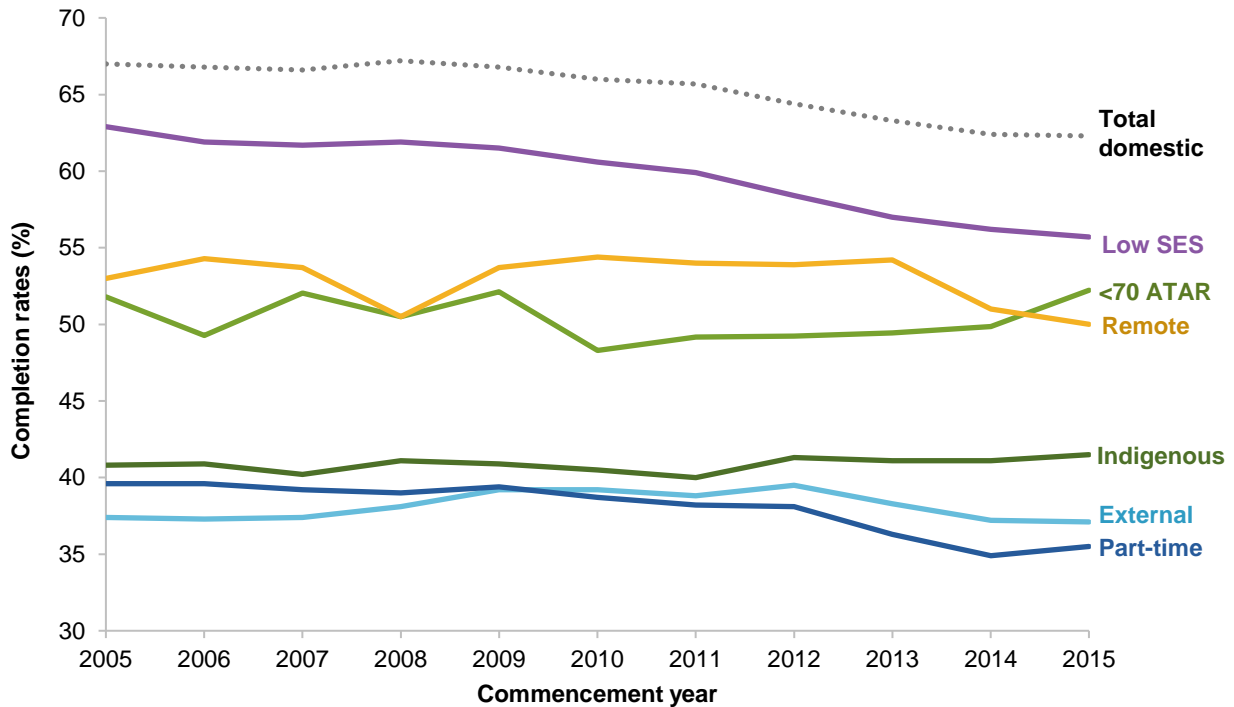
By contrast, VET completion rates have been steadily increasing, and this trend has been reflected across equity groups. Completion rates for students with disability, from very remote locations and Aboriginal and Torres Strait Islander students have all increased over the past decade (PC 2020c). This may be attributed to better targeting of qualifications and skill sets or improved quality of delivery, such that a larger share of students complete only the components of a qualification they really need.

Completion rates also differ by provider type. Those training with an enterprise provider¹¹⁴ are much more likely to complete their qualification than their peers, particularly students at TAFE (NCVER 2021b). However, this may be explained by differences in student mix. The average student attending an enterprise provider is older and of a higher socioeconomic status than those at TAFE (PC 2020c) — two characteristics that improve the likelihood of completing their VET qualification (McVicar and Tabasso 2016).

¹¹⁴ A company accredited to deliver qualifications to its own workers, whose primary business is not the delivery of training and development.

Figure 4.4 – Degree completion rates are below average for several equity and non-equity student groups^{a,b}

Completion rates for bachelor degrees within six years, by student groups



a. The completed course may not necessarily be the same course that the student initially enrolled in. For example, a student may have commenced a science degree but completed an arts degree; or commenced study at one institution, but completed at another. Low SES is measured as the bottom 25% of Socio-Economic Indexes For Areas (SEIFA). SEIFA scores are produced by the ABS and rank areas in Australia according to relative socio-economic advantage and disadvantage. **b.** While part-time students would be expected to complete their courses more slowly, they are still significantly less likely to complete a degree even after 9 years.

Source: DESE (2022a).

Understanding the determinants of non-completion is an important step to supporting optimal completion rates. The variations among different student cohorts and providers suggest that providers could learn from each other about the best ways to lift completion rates for students at greater risk of non-completion.

Improving completion for equity groups continues to be important ...

Education policy for equity groups aims to promote enrolment in tertiary education and increase the likelihood that an enrolled student completes their studies. Addressing these challenges ensures that students who face disadvantage can benefit from tertiary education and helps eliminate structural inequities.

In response to these challenges, the Indigenous, Regional and Low-SES Attainment Fund (IRLSAF) combines several pre-existing funding arrangements designed to support equity students.¹¹⁵

As part of the IRLSAF, the Higher Education Participation and Partnerships Program (HEPPP) provides funding to universities to implement strategies that improve access to undergraduate courses for identified equity groups,

¹¹⁵ Specifically, this includes people from regional and remote Australia, low-SES backgrounds, and those of Aboriginal and Torres Strait Islander descent.

and to support retention and completion for these groups. There is some evidence at an individual program level that HEPPP initiatives have improved outcomes (for example, NCSEHE 2017; Zacharias et al. 2016). However, given other factors influencing completion rates, it is challenging to assess the causal effect of the HEPPP on completion rates, which remain stubbornly high for equity groups. An evaluation of the HEPPP cautiously concluded that there was evidence it contributed to improvements in student outcomes, but that the extent of the impact could not be quantified with available data (ACIL Allen Consulting 2017).

Part of the challenge in identifying the effectiveness of the HEPPP is its concurrent operation with the demand-driven funding system. Indeed, demand-driven funding was accompanied by additional HEPPP funding to universities in proportion to the number of students they enrolled from equity groups, in part to meet the cost of additional support needed to allow some students to succeed. The Productivity Commission found:

Universities choose how to deploy these funds and in practice it supports a myriad of different programs. Their efficacy has not been evaluated at a program level. This study at a system level at least suggests two hypotheses: that the additional funding has been used ineffectively; or that it has proved insufficient to meet the needs of students from disadvantaged backgrounds. Possibly both hypotheses are true. (PC 2019, p. 69)

Supporting access and retention of equity students remains a priority. For Aboriginal and Torres Strait Islander students, the National Agreement on Closing the Gap has set a target of 70% of Aboriginal and Torres Strait Islander people between the ages of 25 and 34 to attain a Certificate III or above by 2031. While progress has been made to meet this gap, increasing from an attainment rate of 19% in 2001 to 42% in 2016, there is still some way to go to meet the target (PC 2022).

But equity education policy has continued to develop. Regional University Centres, which provide facilities and support to students studying in remote areas have been successful (Country Universities Centre, sub. 119), with eight more Centres to be opened in 2023. Further, there have since been efforts to improve the evidence base for initiatives funded under the HEPPP. A new *Student Equity in Higher Education Evaluation Framework* was designed to share lessons across the sector about equity activities that work through three levels of evaluation:

- overall national program evaluation of the HEPPP and its outcomes
- quality improvement evaluations of HEPPP-funded projects
- evaluations of the effectiveness and impact of HEPPP-funded projects (Robinson et al. 2021).

This process has yet to commence but represents a positive move toward ensuring that HEPPP funding is targeted at initiatives that have the greatest impact on objective outcomes, such as student completion rates.

... but more could be done to support non-equity students to complete

The HEPPP should remain focused on equity groups. Extending its purpose beyond Aboriginal and Torres Strait Islander, low SES and remote students would dull the incentive for providers to target funding toward equity group access and completion.

However, there is merit in extending new measures that support retention beyond equity groups to others with elevated risk of non-completion. As the share of the population accessing tertiary education grows, effective supports will become increasingly important for a wider range of students. Indeed, many of those belonging to equity groups study part-time or externally (Edwards and McMillan 2015). But this overlap does not always apply and may diminish over time. The share of external students, for example, has grown through the past 5 years, with more undergraduates opting to learn externally while internal student numbers continue to decline (DESE 2022f). Student support and resources will need to accommodate these demographic changes and the challenges they bring to students' preparedness for higher education.

While group affiliation will still inform the types of support measures appropriate (for example, culturally safe interventions for Aboriginal and Torres Strait Islander students), providers should be able to test new measures to screen students, identify those specifically at risk and provide support. A combination of many approaches is likely to be needed across the sector given the unique characteristics and needs of individual students and providers (box 4.2). In some cases, this may simply require earlier intervention to engage struggling students with existing support services. Subject coordinators could include links to tutoring services on the subject's webpage, or ensure that students who fail the first assessment attend a mandatory meeting with their subject tutor. In other cases, novel approaches may be required.

Box 4.2 – Specific measures to improve support for students

The Productivity Commission has made several recommendations in recent reviews aimed at improving supports for tertiary students which remain relevant.

Better mental health supports for tertiary students

The *Mental Health Inquiry* recommended strengthening accountability of tertiary providers with expanded mental health support, including:

- expanding online mental health support and collecting de-identified data to inform service improvement
- ensuring international students are adequately covered for mental health treatment and counselling services meet language and cultural diversity needs
- requiring all tertiary providers to have a mental health and wellbeing strategy as a part of registration
- the development by the Australian Government of guidance for non-university higher education providers and VET providers on how they can best meet student mental health needs
- monitoring and disseminating information on best practice interventions by TEQSA and ASQA.

Better supports for apprentices and other VET students

The review of the *Skills and Workforce Development Agreement* identified several gaps in support for apprenticeships and recommended:

- screening apprentices to improve completion rates, and identify needs for support services, and if found to be cost effective, extending this to all VET students
- improving apprenticeship support services through more co-operative contracting arrangements, and expanding services to areas of unmet need.

Source: PC (2020b, p. 254); PC (2020c, pp. 346, 354).

Programs found to be successful should be replicated throughout the sector, although determining program success has proved difficult. Program evaluation across the sector is piecemeal, but there are instances where evaluations have identified positive initiatives, which have then been adopted more widely. The National Centre for Student Equity in Higher Education (NCSEHE) recently funded an internal evaluation of the Victoria University Block Model, which found significant reductions in failure rates (Jackson, Tangalakis and Solomonides 2022). This has led other universities, including Southern Cross and Murdoch, to introduce their own versions of the block model.

TEQSA (2020) has developed a Good Practice Note to share institutional retention strategies and lift performance in this area.¹¹⁶ However, while it identified 29 'good practice' examples, TEQSA has had to rely on a thin evidence base and acknowledged that 'many providers have difficulty demonstrating whether particular initiatives have worked' (p. 5). Some simply cite a correlation between having the program in place and generally high retention rates at an institution level. Others present survey evidence that students reported feeling positive about the experience or reported improved satisfaction, without demonstrating any effect on retention.

TEQSA notes that further exploration is needed into the structural factors that limit part-time and external students' likelihood of completion. This goal can only be realised if there is sufficiently reliable evidence on cost-effective support measures. Evaluations of retention programs should use a robust strategy for identifying program effects and measuring objective outcomes to enable cross-program comparison (box 4.3). They should also be made publicly available where feasible.

In the lead up to the *Student Equity in Higher Education Evaluation Framework*, several reviews recommended a central clearinghouse to support dissemination of evidence about effective equity initiatives (Bennett et al. 2015, p. 9). This could be broadened to encompass retention strategies that target all students (both equity and non-equity) at higher risk of non-completion in all tertiary settings.

Developing an evidence base and improving outcomes will first require providers to invest in interventions. Absent sufficient incentives to further expand and innovate in providing student support, providers may be unwilling to experiment with new retention programs.

Extending a grant to higher education providers aimed specifically at retention and completion can reduce this unwillingness. Providers would apply to the Department of Education for funding, outlining the specifics and the expected impact of their proposed initiative. Universities would be able to apply for funding annually (depending on the initiative, the grant could be for more than one year). Given the high number of external and part-time students, experimentation with a large cohort will likely yield more robust results. Pairing this with a sector-wide evidence base will ensure that programs can be evaluated within their contexts and applied by other institutions where viable.

Not pushing retention at all costs

Some students may benefit from support to exit quickly if a course does not suit them. Not completing a qualification, or taking excessively long to do so, incurs costs for students (forgone earnings from a job, spending on course material, and course fees or accrued debt) and taxpayers (given governments subsidise tertiary education).

'Debt and regret' appear to be commonplace among university non-completers:

- almost 40% would not begin their degree again knowing what they know after dropping out
- about one third believe they received no benefits from their course
- nearly two thirds believe they would have been better off if they had finished (Norton and Cherastidtham 2018).

¹¹⁶ Institution retention strategies and TEQSA guidance on good practice both stem from recommendations in the Higher Education Standards Panel review on *Improving Completion, Retention and Success in Higher Education* (HESP 2017).

Box 4.3 – Good practice evaluations are needed for an optimal retention program

Evaluation of support programs involve many practical and methodological challenges, including a clear framework for determining whether a program causes an outcome, ethics clearance and adequate data. Where a survey is used as a component of an evaluation, another wide range of considerations are at play: identification of unbiased sample frames; recruitment of respondents, stratification and weighting strategies; questionnaire design and piloting; interview training; and non-response follow-up approaches. Often, evaluations only assess how responding students view a program, which provides minimal guidance to universities.

A well-designed program can profoundly improve student outcomes. For example, an evaluation of the US-based OneGoal program (a university preparatory program for low-income high school students) found that participants have an almost 50% higher chance of going to university than their peers and a 40% higher chance of graduating (Hallberg et al. 2022, p. 27). This program also demonstrates the benefit of scaling such effects, having grown from a local pilot program to a national organisation serving 17 250 students by 2021 (OneGoal 2021, p. 5).

Building randomisation into programs can identify how they can best operate. For example, a retention program at Charles Sturt University introduced a pre-census date assessment, with students failing to submit being contacted to be offered support if they wished to stay, or to be assisted to withdraw before the census date if they did not. When the program was trialled, students were randomly allocated to different potential designs.

- Students not submitting the early assignment in one subject were either contacted by the subject coordinator or an outreach team. Students were far more likely to modify their enrolment if contacted by the outreach team, despite almost all of those who remained enrolled failing to submit any further assessments. This suggests that specialised professional staff may sometimes be better placed to contact disengaged students.
- Different methods of contacting students were tested. A phone call alone had a 20% success rate, but the most effective method was a phone call, followed up by a text and an email if no contact was made. This increased the call success rate to 55%, but discovering this required a willingness to trial and evaluate different options.

This, and other well-designed program evaluations suggest the importance of personalised contact through a combination of text messages and phone calls rather than emails alone, and the potential benefits of using early assessment to identify disengaged students.

However, each university operates in a unique context, and findings from one setting will not always be universal. This underscores the importance of each institution testing different approaches to understand how retention programs can best achieve their goals — and of having a mechanism to share lessons.

Source: Linden (2022).

A student dropping out does not necessarily imply that enrolling was the wrong decision, or that no benefit was received. Most people who drop out of university report some benefit for their personal growth, skills or career (Cunninghame and Pitman 2020; Norton and Cherastidham 2018). However, a key question is whether these benefits outweigh the costs (both to the student and the taxpayer), or whether an earlier exit would have been better. Delayed exits mean that students are likely to forgo wages or can displace other

options in their lives, such as an alternative academic pathway. It can be difficult for potential students to determine if a particular qualification is right for them without firsthand experience. Some may discover that they lack the requisite academic preparation or interest in the subject matter. Others may face personal or financial issues that leave them unable to complete their course. Yet, many of these students stay enrolled in courses beyond the point at which it is apparent they will not succeed, incurring costs for themselves and governments. This is more pressing in the university context than the VET sector because university courses are longer and loans are more prevalent (although expanding eligibility for income-contingent loans in VET may change this (chapter 3)).

Given it is difficult to predict if a pathway is right for a student, the system needs to allow for experimentation, but encourage quick exits when necessary.

Nested qualifications lower the cost of an early exit

For some, a partial qualification may be a better outcome than completion. A student may gain enough knowledge from their studies to secure their desired job and learn the rest on the job. In the VET sector in particular, some individuals enrol in qualifications with the intention to take particular subjects and obtain targeted skills, rather than a complete qualification (NCVER 2016).

However, it can be challenging to have this knowledge recognised. Without a formal qualification, students may have difficulty demonstrating the skills they gained to employers. This is particularly problematic for disadvantaged students who are more likely to face financial or health issues that make it more challenging for them to complete their studies.

For VET students, the Productivity Commission's NASWD review highlighted the need for better information about credit pathways, and reducing barriers to credit pathways that would reduce the risks associated with partial completion (PC 2020c, pp. 211, 430).

In higher education, the availability of nested qualifications (for example, awarding an associate degree to a bachelor student who withdraws after two years) can help lessen the cost of experimenting with higher education for those unsure if it would suit them (TEQSA 2019). These qualifications are uncommon at the undergraduate level.¹¹⁷

Student equity researchers and the Higher Education Standards Panel have recommended the expansion of these qualifications (Harvey and Szalkowicz 2016; HESP 2017; Nelson et al. 2017). This could assist students who are only able to complete part of their studies by providing information to employers on their capabilities and facilitating a potential return to study. The provision of such awards is beneficial so long as they do not compromise the coherence and quality of course design.

¹¹⁷ Not all universities offer Diplomas or Associate Degrees as a form of 'alternative exit' from a bachelor's degree. However, a number of institutions do offer early exit degrees and awards, including but not limited to: Charles Darwin University, Flinders University, James Cook University, University of the Sunshine Coast, and Deakin University.



Recommendation 8.13

Expand alternative exit opportunities through the provision of nested qualifications

The Australian Government should require that for any given undergraduate degree, Australian higher education providers create at least one subset of courses that, if completed, lead to a lower level qualification for students who decide to withdraw before completing the whole degree ('a nested qualification').

The Australian Government should leave the design, requirements, and timing of the nested qualification/s to providers' discretion, with the exception that any qualification would need to meet the relevant Tertiary Education Quality and Standards Agency (TEQSA) standards and monitoring requirements.

A different approach to census dates could improve enrolment decisions

Many students are still enrolled in units of study they do not wish to take at the date at which students incur fees for their course (the census date). Indeed, at one university a mark of zero was recorded for nearly 4% of units of study — consistent with little or no engagement by the relevant students. About one in ten commencing students recorded a mark of zero in at least one subject (Stephenson, Cakitaki and Luckman 2021). Even students who go on to pass a subject they enrol in may have benefited more from pursuing an alternative, but were too late to change their enrolment.

Recent regulations that took effect in 2022 attempted to ensure only 'genuine' students received government funding and to protect students from study for which they are not suited (DESE 2022c). Students who, after undertaking eight units of study, have failed most of them will lose CSP eligibility for that course.¹¹⁸ However, this will not protect disengaged students from debt incurred in their second semester.

Current arrangements require students, including those disengaged from their studies, to understand a complex system and make an active choice. Most students either do not know when the census date is or are unaware that if they are enrolled at the census date, they accrue the debt for that semester. More than one in ten students had missed the census date for a subject they wanted to drop (Norton and Cherastidtham 2018).

There is scope to reduce this complexity to give students greater clarity and prompt them to make the decisions best suited to their educational needs. A number of levers are available to universities to improve students' enrolment decisions. Text messages, rather than email reminders, could be used to inform students of the upcoming census date, as text messages are more likely to reach disengaged students and prompt them to act. Courses could also ensure that students are engaged in their studies prior to their census date through a small assessment early in the course. Students who do not submit this assessment would be contacted to ensure that they still wished to continue, and could be withdrawn following repeated failure to respond (Norton and Cherastidtham 2018). A similar approach — although more focused on offering support than allowing for a costless exit — is already taken by many universities and seems to be effective (Linden 2022; Parks, King and King 2021). As with supports for retention, there would be benefit in trialling different options at an institutional level to see what works.

To highlight the importance of what otherwise seems like an obscure issue, students should be made aware of the harsh reality that a census date is a notice of a payment that, if not acted upon, will entail unnecessary

¹¹⁸ Students are still able to receive a CSP if they change course.

and unproductive debt. Altering its name to 'payment date' to be more explicit may help students to withdraw or nominate alternative subjects before incurring a liability.

The above options are likely to encourage a rapid and less costly exit for students who will not succeed in their studies, and instead pursue more productive pathways. They are also unlikely to worsen completion rates, primarily causing students who would not have completed their studies to exit sooner, rather than raise longer-run exits. Additionally, this may free up places for students that are more likely to complete their studies. When combined with grants to improve student retention measures, these strategies will ensure that students are better supported to make decisions that benefit their labour market choices in the long run.



Recommendation 8.14

Give students support to complete and clarity to exit

The Australian Government should amend the *Higher Education Support Act 2003* (Cth) (HESA) to support completion where desirable and facilitate early exits where necessary.

It should do this by:

- providing grants to encourage higher education providers to experiment with and share new strategies for student retention
- assessing any individual grant for its effectiveness and lessons in post implementation reviews and evaluating the higher education grant program as a whole after six years to determine whether rounds of funding under the grant have contributed to a demonstrable improvement in student completion rates
- amending the 'census date' in the HESA to the 'payment date' and requiring that universities effectively communicate to students that the payment date is the time when they can exit without having to pay fees for any initially commenced course.

4.5 Teaching for adaptive skill needs in VET

Notwithstanding the strong growth of the higher education system, VET remains a key system for acquiring formal post-school training with about 4 million students in 2021 compared with about 1.5 million for higher education (NCVER 2022b).¹¹⁹ Given its scale, the central role it plays in lifelong learning, and the changing nature of the vocational skills required in an increasingly digital and service-based economy, overcoming systemic flaws in its design has become a major policy preoccupation.

Several recent reviews, including the Joyce review and the Productivity Commission's NASWD review, have aimed to improve and update the VET sector. While JCSF Consulting's (sub. 97, p. 2) observation that there is 'no shortage in the stock of ideas for betterment of Australia's tertiary education system' rings true, reform implementation in the VET sector over the past five years has been slow, partly due to COVID-19.

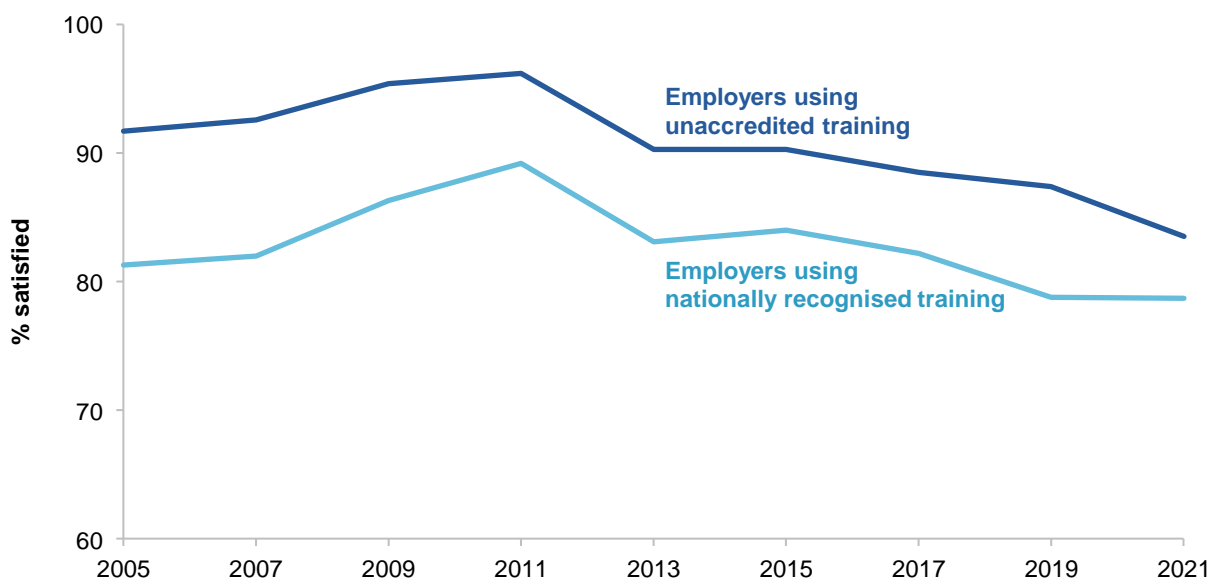
In this environment, employers' satisfaction with VET has continued to trend down, with satisfaction for nationally-recognised training consistently lower than unaccredited training (figure 4.5). In 2021, the overall gap in satisfaction was just under 5 percentage points. The difference is more stark for certain industries, with the largest gaps for 'information media and telecommunications' (25 percentage points) and

¹¹⁹ When adjusted for full-time student loadings, the systems are closer in relative size, reflecting that VET covers a much greater diversity of courses, including short vocational courses to meet specific knowledge gaps.

'administrative and support services' (18 percentage points) (NCVER 2021a). As noted in this inquiry's companion volume *'Australia's data and digital dividend'*, for digital skills acquisition, many employers prefer industry-provided short courses compared with formal learning options offered in VET and other sectors.

Among those employers dissatisfied with nationally-recognised training, the most common concerns were that it did not teach relevant skills (37%) or was of poor quality (36%), with some also reporting the content was outdated (14%). Further, the most common reason employers cited for favouring unaccredited training was that it was tailored to their needs (38%), with the share giving this reason almost doubling from 2015 (NCVER 2021a).

Figure 4.5 – Employer satisfaction is consistently higher for unaccredited training
Percentage satisfied among employers using VET



Source: NCVER (2021a).

Skills Reform has the potential to drive much needed change

Over the past year, there has been greater action in implementing VET reform recommendations (DEWR 2022d). The recent *Skills Reform* measures are welcome and necessary steps in transforming the VET sector so that it is better able to teach, recognise and develop adaptive skills. These reform measures are wide ranging, and *if* successfully implemented, have the potential to fundamentally re-shape the VET sector. The measures include changing the existing qualification framework and updating training package content and development, including an overhaul of competency-based assessment.

Training package development and content will be more responsive

Training packages and competency-based training (CBT) and assessment have been the cornerstone of the formal VET system since the early 1990s. In this inquiry, the Productivity Commission found there is still broad-based support of CBT, which has several important and well-established benefits.

- By focusing on the **outcome** of training (what the student can do), rather than the **inputs** (such as time spent training or who delivers it) it supports a model of contestable and open training markets.
- It means **qualifications** are nationally **portable** and have currency with industry regardless of where they were issued; as well as facilitating credit transfer for students.

- It allows for an **industry-led** (rather than provider-led) training system, with industry representatives involved in defining and updating competencies being taught.
- The process of assessing students' competency, by observing the performance of tasks and awarding qualifications, also provides an important form of **quality assurance** for training outcomes.

Training packages allow industry representatives to agree on and define units of competency that are necessary for an occupation.¹²⁰ RTOs then develop course material to meet the competencies embedded in training packages.

However, submissions noted the overly prescriptive nature of CBT (Ronald Jackson, sub. 171, p. 12) and the difficulties in developing timely and relevant training package content (NECA, sub. 108, p. 2). These concerns were also raised as part of the Joyce Review (2019a, p. 58) and the Productivity Commission's NASWD review (2020c, p. 238).

Despite its strengths, CBT is backwards-looking by nature. It is prescriptive and limited to actions that can be applied and observed in an existing workplace setting. This can be highly effective for certain forms of training, such as regulated trades where job requirements are relatively stable and competency can be clearly observed and mapped to workplace actions. But it can limit acquisition of broader knowledge that can be adapted and applied in multiple and fluid settings. Training packages can quickly become outdated, particularly for digital skills for which regular and quick updates are necessary for continued relevance (Wibrow, Circelli and Korbelt 2020).

However, major reform in this area is now underway.

As part of the *Skills Reform* initiative, newly-formed Jobs and Skills Councils (JSC) will have responsibility for training package development, taking over from Industry Reference Committees and Skills Service Organisations (DEWR 2022a).¹²¹ Under the previous system, it would take a year to develop a training package and endorsement could take years more (Joyce 2019b). JSCs will have greater industry representation and are intended to make training package development less time-consuming and more responsive.

Changes are also underway for CBT. One of the key *Skills Reform* projects is the VET Qualifications Reform program that proposes to replace units of competency with 'Skills Standards'.¹²² The purpose of Skills Standards is to reflect broader attributes and functions required by an occupation, as opposed to specific job tasks that were more easily distilled into units of competency. They are intended to be predominantly 'industry-sector neutral', and can be either 'cross sectoral' which are relevant to multiple industries, 'specialised' which are more industry-specific 'or 'foundational' which can be applied across all industries for standards relating to reading, writing and numeracy (DEWR 2022b). Using an example of how the proposed model would work when applied to the Certificate III in Floristry, the qualification's 16 core units that sit within 40 overall units of competency would be replaced by six broad skills standards (Ai Group 2022, p. 6).

This allows for formal recognition of a more applicable and portable set of skills for a person who may have a series of jobs either within a sector (for example, services or hospitality) or across several sectors over their

¹²⁰ Nationally-recognised qualifications comprise 'units of competency' (individual subjects such as 'responsible service of alcohol') which may be grouped into 'skillsets' (such as 'work zone traffic control' or 'food safety supervision', both of which are included in 'training packages' (such as a Certificate or Diploma).

¹²¹ The ten industry groupings for the new JSCs are: Agribusiness; Arts, Personal Services, Retail, Tourism and Hospitality; Energy, Gas and Renewables; Finance, Technology and Business; Manufacturing; Mining and Automotive; Transport and Logistics; Public Safety and Government; Early Educators, Health and Human Services; and Building Construction and Property.

¹²² Consultation on this model is currently underway with a stakeholder survey and information sessions conducted by the Department taking place over the first half of 2023 (DEWR 2022b).

working life. It also allows for the assessment of generic, non-technical skill sets that apply across occupational groupings that are of growing importance to Australia's economy (chapter 1).

Skills Standards will also be independently assessed, in line with the Productivity Commission's recommendation in the NASWD review, to help allay concerns about uneven quality standards among VET graduates and provide employers with greater confidence (PC 2020c, p. 249). There has also been some movement toward incorporating proficiency-based assessment, as previously recommended by the Productivity Commission (2017a, p. 96). The Digital Skills Organisation¹²³ *Digital Pathways Project* incorporates levels of proficiency across three groups in their occupational standards assessment system to better reflect the broad range of digital skill sets needed across most present day occupations (Schueler 2021, p. 25).

The framework and existing implementation plans for these changes are sound. The test will be whether they are delivered promptly and well. Ten JSCs are expected to become fully operational over 2023 (DEWR 2022a). When assessing the efficacy of training package development in 2019, the Joyce Review found that an over-bureaucratized process and a lack of industry engagement led to training packages becoming 'very cumbersome and complex and too hard to change' (2019a, p. 53). There is a need to oversee the new VET system 'architecture' to ensure that training product development avoids the time consuming and bureaucratic processes of the system it is replacing.

The Independent Training Package Assurance (ITPA) function in the Department of Employment and Workplace Relations (DEWR) should extend its existing role to monitoring the output of the JSCs to ensure that the time taken to develop training packages is shorter, while remaining responsive to industry and workplace requirements. Examples of innovative training package design should be identified by the ITPA function and disseminated across the wider network of JSCs to establish models of best practice. DEWR should also guide and assist the JSCs in developing cross-sectoral skills standards as a priority over the next year. This will also reduce duplication for the JSCs as they commence their training package development work.



Recommendation 8.15 **Support a responsive VET sector**

The Australian Government, in consultation with State and Territory governments, should continue reforms that enable the VET sector to support an adaptive workforce and keep pace with industry needs, by:

- monitoring the development of training packages under the newly formed Jobs and Skills Councils (JSCs) to:
 - ensure their development takes place within acceptable timeframes
 - identify and disseminate best practice and innovative training package design models
- prioritising the development of cross sectoral skills standards that are applicable across industries over the next year to both reduce duplication in training package development for the JSCs and allow individuals enrolled in the VET system to be assessed against these new standards as soon as possible.

¹²³ This is one of three recently completed Skills Organisation Pilots trialling new approaches recommended by the Joyce Review. The other pilot programs covered the mining and health industries.

The VET workforce will also need to be supported

The greater ambitions and sophistication of the new VET system will require further investment in VET workforce capability across a wide range of delivery modes — VET in schools, Adult and Community Education providers, private RTOs and TAFEs.

A prominent but contested concern is whether VET teachers have sufficient skills. Some argue that VET teachers have become deskilled due to a twenty-year reliance on CBT and declining levels of pedagogical (VET teaching) qualifications since 2000 (ACDEVEG, sub. 116, p. 1).

Changes to address such perceived gaps in capabilities involve trade-offs.

On the one hand, demanding higher levels of training than the existing Certificate IV for trainers may limit supply, especially given that a significant source of teachers are people who have worked formerly in industry and have commenced a teaching role later in life, and often only on a part-time basis. Indeed, trainers and assessors do not even need to complete the Certificate IV in Training and Assessment (the minimum qualification requirement) before working in the sector, just to be enrolled in the course as soon as practicable. This reflects the need to access trainers with relevant and up to date industry experience.

On the other hand, even if VET teachers have strong practical knowledge, transmitting that effectively requires pedagogical skills, an issue that has confronted governments for some time.

There has been some recent action to improve the quality of teaching in the VET sector, including an updated Training and Education Training Package with an improved version of the Certificate IV qualification that has greater pedagogical depth and rigor (Smith 2022, p. 9). Nonetheless, there is a concern that moves to incorporate proficiency or some other form of graded assessment will require an added level of independent judgement on the part of VET teachers and trainers that has to be justified or defended against some form of external review, and that these are 'skills that go way beyond what is in the Cert IV Training and Assessment' (Misko and Circelli 2022, p. 23). As the VET assessment system evolves beyond CBT to incorporate independent and proficiency-based assessment, the VET workforce will need to access appropriately designed and funded professional development opportunities to implement these new assessment methods successfully. In light of this, the Australian Government should fund extra training and development programs for VET trainers and assessors so they can adequately perform independent and proficiency-based assessment.

An associated challenge is that even under the current system, there are major obstacles to an adequate VET teaching workforce, with difficulties in retaining adequately trained staff in the current tight labour market and, over the longer term, the implications of an ageing workforce.

Strategies for addressing attraction, retention, career development and succession planning are being developed as part of the upcoming *Blueprint for the VET Workforce*. The VET workforce strategy should be underpinned by evidence, including a VET workforce census, undertaken by the National Centre for Vocational Education Research that would focus on teachers' industry experience, pedagogical and professional characteristics (PC 2020c, pp. 243–244).

More flexibility and experimentation in provider models will also support the continued relevance of VET

A more flexible approach across Australia's tertiary sector will require greater autonomy for VET providers. For example, in Singapore, quasi-Government VET institutions have greater autonomy to develop and assess courses (Varaprasad 2021), which has contributed to a higher status for VET:

In Singapore, the formerly dilapidated Institutes of Technical Education have been entirely overhauled, materially and in spirit. Now, they emphasise future skills training, with a technology edge ... This, in turn, has amped up the prestige of the sector, drawing in students who would have previously only considered a university education. (Peter Noonan cited in Siekmann and Fowler 2017, p. 33)

The establishment of two Institutes of Applied Technology (IAT) in New South Wales, slated to open in 2023 emulates the Singaporean model. The NSW Government explained that:

... [the] IAT will not be a 'Super TAFE'. Nor will it be a 'dual sector' institution, offering vocational and higher education in separate streams. It will not take the place of university-based programs that already deliver foundation or bridging courses to higher education students. Rather, the IAT will be a 'single sector' tertiary institution. Through a number of colleges each focused on a particular industry, the IAT will embed and integrate practical and theoretical components of tertiary education throughout its curriculums. (Gonski and Shergold 2021, p. 11)

The new IAT-Digital will deliver a curriculum that incorporates big data, cyber security, artificial intelligence and cloud computing, while the IAT-Construction will focus on high-level skills aimed at professional workers in the construction industry, such as project management and leadership. Qualifications will be delivered at both IATs in partnership with universities and industry (NSW Department of Education nd). This education and training model demonstrates greater connection between the higher education and VET sectors and industry, as well as the recognition and incorporation of microcredentials into the formal qualification system.

Development of IATs will offer greater choice to students beyond the traditional, binary system of either VET or higher education (chapter 3). Drawing on the lessons from the NSW initiatives, other jurisdictions should begin to examine how they can develop tertiary institutes that combine VET and higher education content and industry expertise, subject to their own legislative and institutional frameworks.

The further growth of new institutional arrangements such as IATs will reveal whether the recently instituted reforms across the VET sector are shifting the sector from its narrow focus on defined skill sets to a model that, while still vocational in orientation, can accommodate more innovative models for delivery of less prescriptively-defined and more adaptable skills.



Recommendation 8.16

Improve VET teaching, pathways and partnerships

To ensure the successful implementation of Skills Reform, the Australian Government should:

- fund extra training and development programs for VET trainers and assessors so they can adequately perform independent and proficiency based assessment
- task the National Centre for Vocational Education Research to conduct a census of the VET workforce, focusing broadly on the characteristics of teachers at the provider level, including their pedagogical and occupational qualifications, as well as industry experience.

The Australian Government, together with State and Territory governments, should also continue to improve pathways between VET, higher education and industry.

- Other State and Territory governments should monitor and follow the example set by the New South Wales Government's Institutes of Applied Technology, and support local models of vocationally oriented tertiary education that deliver qualifications combining VET and higher education content together with industry expertise.

Appendices

A. A mixed story — performance of higher education

As noted in chapter 4, there are no simple indicators of the outcomes from teaching in universities. Aggregate outcomes, students' assessments of teaching quality, and the incentives for universities to teach to a high standard form a trio of incomplete indicators for the degree to which universities are likely to fulfill their teaching function. This appendix relates to the first two quantitatively-based indicators. While these have some nuanced elements, it is more straightforward to investigate them. In contrast, the conflicting incentives universities face are multitiered and complex and their resolution is a key instrument for achieving better outcomes, which is why they are addressed in the chapter.

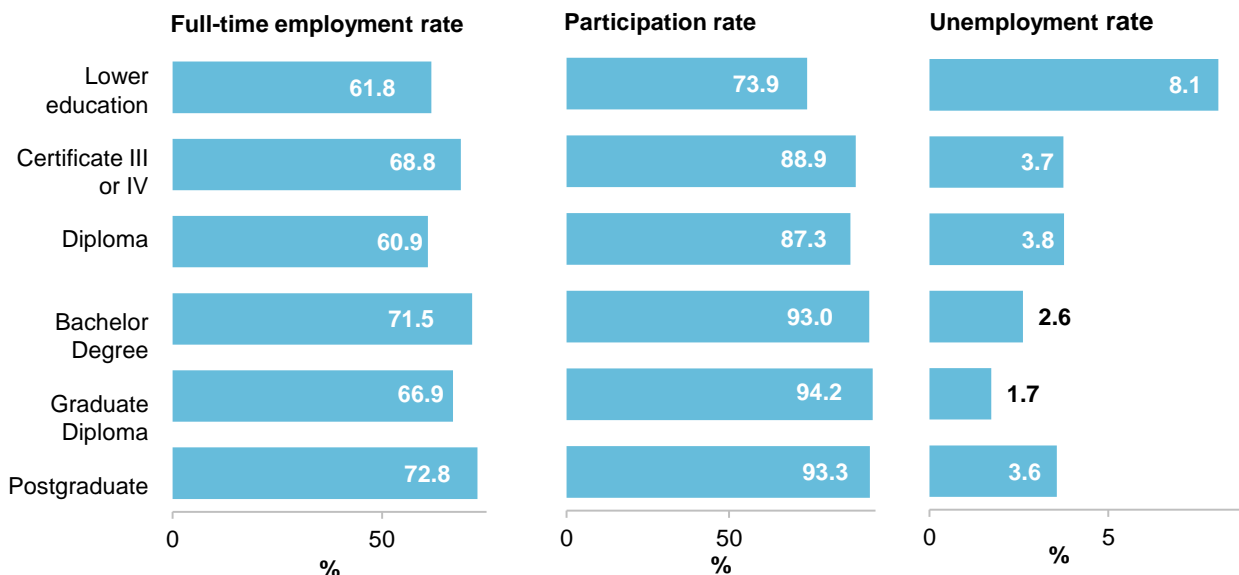
A.1 The quality of outcomes from university training are generally high

University graduates achieve higher rates of employment, experience lower unemployment rates and have higher labour force participation rates than those who acquire skills via VET or school alone (figure A.1). They are much more likely to earn more than \$1500 a week than non-university graduates (figure A.2). They are also more likely to work in the highest skill occupations that increasingly underpin productivity and economic growth. Students apply the skills they have acquired at university to their jobs, even if their occupations are in fields outside those studied — suggesting that university students acquire portable skills. Employer satisfaction rates with university graduates are also high (chapter 1).

However, not all of these correlations reflect what universities do. Variance in outcomes by educational attainment partly reflects that entry to university depends on academic and cognitive ability, which independently affects labour market outcomes. So too is the commitment by students to put aside three or more years to learning, much of it driven by their own motivation and passion, rather than the direct efforts of the institution they have enrolled in. The accreditation role of universities remains important, but that is different from the actions universities take to promote learning. These factors exaggerate the causal impact of providers on labour market outcomes.

Nonetheless, even after controlling for inherent ability and other confounders, university education — if completed — has large positive impacts on labour market outcomes of Australians compared with other forms of education (Marks 2018). While university has differential impacts on students with prior lower academic results and from 'equity' groups (such as students from lower socio-economic backgrounds), for many such groups, the value-added from university in Australia still compares favourably to alternative training (PC 2019; Zajac et al. 2021). Indeed, the favourable effects of higher education on labour outcomes is supported by a broader international literature (chapter 1). Against that background, Australian universities — as a whole — appear to be successful in raising average skill levels.

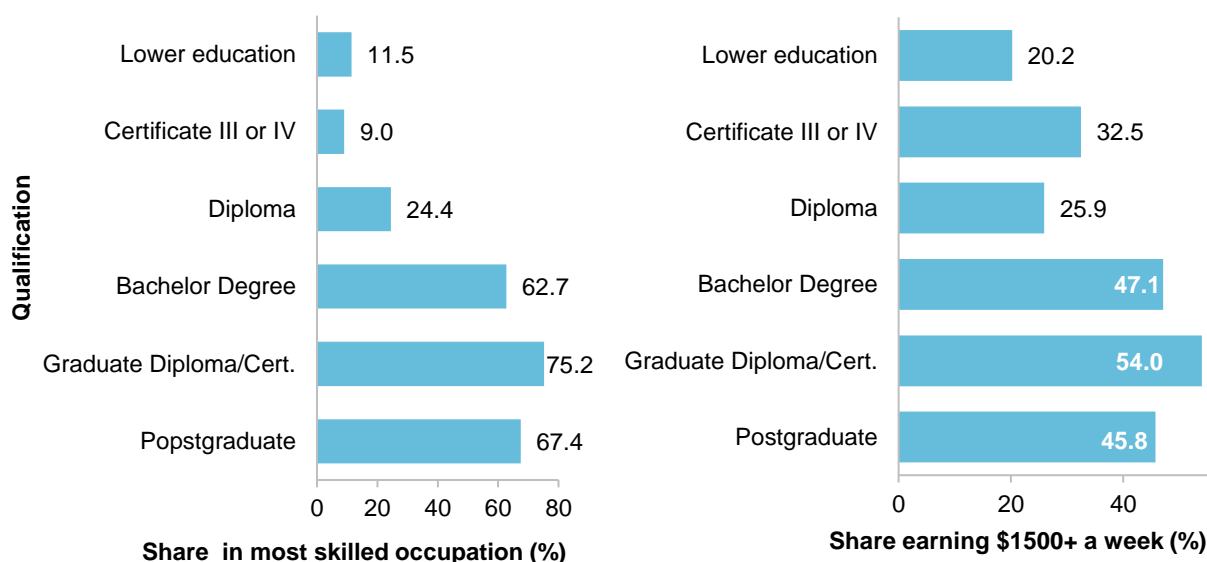
Figure A.1 – Key labour force outcomes are good for university graduates^a
People aged 25-34 years, not in education, 2021



a. The 25-34 year age range was selected because it will reflect job outcomes after some reasonable period after completion of studies, but exclude people whose training occurred in education systems that were different from those in recent times. The results only relate to people who are not currently attending an educational institution. Shares exclude people who did not indicate their labour market outcomes or educational attainment.

Source: ABS (*Census of Population and Housing: 2021*).

Figure A.2 – University graduates are faring well in labour markets^a
Weekly income and occupational skill levels of 25-34-year-old workers



a. See note for figure above.

Source: ABS (*Census of Population and Housing 2021*).

Trends in outcomes for university graduates tell a more nuanced story (Aungles, Hodgson and Parbery 2021). On the one hand, there are some indications that outcomes have worsened over time. For

instance, the full-time employment rate of undergraduates four months after graduation fell from above 80% in 1982 to just below 70% in 2020, and while unemployment rates for those with a bachelor or higher qualification have been typically below 4% from 1979 to 2020, the unemployment gap between VET and other qualifications have narrowed over time, and there has been a slight diminution in the median wage premium for bachelor degree over Certificate III/IV holders between 2004 and 2020.

On the other hand, full-time employment for undergraduates three years after completion of their degree fell only slightly over the ten years to 2020 and has even increased from 2015. And notwithstanding the short-term damaging effect of the Global Financial Crisis (GFC) on graduate outcomes, the longer-run growth in median incomes of the cohorts of graduates completing their studies since the GFC was surprisingly more rapid than the graduates completing their studies in the year before the GFC struck (Aungles, Hodgson and Parbery 2021, pp. 38–40).

The generally modest reduction in some labour market outcomes over time is unlikely to be evidence of a diminishing quality of university teaching, but due to a change in the mix of students. Over time, the share of young people entering university has greatly expanded, so the additional entrants have worse school results. Similarly, labour market conditions also vary over time, and are beyond the control of universities.

Similar issues confront assessing the value added by individual universities. At any given time, the differences in outcomes will only partly reflect the efforts of universities to impart skills to their students. The labour market outcomes of any given university depend on the prior academic ability of the students they attract, the vocational orientation of the institution and, crucially, the length of time considered. For example, the 2007 cohort of bachelor graduates of the University of Sydney earned substantially less in 2009 than the more vocationally-oriented graduates from the University of Technology Sydney and the University of Notre Dame but had significantly higher earnings by 2018. This partly reflects that bachelor's graduates in less vocationally-oriented universities are more likely to engage in further study, which limits their short-term incomes. Their earnings may also be more responsive to experience. Overall, the empirical evidence suggests that the university of origin explains only about 2% of the variation in long-run median university graduate incomes (Aungles, Hodgson and Parbery 2021, pp. 41–54).¹²⁴

Once many student outcomes depend on luck in labour markets, preferences for certain types of jobs and unobserved aspects of students that also affect salaries such as their motivation levels, the more difficult it is to causally ascribe outcomes to the teaching efforts of universities. As discussed further in chapter 4, this is the key challenge facing the implementation a workable performance-based funding model.

A.2 The quality of the university experience

Prima facie, improvements in the quality of university education, and particularly teaching quality, could be expected to increase:

- students' skills, which raises their future employment, productivity and wages
- the quality of the university experience, which has separate value, including in attracting people to undertake tertiary education in the first place
- student completion rates, by raising competency and confidence in students who are struggling, which enables some students to obtain a qualification they would otherwise have forgone.

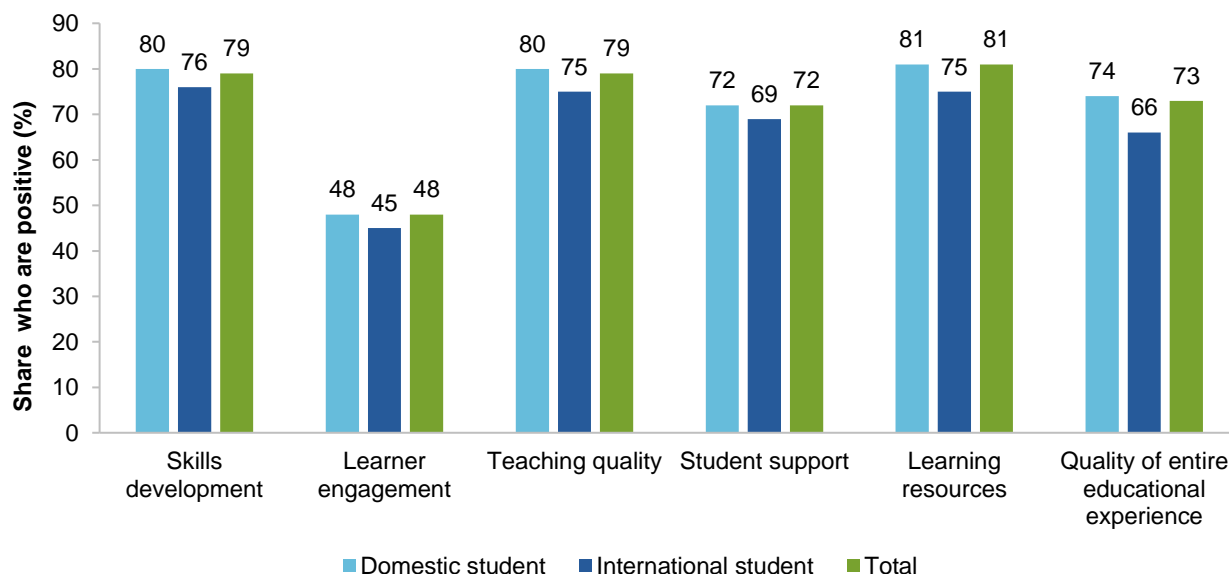
¹²⁴ Even after controlling for the study area, full-time or part-time study and student traits (such as gender, age group, ATAR, and location) and the study area, more than 85% of the variation in long-run graduate incomes remains unexplained.

There are few attempts at objectively assessing teacher quality. Observational studies using proven instruments for assessing quality are rare and costly. Therefore, evaluating the size of the effects must rely on student perceptions of their experiences at university.

The subjective evidence of students’ perceptions points to reasonably good performance. About 80% of domestic university undergraduates rated teaching quality, skills development and learning resources positively. However, student support (about 70%) and learner engagement (less than 50%) were less well rated (figure A.3).¹²⁵ In general, domestic students rate the performance of universities higher than international students, but not by much.

The particularly poor outcomes for learner engagement reflects the effects of COVID-19. By forcing students into online learning, the pandemic had adverse impacts student interaction outside study and opportunities to interact with local students, which are key elements of learner engagement. (The rating fell by more than 15 percentage points between 2019 and 2020). The challenge of online learning is discussed further in chapter 4.

Figure A.3 – Undergraduate perception of the key domains of university performance, 2021



Source: SRC (2022c).

Surprisingly, there was no significant reduction in perceived teaching quality or skills development associated with the pandemic — the domains likely to be most strongly related to the capacity of universities to produce good outcomes (figure A.4). Moreover, the mediocre rating of the overall university experience in 2020 and 2021 is likely to be a temporary effect of the pandemic, and already shows improvement as on-campus classes rise.

It is also notable that very few students gave poor ratings for the key items. For instance, among universities, less than 4% of undergraduate students rated the overall quality of teaching as poor in 2021 (covering both domestic and international students) and just over 5% rated their overall experience at university as poor.¹²⁶

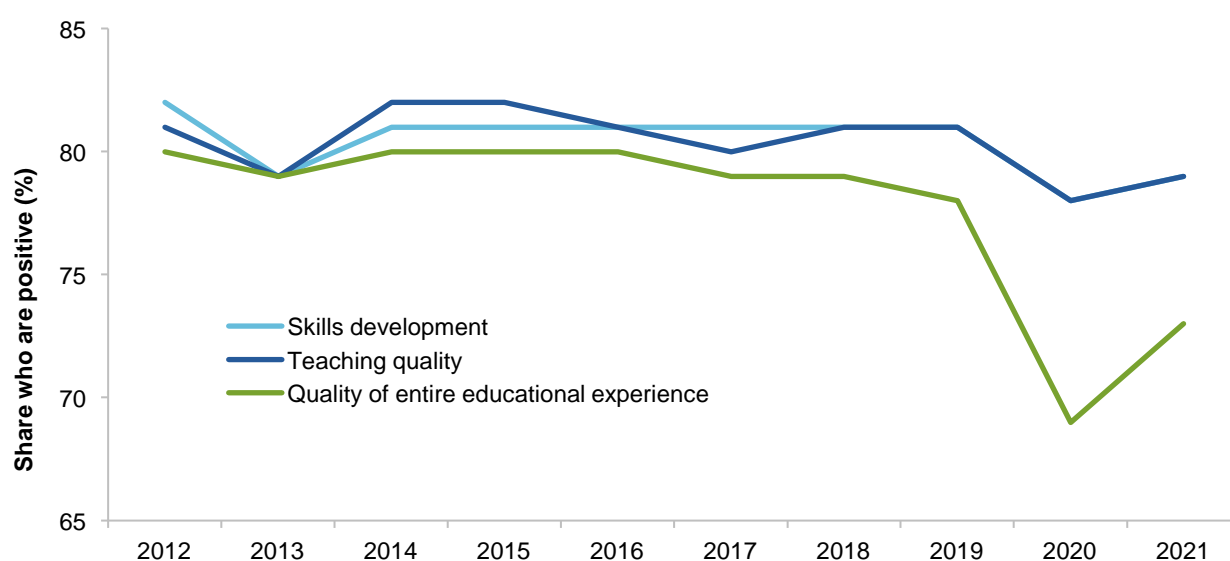
¹²⁵ Depending on the domain, a positive response is where students nominate Quite a bit/Very much on a 5-point Likert scale of Not at all/Very little/Some/Quite a bit/Very much, or Good/Excellent on a scale from Poor/Fair/Good/Excellent.

¹²⁶ Based on unpublished QILT data analysed by the Commission.

Nevertheless, to the extent that students' perceptions are accurate, these estimates still point to considerable wasted resources and opportunities.

An encouraging facet of university performance across the key broad categories of a quality education is that the variation in average outcomes for undergraduates from different demographic groups is very low with the exception of learner engagement (SRC 2022b, pp. 8–10).¹²⁷ This suggests that universities are achieving reasonably consistent outcomes for a wider range of student types, which is important as diversity in the student body increases.

Figure A.4 – Undergraduates' perceptions of quality^a
Universities and non-university higher education institutions, 2021



a. Non-universities were included from 2015, but given score similarities in overlapping years, is unlikely to invalidate the longer trend analysis. Results include international students.

Source: SRC (2022b).

Granular results point to some mediocrity

At the more granular level, university undergraduates' perceptions of the effectiveness of universities' capabilities to develop skills and teach were more mediocre than their overall higher impressions (tables A.1 and A.2). For instance, feedback is an essential element of effective teaching and the efficient acquisition of skills, but nearly half of students rated this as only happening sometimes, or not much or not at all.

¹²⁷ Among other student traits, this includes gender, first in family status, age, ethnicity, international student status and socio-economic status. For four of the five categories of quality, there is only a one or two percentage point variation in positive ratings across different student groups. The greater variation in learner engagement is solely due to the much lower positive ratings for students who are solely studying remotely from the university.

Table A.1 – Undergraduate perceptions of the effectiveness of skill development^a
Universities, 2021

Skill type	Positive rate (%)	Change from 2020
Developed critical and analytical thinking	70	up
Developed ability to solve complex problems	61	same
Developed ability to work effectively with others	59	up
Developed confidence to learn independently	72	same
Developed written communication skills	64	up
Developed spoken communication skills	52	up
Developed knowledge of field studying	76	same
Developed work-related knowledge and skills	62	up

a. A positive response is where students nominate Quite a bit/Very much on a 5-point Likert scale of Not at all/Very much/Some/Quite a bit/Very much. The results relate to domestic and international students.

Source: SRC (2022c).

Table A.2 – Undergraduate perceptions of teaching quality^a
Universities, 2021

Aspect of performance	Positive rate (%)	Change from 2020
Study well-structured and focused	65	up
Study relevant to education as a whole	73	up
Teachers engaged you actively in learning	63	up
Teachers demonstrated concern for student learning	59	down
Teachers provided clear explanations on coursework and assessment	67	up
Teachers stimulated you intellectually	67	up
Teachers commented on your work in ways that help you learn	54	up
Teachers seemed helpful and approachable	70	same
Teachers set assessment tasks that challenge you to learn	77	same
Overall quality of teaching	77	up
Quality of entire educational experience	73	up

a. A positive response for the first nine aspects is where students nominate Quite a bit/Very much on a 5-item Likert scale of Not at all/Very much/Some/Quite a bit/Very much. For the quality items (10 and 11), a positive response is where the student nominates the aspect as Good/Excellent from a 4-item Likert scale of Poor/Fair/Good/Excellent. The results relate to both domestic and international students. The overall assessment score for teaching and the entire student experience is not an average of individual assessments, but a holistic assessment by students.

Source: SRC (2022c).

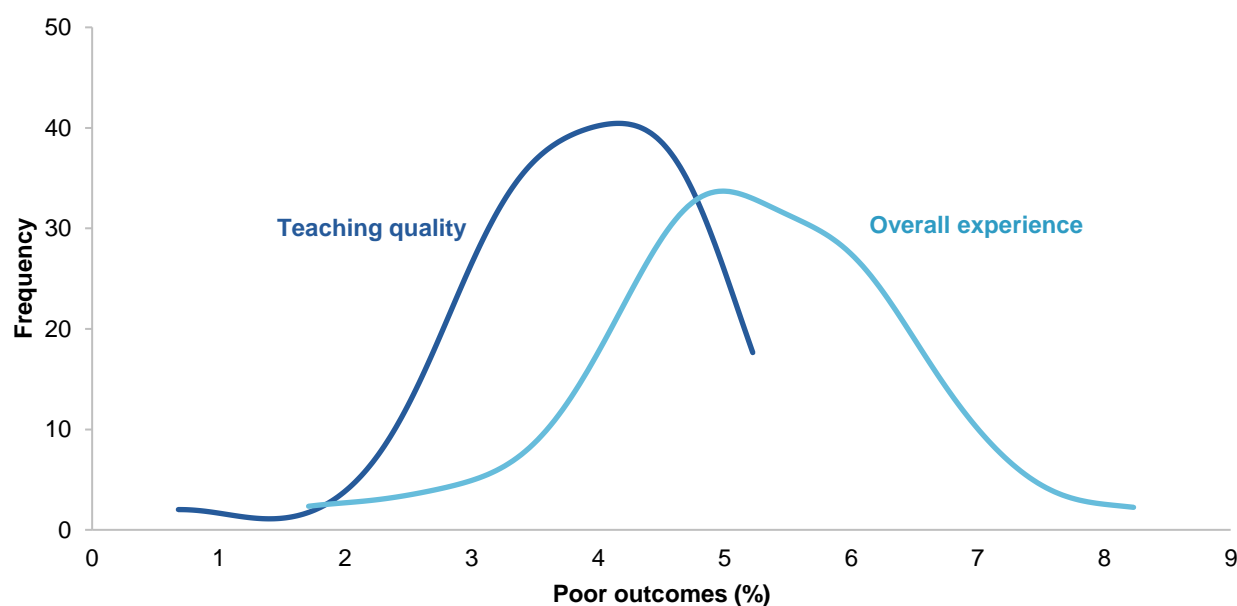
There are sizeable variations in performance between universities

There is considerable variation in the performance across universities on key domains of their educational functions (figure 4.2 in chapter 4). Deeper analysis shows that the differences in the overall quality of teaching between universities is the most influential determinant of the variations between them in students' perceptions of the overall quality of the entire educational experience, although student support and

resources play a residual role.¹²⁸ Perceptions of skills development do not have any independent effect on differences in overall perceived educational quality and are largely determined by perceived teaching quality.

The variations between universities mainly appear to reflect the extent to which they are mediocre rather than poor in undertaking their key functions as the degree of variance in poor ratings is relatively low (figure A.5).

Figure A.5 – Distribution of poor ratings of education quality across universities, 2021^a



a. Densities estimates are based on a Gaussian kernel.

Source: Unpublished QILT data from the Social Research Centre.

Perceptions and outcomes are only partly related

While students' *perceptions* of skill acquisition are linked to *perceived* overall teaching quality, the evidence suggests that subjective assessments of teaching quality have weaker links to actual labour market outcomes. For instance, while figure 4.2 in chapter 4 shows considerable variation between universities in all of the various domains of educational quality, graduate outcomes data show far smaller differences in medium-term full- and part-time employment outcomes (SRC 2022d).

Across universities, a 10% increase in average perceived teaching quality is associated with about a 1% increase in full-time graduate employment three years later, but with a level of imprecision that would not even rule out a negative impact.¹²⁹ The relationship is negative for graduate salaries — a clearly spurious

¹²⁸ These results are based on analysis of student ratings across universities, and so seeks to explain the variations in the overall ratings at the university level. This analysis is relevant to any model of performance-based funding. Further analysis — not undertaken — could use student level data. This could inform the determinants of student ratings of their overall university experiences for each university and whether these were uniform across universities (which, given the nature of their student intakes and varying vocational orientation, is unlikely). This is a fruitful area for future analysis.

¹²⁹ Alternatively, a one standard deviation increase in teaching quality increased the full-time employment rate by about 0.3 percentage points, although this estimate has a wide confidence interval. These results are based on Commission

result. This replicates the results of global research, which typically find immaterial and sometimes negative links between subjective student satisfaction ratings and labour market outcomes (Falch et al. 2022). This suggests risks in using subjective measures of satisfaction in performance-funding or in informing new students about the relative career outcomes they might expect from the tertiary pathway they might choose.

However, this does not mean that teaching quality is unimportant. It may just mean that the subjective measures of quality are too simplistic to capture all of the facets of teachers that influence outcomes. Even on face validity grounds alone, it seems very unlikely that an excellent university teacher would raise skills by the same amount as a poor teacher. If the outcome of effective teaching is to raise post-graduation incomes per student by even a small amount (say just 1%) for a given university then across all the students enrolled, the economy-wide benefit is many hundreds of millions of dollars per year.¹³⁰ This large effect may be hard to detect when looking at the average outcome per student given all of the other determinants of labour market outcomes.

Furthermore, in school settings, there is compelling evidence that higher levels of teacher competence lead to significantly higher levels of student achievement (Hanushek 2011). Indicative estimates suggest that a teacher who is one standard deviation above the average teacher (in terms of their ability to increase student achievement), instructing a classroom of 15 students, could increase the average lifetime earnings of the classroom by about \$530 000 in a given year; or about \$35 000 per student (PC 2023, pp. 333–334). It would be remarkable that an effect that was clear in one learning environment had entirely vanished several years later in another learning environment.

In addition, students' subjective assessments are still likely to affect the quality of their university experience and the likelihood that they will continue their studies. Nearly one fifth of students who considered early departure cited quality concerns as the reason for doing so, and about one quarter claimed that their expectations were not met (SRC 2022b, p. 29). So, while these are subjective assessments, they matter for behaviour.

Finally, the quality of a person's education may have longer-run non-economic effects on students — such as how they relate to people, their personal interests, and networks.

analysis of QILT student ratings across universities in 2018 and graduate outcomes for the same cohort three years later. The result is only indicative because it does not control for any aspects of universities (such as their location, the mix of courses, and the nature of the student intake).

¹³⁰ Based on some indicative calculations by the Commission, drawing on shifts in the Mercer equation for lifetime earnings.

B. Stylised simulations of economy-wide effects

The Productivity Commission used a whole-of-economy model to illustrate the potential effects of some of the recommendations in this report in a stylised way. This model is static, in that it does not capture dynamic effects over time. Rather, the results are interpreted as if the effects of a shock to the economy could happen overnight. While the simulations are stylised and there is a high level of uncertainty in the impacts of the proposed recommendations and other model assumptions, the simulations provide insight on how potential productivity improvements could flow through the economy's structure and the differential impacts across industries and household types. Further details of the model, simulations and effects of sensitivity testing are contained in this inquiry's companion volume '*Whole-of-economy modelling*'.

Improving school education quality¹³¹

The model was used to run three simulations to illustrate the potential effects of improving the quality of school education — one simulation to illustrate the 'short run' effects, and subsequent simulations for 'long run' and 'very long run' effects.¹³²

- The short run impact was an immediate improvement in the labour productivity of workers in the 'school education' industry, modelled in this simulation as a 3% productivity increase as a result of better use of curriculum resources to save teachers' time and improve practices, as well as better integration of technology within classrooms.
- The long run illustrates the economic impacts once school quality improvements have resulted in more productive workers in the first group of school leavers that will initially benefit from better school quality, via a 2% increase in the labour productivity of 15-24 year old workers. This effect occurred on top of the short run impact.
- In the very long run, all workers that have completed school will have done so in the improved system, so it is assumed that the 2% labour productivity improvement applies to all labour types. This effect occurred on top of the short run impact.

For all these simulations, labour use (as measured by hours worked) in the 'school education' industry was assumed to be fixed. It was assumed that reforms to improve school education quality would not change the

¹³¹ Referred to as simulation 5 in this inquiry's companion volume '*Whole-of-economy modelling*'.

¹³² It has been assumed in all three scenarios that the time horizons were sufficient to allow the capital stock to grow and to move flexibly between industries, despite the assumption of a fixed capital stock being common in short run simulations.

hours worked by teachers and other workers in the 'school education' industry, but that those hours would be more productive.¹³³

Short run

Simulating increased labour productivity in 'school education' led to an estimated reduction in the relative price of 'school education', as the relative cost of producing a unit of 'school education' was reduced.¹³⁴ In most industries, such a change would lead to an increase in production and output. However, schooling is a special case whereby the amount of schooling delivered in the economy meets population demands (the model does not incorporate any population changes, which means there is no source for changing demand). The resulting change can therefore be interpreted as improvements to the quality of education delivered, at a relatively lower cost. In order to produce the increased quality, there is also a corresponding increase in capital in the model.

In this simulation, wage rates and capital rental prices both increased relative to the economy-wide CPI, so household incomes increased as a result of increased labour and capital income.

The effects on the quantity of output produced by other industries varied depending on relative changes in consumption by different users. Domestically, household consumption of commodities other than 'school education' increased. While these other commodities experienced relative price increases due to increased input costs, which induced lower demand, this effect was more than offset by the increased demand arising from higher household incomes. But internationally, for more export-intensive industries such as 'agriculture, forestry and fishing', 'mining', 'advanced manufacturing' and 'other manufacturing', the increased input costs made these commodities less competitive in the foreign market, which led to an overall decrease in these industries' real output and reduced labour in these industries.

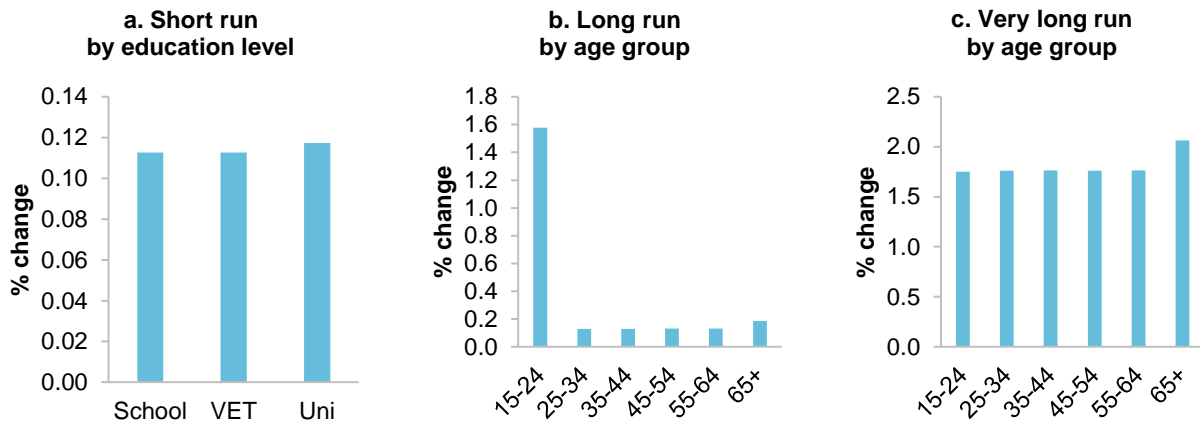
Real GDP and real gross national income (GNI) increased by 0.08%. Sensitivity testing found that the real GDP increase ranged from 0.05% to 0.11% under different assumptions about the size of the labour productivity shock for the 'school education' industry (chapter 4 of this inquiry's companion volume '*Whole-of-economy modelling*').

Household wellbeing increased, reflecting increased consumption and leisure, as labour use across the economy fell slightly. The value of this increase was estimated to be \$1.4 billion in aggregate in 2018-19 dollars (that is, if this amount was given as extra income instead of the productivity shock, households would be as well off as they were estimated to be after the productivity shock). University-educated workers had slightly higher increases in real wages rates (that is, wages relative to the CPI) (figure B.1, panel a). These relative wage effects were observed because the 'school education' industry largely employed university-educated labour, and the assumption that labour in that industry is fixed (rather than being able to be redeployed to other industries) led to greater upward pressure on their wages.

¹³³ Separate simulations that were run without fixing labour in the 'school education' industry resulted in labour being reallocated to other industries. This occurred because the model was built on relationships in the market sector where productivity improvements typically result in a reallocation of resources toward their most efficient use. 'School education', however, is a non-market service, and productivity improvements are unlikely to lead to workforce reductions, but rather would improve the quantity or quality of outputs while retaining the workforce.

¹³⁴ 'School education' is a non-market service in which prices generally do not significantly affect the amounts produced or consumed. The price changes for 'school education' in this simulation merely represent the mechanics of the CGE model (which was structured based on market sector relationships).

Figure B.1 – Estimated changes in real wage rates by select labour groups across short run, long run and very long simulations of improved school quality



Source: Productivity Commission estimates.

Long run

In addition to the short run impacts on the ‘school education’ industry discussed above, the long run improvements to labour productivity for 15-24 year old workers saw producers substituting toward these labour types due to their higher productivity. This led to an overall increase in hours worked by 15-24 year old groups, and a decrease for older age groups, particularly those aged 55 and over. Real wage rates increased for all age groups relative to the economy-wide CPI, but real wage rates for 15-24 year old groups increased the most (figure B.1, panel b).

Labour use decreased in the ‘retail’ and ‘hospitality’ industries as these industries most heavily utilised 15-24 year old labour. This decrease was because more output could be produced with the same amount of labour, which more than offset the additional labour required to meet the increase in demand for ‘retail’ and ‘hospitality’ goods and services (arising from higher household incomes and therefore consumption). Changes in labour use in other industries was mixed, with the overall effect on hours worked in the economy largely unchanged.

Almost all industries increased their quantity of output produced, due to the benefits of improved labour productivity. Investment and the capital stock also increased to meet requirements for capital for increased production, and the relative price of capital rental increased.

Real GDP and real GNI increased by 0.2% (which includes the more immediate effects of improvements in labour productivity in the ‘school education’ industry, discussed above), through increases to real consumption, investment and government expenditure. Sensitivity testing found that the real GDP increase ranged from 0.1% to 0.3% depending on assumed changes to the labour productivity shock simulated (chapter 4 of this inquiry’s companion volume ‘*Whole-of-economy modelling*’).

Household wellbeing increased due to increased consumption and increased leisure for older age groups, and the estimated value of this wellbeing increase was about \$2.8 billion in 2018-19 dollars in aggregate. Consumption inequality decreased slightly as the 15-24 year old labour groups, who initially had lower consumption, experienced relatively higher real wage rate increases and hence were able to increase their consumption by a greater extent.

Very long run

In the very long run, labour productivity improvements through improved schooling were assumed to flow through to all age groups, in addition to the continued impact of improved labour productivity in the ‘school

education' industry from the short run changes. All industries increased their quantity of output produced as a result of the productivity improvements. Total hours worked was largely unchanged, and the capital stock increased to support growth in production.

Hours worked increased slightly across most age groups, but decreased for retirement aged workers, whose choice of labour supply was calibrated in the model to be more responsive to changes in income. Household consumption nevertheless increased for all groups because of increases in real labour and capital incomes, through real wage rate rises for all age groups (figure B.1, panel c), and relative increases in the capital rental price and amount of capital held by households. These increases in income were partly offset by increased saving and income taxes.

Real GDP increased by 2.0%, and real GNI increased by 2.1%, with increases to real consumption, investment and government expenditure (including the more immediate effects of improvements in labour productivity in the 'school education' industry, discussed above). Sensitivity testing found that the real GDP increase ranged from 1.0% to 3.0% under different assumed labour productivity improvements (chapter 4 of this inquiry's companion volume '*Whole-of-economy modelling*'). Household wellbeing increased as a result of increased real incomes (and thus consumption), and increased leisure among some labour groups. Consumption inequality decreased slightly as labour productivity improvements were shared more broadly across all labour types.

Increasing tertiary education graduates to meet increasing needs for skilled labour¹³⁵

The model was used to illustrate the potential effects of measures that would increase the supply of tertiary education graduates to address increasing needs for skilled labour in the Australian economy. This could, for example, arise from proposed reforms that lift participation in university education and qualification completion rates, with younger age groups being more likely to graduate sooner and hence benefit from the reforms.¹³⁶

The impacts of proposed reforms were simulated by changing the composition of the population toward more university-educated people among the 15-24 year old group. It was assumed that among 15-24 year old groups, there was a 10% increase in numbers of people who are university-educated, a 4% fall in those who are VET-educated, and the remaining compositional shift absorbed by a fall in school-educated people. That is, the total number of people in the population remained the same, but they were more highly educated on average.

The increase in supply of university-educated labour resulted in the real wage rates of university-educated groups falling (that is, wage rates decreased relative to the economy-wide consumer price index (CPI)). Real wage rates of the university-educated 15-24 year old group fell the most, and real wage rates of older university-educated groups fell slightly too because producers were able to substitute toward the less scarce younger university-educated group. This, in turn, resulted in decreases in average consumption by university-educated people. The real wage rates of school- and VET-educated groups increased because these labour types were relatively more scarce, and labour of different education levels was assumed to be less substitutable than labour of different age or sex groups. Although the size of the gap in wage rates

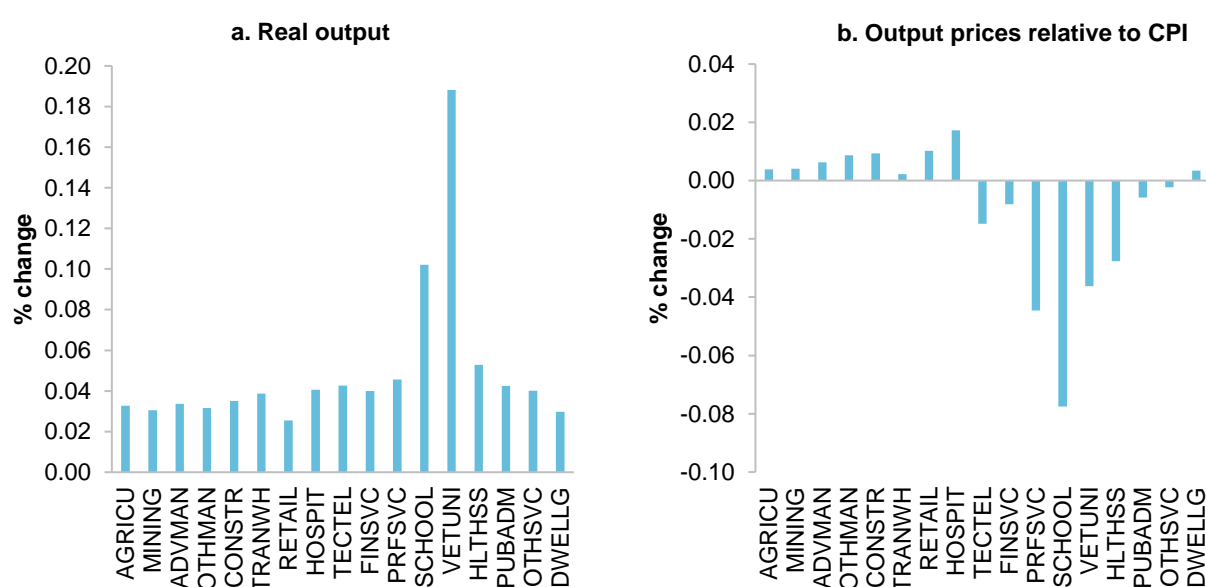
¹³⁵ Referred to as simulation 3 in this inquiry's companion volume '*Whole-of-economy modelling*'.

¹³⁶ In the absence of these reforms to increase university-educated labour supply to meet increasing demand for skilled labour, there would be a shortage of skilled labour at original wage levels and eventually, assuming the economy can adjust, an increase in the market-clearing wages of university-educated labour. This was verified in a separate simulation in which demand for university-educated labour was increased through increasing the factor share associated with university-educated labour, and reducing that associated with other types of labour, in industry production functions.

decreased between university-educated workers and workers with lower education levels, the wage rates of university-educated workers were still higher than for other workers.

Industries that used relatively more university-educated labour in their production process (such as education industries, ‘professional, scientific and technical services’ and ‘health and social services’) were better able to benefit from the increase in supply of university-educated labour to produce more output at lower prices relative to the economy-wide CPI (figure B.2).¹³⁷ Other industries tended to experience relative price increases (figure B.2, panel b), partly because of higher labour costs (arising from substitutions away from more scarce non-university-educated labour toward relatively more costly university-educated labour, and relative wage rises for non-university-educated labour).

Figure B.2 – Estimated changes in real output and output prices by industry due to increasing tertiary education graduates^a



a. Industry abbreviations: AGRICU – agriculture, forestry and fishing; MINING – mining; ADVMAN – advanced manufacturing; OTHMAN – other manufacturing; CONSTR – construction; TRANWH – transport and wholesale; RETAIL – retail trade; HOSPIT – hospitality; TECTEL – technology and telecommunications; FINSVC – financial services; PRFSVC – professional, scientific and technical services; SCHOOL – school education; VETUNI – technical, vocational and tertiary education; HLTHSS – health and social services; PUBADM – public administration; OTHSVC – other services; DWELLG – ownership of dwellings.

Source: Productivity Commission estimates.

Nevertheless, output still increased across all industries due to increased demand (figure B.2, panel a). Demand from the household sector increased because the rise in consumption for non-university-educated groups (due to real wage rate rises) exceeded falls in consumption from university-educated groups, and because of the simulated compositional changes (a shift from school- and VET-educated young people on lower incomes to university-educated young people earning higher incomes means that young people in aggregate enjoy greater consumption, all else equal).

¹³⁷ In reality for the ‘school education’ industry, the amount of schooling delivered meets population demands (which are not modelled) and school education is not explicitly priced in the public sector. The simulated changes for this industry can therefore be interpreted as improvements to the quality of education delivered, at a relatively lower cost. This is discussed further above in the simulation examining improvements to school education quality.

Relative capital rental prices also increased due to increased demand for capital from growth in production, and the fact that industries that experienced relative price reductions were not used heavily by the investment sector.

Real GDP and real GNI increased by about 0.04% under this simulation, but sensitivity testing found that the effects varied with changes to the model assumptions. For example, some changes to the size of the assumed increase in university-educated people led to real GDP increases from 0.03% to 0.06% (chapter 4 of this inquiry's companion volume '*Whole-of-economy modelling*').

Improving tertiary education quality¹³⁸

The model was used to run two simulations to illustrate the potential effects of recommendations to improve the quality of tertiary education — one stylised representation of 'long run' effects and another of effects in the 'very long run'.¹³⁹

- The long run illustrates the economic impacts once quality improvements have resulted in more productive workers in the age groups that are more likely to graduate (and therefore benefit from improved tertiary education quality) sooner, via a 2% increase in the labour productivity of university-educated 15-24 and 25-34 year old labour.
- In the very long run, all workers that have completed tertiary education will have done so in the improved system, so it is assumed that the 2% labour productivity improvement applies to all university-educated labour types, regardless of age.

Long run

The increase in productivity for university-educated 15-24 and 25-34 year old workers resulted in their real wage rates (that is, wages relative to the economy-wide CPI) increasing relatively more than other labour groups. Real wage rates for other university-educated age groups fell slightly on average as the 15-24 and 25-34 year old labour groups were preferred due to their increased productivity. Aggregate real wage rates increased slightly and hours worked fell slightly.

Increased labour productivity meant that industries could produce more output with the same amount of labour. All industries increased their quantity of output produced. However, output price effects relative to the economy-wide CPI varied across industries, reflecting several factors — including relative wage rate changes due to the increased labour productivity, each industry's relative use of 15-24 and 25-34 year old workers, and the change in demand for goods and services. Industries that used relatively more university-educated 15-24 and 25-34 year old workers (such as 'school education' and 'professional, scientific and technical services') benefited more from their improved productivity, which led to an overall decrease in their relative prices. However, industries that used relatively little labour from university-educated 15-24 and 25-34 year old workers (such as 'other manufacturing', 'construction' and 'transport and wholesale'), or that relied heavily on capital (such as 'agriculture, forestry and fishing' and 'mining'), experienced a relative increase in their output prices, because the improved labour productivity had less of an effect.

The increase in output across all industries meant an increased need for capital, leading to increased investment and a larger capital stock. Capital rental prices increased in relative terms as well, due to the relative price of investment increasing.

Households increased their consumption across all commodities in real terms, and real exports and government consumption also increased. Real GDP increased by about 0.2% and real GNI increase by about 0.3% under this

¹³⁸ Referred to as simulation 4 in this inquiry's companion volume '*Whole-of-economy modelling*'.

¹³⁹ It has been assumed in both scenarios that the time horizons were sufficient to allow the capital stock to grow and move flexibly between industries.

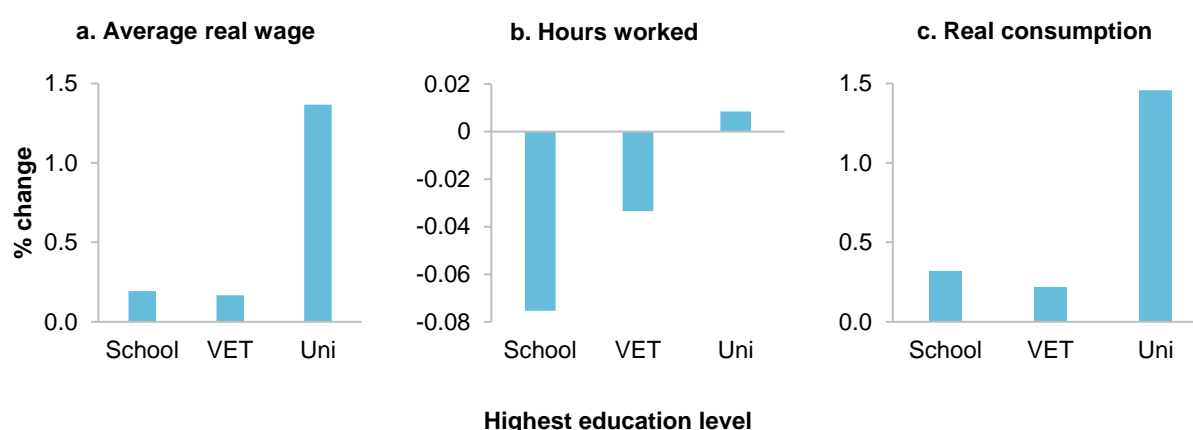
simulation. However, sensitivity testing found that the real GDP effect ranged from 0.1% to 0.5% with changes to the assumed labour productivity improvement, indicating some uncertainty about these figures. Household wellbeing (as measured by a combination of consumption and leisure time) increased as households had higher labour incomes and were able to consume more, and some groups increased their leisure time. The value of the wellbeing improvement was estimated to be worth about \$2.5 billion to households in aggregate in 2018-19 dollars (that is, if this amount was given as extra income instead of the productivity shock, households would be as well off as they were estimated to be after the productivity shock). Consumption inequality increased slightly as the benefits of the shock predominantly flowed to university-educated workers, who were generally more highly paid and initially had higher consumption on average.

Very long run

The increase in productivity across all university-educated workers increased demand for this type of labour relative to other types, which increased their real wage rates (figure B.3, panel a). The real wage rates of VET- and school-educated labour also increased, albeit by a smaller amount. The greater real wage increase for university-educated workers resulted from industries substituting toward more productive university-educated workers. Hours worked by university-educated labour increased while hours worked decreased for VET- and school-educated labour (figure B.3, panel b).

Real consumption increased across all individual groups (figure B.3, panel c), with increases in labour and capital incomes exceeding increases in saving and taxes in real terms. On labour incomes in particular, university-educated workers saw increased real wage rates and hours worked. VET- and school-educated labour types also saw increased incomes and consumption even with a decrease in their hours worked, as real wage rates for these labour types increased. Similar to the long run simulation, household wellbeing increased (as both consumption and leisure time for some groups increased), with the improvement valued at \$8.4 billion in aggregate in 2018-19 dollars. There was a slight increase in consumption inequality, as the university-educated labour groups who benefited from relatively larger consumption increases also initially had higher consumption on average than other groups.

Figure B.3 – Estimated changes in average real wage rate, hours worked and real consumption by education level due to improved tertiary education in the very long run

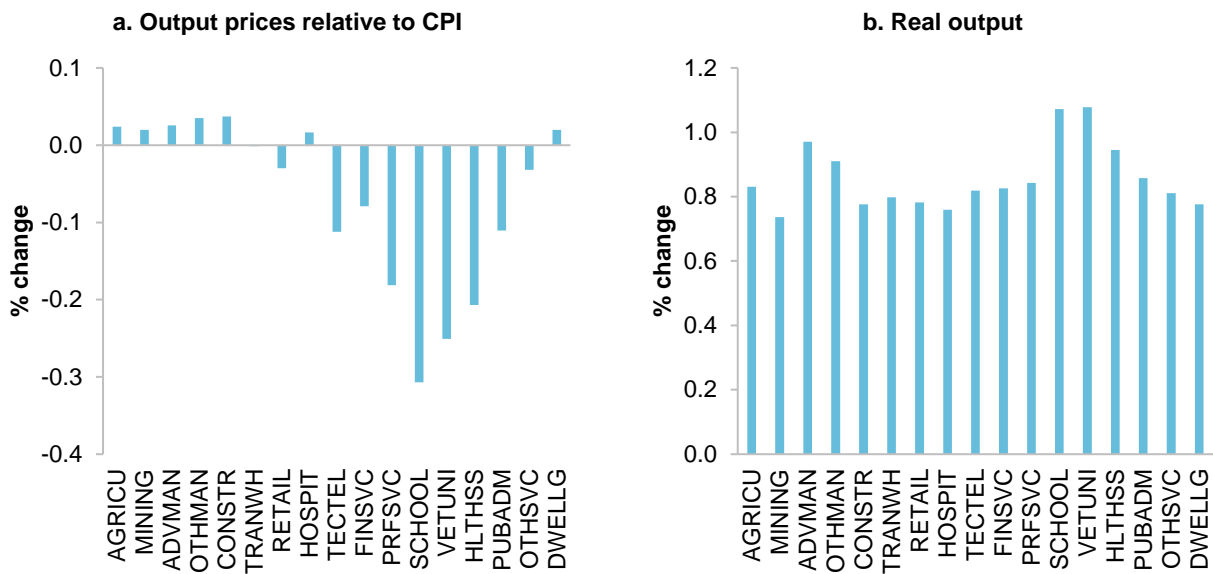


Source: Productivity Commission estimates.

Similar to the long run simulation, output price changes relative to the economy-wide CPI varied. Industries that saw a relative price increase included 'agriculture, forestry and fishing', 'mining', advanced manufacturing', 'other manufacturing', 'construction', 'hospitality' and 'ownership of dwellings', and other industries experienced relative price decreases (figure B.4, panel a). Real output increased across all industries as the increased labour productivity of all university-educated workers meant more output could be

produced with the same level of labour (figure B.4, panel b). More capital was also required to produce this increased output, so investment and the capital stock increased, while the relative price of investment and capital rental increased. Economy-wide, real GDP increased by about 0.8% and real GNI increased by about 0.9% under this simulation. Sensitivity testing found that the real GDP effect ranged from 0.4% to 1.6% under different assumed productivity improvements.

Figure B.4 – Estimated changes in output prices and real output by industry due to improved tertiary education in the very long run^a



a. Industry abbreviations: AGRICU – agriculture, forestry and fishing; MINING – mining; ADVMAN – advanced manufacturing; OTHMAN – other manufacturing; CONSTR – construction; TRANWH – transport and wholesale; RETAIL – retail trade; HOSPIT – hospitality; TECTEL – technology and telecommunications; FINSVC – financial services; PRFSVC – professional, scientific and technical services; SCHOOL – school education; VETUNI – technical, vocational and tertiary education; HLTHSS – health and social services; PUBADM – public administration; OTSVC – other services; DWELLG – ownership of dwellings.

Source: Productivity Commission estimates.

Abbreviations

ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
ACL	Australian Consumer Law
ACARA	Australian Curriculum, Assessment and Reporting Authority
AERO	Australian Education Research Organisation
AITSL	Australian Institute for Teaching and School Leadership
AQF	Australian Qualifications Framework
ARC	Australian Research Council
ASQA	Australian Skills Quality Authority
ATAR	Australian Tertiary Admissions Rank
CBT	Competency-based training
CGS	Commonwealth Grant Scheme
CPI	Consumer Price Index
CSP	Commonwealth supported place
DESE	Department of Education, Skills and Employment
DEWR	Department of Employment and Workplace Relations
EFTSL	Equivalent full-time student load
FTE	Full-time equivalent
GDP	Gross Domestic Product
GST	Goods and Services Tax
GUG	Good Universities Guide
HALT	Highly Accomplished and Lead Teachers
HECS	Higher Education Contribution Scheme
HELP	Higher Education Loan Program
HERD	Higher Education Research and Development
HEPPP	Higher Education Participation and Partnerships Program
IAT	Institute of Applied Technology
ICL	Income-contingent loan
IRLSAF	Indigenous, Regional and Low-SES Attainment Fund
ITPA	Independent Training Package Assurance

JRG	Job-Ready Graduates [Higher Education Support Amendment (Job-ready Graduates and Supporting Regional and Remote Students) Bill 2020]
JSC	Jobs and Skills Council
MOOCs	Massive open online course
MBGA	Maximum Basic Grant Amount
MFP	Multifactor productivity
NAPLAN	National Assessment Program — Literacy and Numeracy
NSRA	National School Reform Agreement
NASWD	National Agreement on Skills and Workforce Development
NCSEHE	National Centre for Student Equity in Higher Education
NCVER	National Centre for Vocational Education Research
NSC	National Skills Commission
NTEU	National Tertiary Education Union
OECD	Organisation for Economic Co-operation and Development
PBF	Performance-based funding
PCS	Provider Category Standards
PISA	Programme for International Student Assessment
QILT	Quality Indicators for Learning and Teaching
RTO	Registered training organisation
SES	Socio-economic status
SEIFA	Socio-Economic Indexes for Areas
STEAM	Science, Technology, Engineering, the Arts and Mathematics
TAFE	Technical and Further Education
TEQSA	Tertiary Education Quality and Standards Agency
TERS	Teaching Excellence Research Scheme
UAC	Universities Admissions Centre
UK	United Kingdom
US	United States of America
VET	Vocational Education and Training
VFH	VET FEE-HELP
VSL	VET Student Loans

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