



# Tertiary education in a world of changing skill demands

As the world of work changes, New Zealanders will need different skills and capabilities. But it is hard to predict the scale and scope of these changes. Tertiary educators will need to equip learners with the skills they need for a dynamic and unpredictable labour market. This document outlines these challenges and offers some ideas on how they can be met.

## Technological advances have significant potential to disrupt the world of work...

What New Zealand needs from its education system will change as the world of work changes. The major force is technological change. In the last decade, there has been an explosion in device connectivity, disruptive technologies, and rapid advances in automated systems, all of which will change organisations and labour markets.

## ...but there is a lot we do not know...

While the disruptive *potential* of these technologies is massive (e.g., Schwab (2016)), it is hard to predict the scale and scope of the change. We do not know:

- › how far or fast technology will progress
- › how rapidly society will adopt new technologies
- › how disruptive all of this will prove to be
- › how and where new jobs will be created.

## ...including how it will affect New Zealand

This makes it hard to anticipate the effects of technological changes on the New Zealand labour market, resulting in widely variable predictions. For example, a New Zealand report (Kubiak et al. (2015)) employed the methodology of a widely-cited Oxford study (Frey and Osborne (2013)) to estimate that 46 percent of New Zealand jobs are at high risk of being automated over the next two decades. In contrast, an OECD report (Arntz et al. 2016) found that only 9 percent of New Zealand jobs are at high risk of automation (with 35 percent at some level of risk).

While some jobs may disappear and others may replace them, **technology will also change the task mix within a range of jobs**. Even where jobs are not automated, the workers filling them may need training to remain competent and to make productive use of new technologies.

Alongside this technological change are the combined effects of:

- › **demographic changes**, with a more diverse, older, and globally mobile population
- › **globalisation**, where it is difficult to predict whether recent nationalist agendas in the US and Europe will affect the long-term globalisation of markets.

### We can be pretty sure about a few things...

Despite significant uncertainty about how skill demands might change and how quickly change might occur, there are a few bets that seem pretty safe:

- › Routine tasks and simple social interactions will increasingly be done offshore or automated, reducing the number of jobs where these tasks are predominant. The effects of this are likely to be felt mainly, but not exclusively, among low- and medium-skilled jobs.
- › New jobs will be enabled by new technologies. These will tend to require technical skills not yet invented.
- › Individuals and firms will need to specialise more to compete in global markets (Di Maio, (2013)).
- › Demand will grow for certain 'soft skills' that are very difficult to automate. These include complex social skills, cultural competencies, critical thinking, creativity, and an enterprising mindset (Picker (2018)).

### ...including that the education system will need to develop skills for an unpredictable employment market

The tertiary education system needs to prepare young people for an unpredictable future, and support adults to remain employable as skill demands change.

This means Tertiary Education Organisations (TEOs) need to do two things, both of which require them to build and maintain strong partnerships with **industry and employers**:

1. **Ensure learners develop transferable skills and core competencies that will complement new technologies and resist automation.** Whatever the future holds, a transferable base of core skills and knowledge is likely to remain valuable. This base should include core subject knowledge and theory, digital, scientific and other literacies, and soft skills. A broad, strong transferable skill and knowledge base is especially important for young learners starting out in the work force. Developing soft skills effectively may require rethinking traditional tertiary educational delivery (e.g. challenge-based learning and interactive classroom activities alongside, or instead of, lectures or seminars).
2. **Ensure the discipline-specific technical skills they teach are up to date.** Demand for technical training is increasingly likely to come not only from young people seeking a first job, but also from workers looking to learn about emergent technologies to remain employable or advance in their careers. We want employees to be able to access this training in-work to prevent redundancy, rather than just getting redundant people back into work.



**Figure 1.** Skills for an unpredictable future

Workers will need provision that gets them up to speed with the latest industry-integrated technical skills as quickly as possible. This means flexible short courses rather than traditional full qualifications. Some courses might be best delivered via online or blended delivery models. Providers will need to recognise workers' prior learning to avoid delivering education that the worker doesn't need.

If some of the more radical predictions of changing skill demand play out, demand for short, modular provision will be very high and may outstrip demand from school-leavers for full qualifications. A possible future scenario is that delivery of short, fast-changing, technically-focused courses to people in work could become the core business of vocation-oriented TEOs. At the very least, we expect demand for this kind of delivery to grow significantly.

## References

- Arntz M, Gregory T & Zierahn, U (2016). ***The risk of automation for jobs in OECD countries: a comparative analysis***. OECD Social, Employment and Migration Working Papers, No. 189, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5jlz9h56dvq7-en>
- Di Maio M (2013). ***External Influences on New Zealand's Economic Potential***. <http://www.treasury.govt.nz/government/longterm/fiscalposition/2013/pdfs/ltfs-13-bg-einze.pdf>
- Frey CB & Osborne M (2013). ***The future of employment: How susceptible are jobs to computerisation?*** [https://www.oxfordmartin.ox.ac.uk/downloads/academic/The\\_Future\\_of\\_Employment.pdf](https://www.oxfordmartin.ox.ac.uk/downloads/academic/The_Future_of_Employment.pdf)
- Kubiak L, Ballingall J, Destremau K, Dean M & Drew A (2015). ***Disruptive Technologies: Risks, Opportunities – Can New Zealand make them most of them?*** <https://nzier.org.nz/publication/disruptive-technologies-risks-opportunities-can-new-zealand-make-them-most-of-them>
- Picker L (2018). ***The Growing Importance of Social Skills in the Labor Market*** <http://www.nber.org/digest/nov15/w21473.html>
- Schwab K (2016). ***The Fourth Industrial Revolution: what it means, how to respond***. <https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/>

## Further reading

- Elliott S (2017). ***Computers and the Future of Skill Demand, Educational Research and Innovation***. OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264284395-en>
- Gumbel P, Lund, S & Cooper RN (2018). ***What can history teach us about technology and jobs?*** <https://www.mckinsey.com/global-themes/future-of-organizations-and-work/what-can-history-teach-us-about-technology-and-jobs>
- Manyika J, Lund S, Chui M, Bughin J, Woetzel J, Batra P, Ko R & Sanghvi S (2017). ***Jobs lost, jobs gained: Workforce transitions in a time of automation***. <https://www.mckinsey.com/global-themes/future-of-organizations-and-work/what-the-future-of-work-will-mean-for-jobs-skills-and-wages>

