



Skills Meet-Up Discussion Paper

Towards A Roadmap For The Emerging Skills Ecosystem In Australia

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Edalex

THE *Bean Centre*

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Martin is the Founder and CEO of The Bean Centre, an organisation founded with a single mission: To partner with visionary education experts, breakthrough technology companies and future thinking education providers to create a future that works. Previously, Martin was Vice-Chancellor and President of RMIT University, an institution with over 80,000 students based in Melbourne, Australia, with campuses in Vietnam and formal University partnerships in Singapore and China. He previously held the positions of Vice-Chancellor of The Open University, the UK's largest academic institution and leader in the provision of flexible learning, and General Manager of Microsoft's Education Products Group in Seattle, Washington.



Dan McFadyen - Managing Director, Edalex

Across the past 20 years, 3 passions have driven Dan: shaping collaborative teams, evolving services businesses, and enabling innovation in education. These passions fuelled varied roles from a start-up developing the CODiE award-winning EQUILLA software to global educational powerhouses Blackboard and Pearson; from small teams to leading a team of 65 delivering an annual product and service portfolio of \$55 million.



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Renzo is an experienced senior executive with a track record of establishing and growing businesses locally and internationally across a range of sectors. His background covers practice management and General Management roles in Tier 1 consulting firms across strategy, operational performance improvement and branding as well as industry roles managing business lines in Australia, Asia and Europe across the FMCG, Healthcare and Education sectors.



Margo Griffith - Head of Business Development, Edalex

Margo's in-depth knowledge and experience of micro-credentialing, skills data and the skills ecosystem is the result of working in and with higher education providers and edtech leaders, nationally and internationally for over 25+ years. She is passionate about the positive impact of technology within education and the enablement of lifelong learning and agility. Margo is a connector at heart and is a strong advocate for diversity and inclusion in all areas of life.



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Executive Summary

Edalex and The Bean Centre recognised the need for a conversation to connect interested parties to share their experiences, hear from policymakers and explore practical avenues to shift the dial around closing the skills gap in Australia.

The thoughts and discussion points from the stakeholders involved in the two Skills Meet-Up events are presented in this discussion paper. We hope that our outputs will contribute to an action plan to create real and measurable change in the way we recognise and validate skills, in the way we train, re-skill and upskill our workforce and in the way we empower all individuals to have equitable access to lifelong and life-wide learning.

Our participants came from a cross-section of organisations involved in advancing the change agenda around skills. From those organisations innovating at a grassroots level with new models of skills data, taxonomies, standards and alignments in the skills ecosystem. They can be grouped into the following stakeholder segments:

- Government
- Industry / Employers
- Educators
- Learners

Several key challenges are outlined and addressed, including:

1. The need for large-scale restructuring across formal education
2. The need for immediate action to provide equitable access to education
3. The need for industry and education to work together more closely
4. The need for funding reform and co-development - the keys to a better skilled, better trained workforce
5. The need to address skills shortages and migration system reform
6. The need for long-term planning and frameworks to sustain change and growth of the skills ecosystem
7. The need for open, linked data to underpin the ecosystem

In the following discussion paper, we explore each of the key challenges and provide recommendations for the role that government, industry / employers and education can play in enabling the roadmap for the emerging skills ecosystem in Australia. Learner solution requirements are outlined and detail how learners will benefit from the proposed changes.

By presenting the data, feedback, and challenges in this way, we hope this discussion paper will not only inspire further discussion around the evolving skills ecosystem, but also inspire action.

Key Findings

1

National leadership and coordination is urgently needed

There has been a lack of national leadership, action and coordination to date, which has impeded our shift to a skills ecosystem. Participants felt frustrated by the lack of agreed-upon standards and systems that are used by stakeholders in all sectors, and whose meaning and intent are universally understood. With no shared vision or cohesive national plan in place, individual efforts continue in isolation and opportunities are often lost. The results from these efforts are not collected or amplified, limiting the sharing of best practice that might otherwise be used to better inform decision-making.

2

Setting standards around taxonomies and open data are the highest priority

Universally agreed, and its lack often lamented, was the view that a skills taxonomy must be decided before any large-scale systemic change can begin. Without a shared language and definition of skills, whose meaning and intent is understood by all stakeholders, there are countless opportunities for miscommunication, misunderstanding and much potential lost. Open data standards that support interoperability and data mobility will remove barriers to enabling technologies and support learner agency.

3

New government policies and funding models will have big impacts

Government funding models have not kept pace with market demands and in many cases are blockers to innovation and progress. Skilled migration reform is another area that presents a range of challenges and opportunities. A cohesive, ongoing coordination effort will be required to organise, drive and govern the skills ecosystem implementation and evolution, a natural fit for the government to own.

4

Greater communication, collaboration and co-design are key to success

Bringing people together from across sectors and from grassroots practitioners through to policymakers has demonstrated for us how important open discussions are. Once in the same room, the topics of conversation and the depths explored in discussion progressed in quality of outcome very quickly. Collaboration and co-design were identified by the group repeatedly, and in answer to many of the challenges we face. Establishing and leveraging existing forums / communities of practice would go a long way to increasing our pace of change.

Introduction

The Skills Meet-Ups were designed to create an avenue for conversation at the grassroots to policy making level. Stakeholders identified the need to share their practical experiences, seek answers from like-minded colleagues and explore the wicked problems around the skills gap and the future of work with those invested in forging change.

The information presented here is a distillation of those events with some additional elements to provide context and background information.

A common theme across the events was the need for action and coordination. It was recognised that there are many disruptive and worthwhile projects currently working to effect change, particularly in the area of training, reskilling and up-skilling. These efforts need to be identified, recorded and the results amplified.

This discussion paper explores these themes and the others raised, not to just present the data, but also to examine implications and potential next steps for four key stakeholder groups:

- **Government** - a source of policy, funding, regulation, coordination and often a distributor of information. Government is an essential partner in addressing the challenges facing the skills ecosystem.

- **Industry / Employers** - as educators provide credentials and records, industry must learn to leverage the validity and security of the credentials that have become a part of the learner's education record. Leveraging employer partnerships in the co-development of education and training results in graduates that more directly match industry needs and can fill skills gaps.
- **Educators** - institutions that not only impart skills knowledge to learners but also provide records to validate the learner's claim to those skills. As such, they are key to the continued evolution of the skills ecosystem and the creation, validation, and acceptance of related credentials.
- **Learners** - learners are the focal point of the skills ecosystem. Governments often impact how they acquire skills and how much that will cost. Educators are often the catalyst to them obtaining those skills and the credentials that validate them. Job outcomes are typically the primary goal of learners: to transition from learner to earner or progress in their career.

The recognition and empowerment of lifelong learners is key to the evolution of the skills ecosystem and must be a central consideration in any action plans.

The Challenges

The challenges that stood out at the Skills Meet-Ups were:

1. The need for large-scale restructuring across formal education
2. The need for immediate action to provide equitable access to education
3. The need for industry and education to work together more closely
4. The need for funding reform and co-development - the keys to a better skilled, better trained workforce
5. The need to address skills shortages and migration system reform
6. The need for long-term planning and frameworks to sustain change and growth of the skills ecosystem
7. The need for open, linked data to underpin the ecosystem

Creativity and innovation need structure to thrive and result in meaningful change. Without a robust combination of solutions that address the above, the emerging skills ecosystem will continue to be "the Wild West" - messy, complicated and complex as it tries to "self-organise" into something more effective.

Terminology

Alternative credentials - any micro-credential, industry or professional certification, acknowledgment of apprenticeship (registered or non-registered), or badging that indicates one's competencies and skills within a particular field. Alternative credentials do not include traditional academic degrees or vocational qualifications.

Interoperability - the ability to transfer data from one standard to another. An interoperable standard can enable skills data to move between and across systems that are designed to empower individual ownership over their skills.

Learners/earners - those entering the skills ecosystem through different channels yet on the pathway to meaningful work. Key beneficiaries of the skills ecosystem.

Skills - knowledge, skills, abilities, and/or attitudes that help communicate what a person can do.

Rich Skill Descriptors (RSD) - a skill statement and associated data points about that skill. The RSD is published at a URL, where machine-readable, searchable data is available that allows for the interoperability of a skill across digital platforms.

Skills-based hiring - employers match the skills required for a particular job role to new or existing talent, instead of using the degree as a proxy for perceived skills typically associated with that credential (DeMark and Kozyrev, 2021).

Skills ecosystem - a self-sustaining network of workforce skills and knowledge in an industry or region (New South Wales Department of Education and Training, 2008). Global infrastructure comprised of social, digital, and technical resources to support and facilitate skills as currency (Open Skills Network, 2022).

Stakeholder Recommendations and Impacts

The discussion paper authors believe in an engagement approach, building on models like the Skills Meet-Ups to enable unified actions to be taken across the spectrum, from grassroots practitioners through to policymakers. With learners placed at the centre, the following recommendations and impacts were identified for each of the stakeholders by participants:



Role of Government

- Promote policies, data structures and funding that support skills-based workforce development
- Develop a national skills taxonomy
- Ensure skills data is open and linked and compliant with data standards for interoperability and mobility. This applies to taxonomies, frameworks, skills classification systems and more
- Make skills data accessible and enable utility - a shift from spreadsheets and PDFs to user-friendly, value-creating applications
- Establish appropriate quality assurance and governance policies towards alternative, digital and micro-credentials to promote trust and value
- Consult with all stakeholders individually and collectively and be prepared to start with a blank sheet of paper
- Develop a comprehensive ecosystem framework to connect and communicate with all sectors
- Promote a reform agenda in training and education systems to remove barriers and establish clear priorities
- Drive more agile, industry-informed skills forecasting
- Develop a pilot collaboration framework - what best practice looks like, informed by local and global practice
- Reset the visa system - focus on skills not occupations and be more granular in skill definitions
- Reduce red tape and increase collaborations and mobility between state and federal agencies
- Incentivise education providers to provide local hiring assistance to international cohorts and streamline the learn-to-earn pathways for international graduates



Role of Industry / Employers

- Create an internal skills taxonomy that makes skills visible to all stakeholders and is linked to a national skills taxonomy
- Decouple work from jobs (basing work and workforce decisions on skills, not formal job definitions, titles, or degrees) to increase the flexibility and response time of your organisation
- Link your job ads, internal training and talent management to skills and, where appropriate, remove degree requirements for candidate consideration to promote equality
- Work with your learning community and share the skills (expressed as clear skill definitions such as RSDs) requirements for your industry and co-develop learning
- Be transparent that the signal to hire is around skills, not qualifications, and build the capability to validate and assess digital credentials
- Collaborate with government and educators to streamline the learn-to-earn pathways for international graduates
- Work with technology vendors to reduce systems and hiring bias and promote interoperability of skills level data



Role of Education

- Ensure visibility and granularity around skill data across all courses and programmes and align with a national skills taxonomy
- Work across education sectors and other providers within the sector to define seamless learning pathways via mapping and alignments with skills as the common thread
- Encourage a research agenda to explore alternative forms of learning such as non-formal and informal, micro- and alternative credentials
- Encourage procurement policies that advocate for interoperable technology platforms based on open data standards
- Co-design learning with industry, amplify effective case studies and encourage replication across discipline and industries
- Create and build collections of RSDs for industry aligned products
- Work with industry to build more robust learning to employment pathways
- Develop specific funding recommendations for government to better leverage existing and potentially new funding
- Develop robust local job search resources and support, including employer networks for domestic and international students
- Collaborate with government and industry to streamline the learn-to-earn pathways for international graduates



Learner Solution Requirements

- Gain access to a more seamless learn-to-earn journey to enable learners to make the right career decisions based on defined skill definitions, evidence-based labour market data and informed learning choices
- The ability to own and control the storage and use of individual skills and learning data via a learner employment record or digital wallet
- Have existing skills recognised and validated with greater perceived value from skills-based learning and non-traditional qualifications
- A more flexible system that enables learners to work, pursue education and lead a meaningful life with incentives for lifelong learning e.g. lifelong learning grants or loans
- Visa system focused on granular skills - increasing employment opportunities upon graduation
- Alignment of programs between industry and education

Challenge 1: The Need for Large-Scale Restructuring Across Formal Education

There is little doubt that the current education and training system in Australia is past due for an overhaul. As identified in the *National Microcredentials Framework* (2022):

“The education landscape is changing with growing demand for shorter-form courses that enable workers to rapidly upskill and encourage lifelong learning.”

The reasons for the growth in demand for skills-based learning are multiple and widely recognised. In brief, some of the primary drivers include:

- Technology, AI and machine learning is advancing at an exponential rate, changing what the workplace looks like and the positions available (Michael, 2022; Marr, 2022). Learners need to upskill or re-skill quickly as new jobs are created, and need to develop the skill of learning quickly to keep up with changing demand - a “perpetual learning curve” (Van Kuiken, 2022).
- Lifelong learners increasingly don't have the time or money to invest in full degree programs. Alternative education (such as micro-credentials) typically costs less, offers a quicker path to reaching their career goals (Tyler, 2022) and recipients enjoy other benefits, such as higher employment rates and salaries (Kato and Weko, 2020).
- Large companies such as Boeing, Walmart, and IBM have begun to remove degree requirements from at least 50% of job postings (Hancock et al., 2022). Increasingly, non-traditional learners can achieve positive employment outcomes even without a degree, using a mix of certificates, credentials and experience (Caballero, et al., 2022).
- In response to the COVID-19 pandemic, the push toward virtual and hybrid work environments has spurred significant shifts in employee retention dubbed the “great resignation.” Employees left secure positions for new opportunities in large numbers (Camilleri et al., 2022; Harvard Business Review, 2022; Klotz, 2022).

With employers across the board experiencing skills shortages (National Skills Commission, 2022) the pressure they are exerting on the government to come up with solutions is only set to increase. According to the Australian

Chamber of Commerce and Industry: “The most pressing challenge facing business today is a shortage of skills and labour. With workplaces under enormous strain, it is placing a handbrake on economic growth (2022). How the government chooses to respond to this will impact greatly the education sector and by extension, society at large.”

There is universal agreement that there are systemic problems with the current skills system that impact all stakeholders - and recognition that a piecemeal approach will be insufficient to enact the level of necessary changes. It was succinctly put by one participant who simply asked, “What system?” Other participants' comments included:

- “In the digital space, the velocity and volume is a problem - and it can't be solved by throwing more learners at the sausage factory.”
- “There are many isolated projects happening - but no cohesion. What is gained in the isolated projects may be lost so easily with no framework holding it together.”
- “Skills are non-transferable, even between universities, let alone between sectors of education.”
- “Change is accelerating in the workplace but our big and clunky system can't keep up.”
- “Training and education systems are too complicated with no clear priorities - the skills system needs to be more agile to respond to needs.”

At a macro level, defining the system was deemed important, focusing on the interactions and interplay between providers, learners, employers and governments. Funding was identified as a large obstacle, and so too were the legacy and regulation of education. Leveraging international models and studying the results of efforts overseas was suggested as a starting point. We need a national approach and, to some degree, we must also align with other skills ecosystems around the globe. It's a complex landscape and ultimately, the evolution of the skills ecosystem in Australia will only come about with a careful, coordinated effort.

Contribution and Recognition





There are several reform agendas currently underway, including The *National School Reform Agreement* (The Department of Education, 2018) - which sets out 8 national policy initiatives against 3 reform directions that all parties have agreed to implement - and the *Skills Reform Agenda* (Department of the Prime Minister and Cabinet, 2020) for our national Vocational Education and Training (VET) sector - which sets out immediate reforms to improve the VET sector and an approach and priorities for developing a new National Skills Agreement to replace the National Agreement on Skills and Workforce Development. The Australian Government has committed to an *Australian Universities Accord* - which provides an opportunity to build a visionary plan for Australia's universities and higher education sector and drive lasting and transformative reform (The Department of Education, 2022). At the other end of the spectrum is the *Early Childhood Education and Care* inquiry (Productivity Commission, 2023) headed by Professor Deborah Brennan. With these reform agendas already underway, the feeling in the room reflected the following ways participants could best contribute:

- **A voice in the reform efforts** - participants wanted to make these changes for the good of learners, employers, educators, and the public as a whole. The “voices you have in the room” will affect the outcome of decisions. Including active leaders and practitioners in the skills system, with real-world experiences to draw from, will greatly improve the quality of recommendations. The opportunity exists to respond to the reform efforts and the *Universities Accord Discussion Paper* is out now for comment.
- **Share solid ideas for action** - while it is great to discuss these issues and identify the problems and potential solutions, participants felt the conversation only matters if it leads to action: items must be actionable, measurable, and achievable to have meaning. This has been a key focus of the Skills Meet-Ups, to not only define a clear identification of the issues faced but what can and should be done about it. With solutions proposed and discussed between all stakeholders, the strategies for action are not proposed lightly. They are a reflection of what needs to be done as decided by those who are doing the work and provide the best-fit solution for all.


Beyond the sharing of ideas and actions at a single point in time, an ongoing channel of communication needs to be captured and shared with those who have it within their power to set policy and guide the market as a whole.

Figure 1: Impressions of the Federal Jobs & Skills Summit (held in September 2022)

What do you believe are the most positive outcomes from the recently held Jobs Summit?

	Recognise the importance of skills and skills-based learning for future work
	An urgency for changes and collaborations among all stakeholders to enhance lifelong learning outcomes
	Recognise skilled migrants as important as domestic talents to the economic growth
	Education needs a speedy transformation in response to the on-demand global digitalisation

What do you think was missed or where do you think attention needs to be paid at the national level?

	Roadmap for better alignment and intergration at all educational levels to bolster learning outcomes
	Learner-centric education to empower learner in job search
	Interoperability and visibility of skills using tech-enablement
	Skills and qualification frameworks revamping solutions
	Equitable opportunities and mobility in learner agenda

Source: Skills Meet-Up poll. (October 2022). Edalex and The Bean Centre

Challenge 2: The Need for Immediate Action to Provide Equitable Access to Education

Since the first of our Skills Meet-Ups was held, large-scale restructuring of formal education has been recognised more broadly, with the establishment of Jobs & Skills Australia (which commenced on 16 November 2022) and the release of a discussion paper by the Department of Employment and Workplace Relations on 5 January 2023. Across the events, while participants acknowledged that the best solutions will come about by engaging with multiple sectors, considering implications at all levels, through open consultation and the sharing of ideas - the strongest arguments were for the need to take immediate action. "While these are all good ideas for change," one participant pointed out after a lengthy discussion, "[we] need to avoid the valley of death syndrome where all good ideas go to die because none [of them] are actioned." Another pointed out that we must "be cognisant that we keep falling in love with the problem and keep failing to provide solutions." Educators, employers, and learners - all want, and are ready for, action.

There is another force driving immediate action - access and equity. We need to acknowledge the diverse array of circumstances from which learners come to education. They often come from a low socioeconomic background, are primary caregivers for elderly parents or relatives, single parents, people of colour, hold multiple jobs or have a disability. Their background and circumstance may affect their ability to access education in the first place or limit their ability to be on an equal footing throughout their studies.

Many learners have been failed by, or have faced barriers to success within the existing system. Rethinking the system involves exploring what a truly equitable system and the future world might look like using a skills-based approach to both learning and hiring. As one participant predicted: "We have a huge equity challenge ahead of us." But if we act to close economic, resource, and opportunity gaps across the learn-to-work ecosystem, we create an opening to address

"Our mindset needs to shift to reflect a more dynamic future of work where linear careers will be far less common and young people will need a portfolio of skills and capabilities - including career management skills - to navigate the more complex world of work."

access and equity issues. Doing so may provide access to hidden or latent talent pools that can then contribute to addressing the skills shortages we face as a nation.

With some immediate actions that reframe education and employment around skills, there is much that may be accomplished. Consider the following as examples:

- **Shift the proxy for hiring and workforce development from qualifications to skills** - when skills are visible and transparent, learners can show a direct line from the skills they possess to the requirements of the job. This results in better-fit hiring decisions for both candidates and employers. This is why skills-based hiring practices have been so enthusiastically embraced - already 81% of, mostly multi-national, employers say they are looking for candidates with skills rather than degrees (American Student Assistance (ASA) & Jobs for the Future (JFF), 2022). With qualification requirements lifted, learners can undertake short-form, skills-based learning, as and when required. This tends to result in learners engaging in more education, over a longer period - creating lifelong learners.
- **Foster and support lifelong learners** - lifelong learning is considered an economic imperative and the only sustainable competitive advantage in a seemingly unpredictable global economy (The Economist, 2017). Lifelong learners continue to build new skills and professional capabilities beyond formal education. They study new topics, have an open mind about new processes, and actively seek opportunities to expand their knowledge. Establishing nationwide data standards will enable system interoperability and learner achievement data to flow seamlessly through the skills ecosystem. Learners can collect their credentials in digital wallets, and stack smaller credentials together to put towards a qualification or degree, choose where who and how they share them and can add, re-organise and build them up throughout the whole of their life.
- **Focus on 'new collections of skills', not just 'the acquisition of new skills'** - "[we] must recognise groups of connected skills instead of degrees," said several Skills Meet-Up participants, who then went

on to consider: “How can we build structures and frameworks to operationalise skills?” This approach was used as the basis for a report released by The Foundation for Young Australians (FYA) in 2017. FYA analysed more than 2.7 million job advertisements to uncover 7 new job clusters in the Australian economy, where the required skills are closely related and more portable than previously thought. According to the report’s authors: “Our mindset needs to shift to reflect a more dynamic future of work where linear careers will be far less common and young people will need a portfolio of skills and capabilities - including career management skills - to navigate the more complex world of work.”

- **Encourage diversity and new perspectives** - alternative credentials make it easier for diverse candidates to get hired, according to 81% of executives, 71% of supervisors and 59% of HR professionals (Society for Human Resource Management (SHRM) & The SHRM Foundation, 2021). And companies would be wise to look for diverse talent, as it helps them adopt fresh thinking and recognise new opportunities (Cohen & Erickson, 2020), encouraging innovation and agility.

- **Show how skills align to job roles and labour market data** - digital credentials should show what skills the learner has, the level achieved and the work they are capable of doing. Providing rich context around skills can include links to skills definitions, such as Rich Skill Descriptors (RSD), what job roles in a particular industry their skills make them qualified to apply for, and labour market data, such as whether a profession is in high demand, how many current job openings there are and the salary that can be expected.

With benefits like these as the result of proactively addressing access and equality, we would be well-placed to take immediate action.

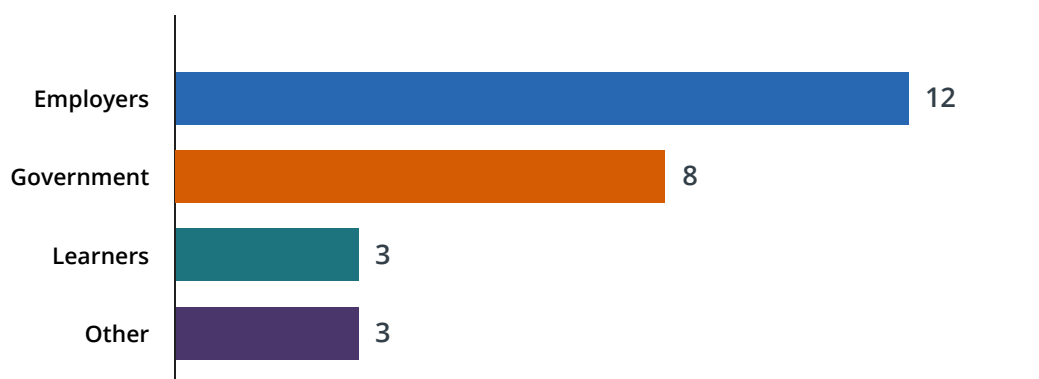
Challenge 3: The Need for Industry and Education to Work Together More Closely

Educators and employers must work closely together. Industry must work with educators to define the future workplace skills they need and to ensure alignment between the skills required and the skills being taught.

When industry speaks about skills gaps, they are often referencing their immediate needs. They don’t need particular skills in the next five years, but rather in the next year or so (Figure 2). Yet this timeline is usually too restrictive for educators.

Figure 2: Which key stakeholders do you believe will drive the most change in the next 12 months?

Note: 13 options in total



Source: Skills Meet-Up poll. (July 2022). Edalex and The Bean Centre

With closer ties between these two stakeholder groups - meeting regularly, sharing ideas, collaborating on solutions, and committing to act - there can be greater understanding, alignment and forward momentum built. During our first Skills Meet-Up, participants noted that:

- “Industry thinks in terms of skills; Education thinks in terms of knowledge,” but, “both need application - and proof of what they can do with skills and knowledge.”
- “There is tension between employer needs and skills outcomes. In higher education there is not enough industry in the mix - they’re not influencing the build of products...”
- “The skills system needs to be more agile to respond to needs.”
- “Government needs to drive the impact along the continuum - beginning with standards and reform through to industry and learner outcomes.”
- “[It’s important to] recognise there will be a range of segmented solutions that reflect the different priorities of government, learners, employers, etc.”

Based on the number of comments Edalex received, that “employers really need to be involved in these discussions”, we made the theme of our next Skills Meet-Up the ‘Voice of Industry’ and had a mix of industry bodies and employers join in. Here are some of the comments at our second Skills Meet-Up, after the two groups had participated in discussions throughout the morning:

- “Need to break the cycle where too many academics determine what is taught versus listening to employers about their needs.”
- “Degree structure needs much more approval from industry - like the technical degrees of accounting. This happens across many degrees but is not universally applied.”
- “Vocational training is dictated by the qualifications network. The quality assurance frameworks make changing course structure difficult and slow.”
- “We need to recognise there are different types of

employers by size - not just very large ones. Small business is the largest employer of Australians - different solutions are likely to be required for different sizes of employers.”

At our second meeting, The Tech Council of Australia (TCA), shared their thinking and research behind their report: *Getting to 1.2 million: Our roadmap to create a thriving Australian tech workforce* (2022). It defines the drivers, goals and steps the industry will take to build a thriving tech force by 2030. Their research showed:

- Many learners lack the knowledge of what tech jobs exist and how to get into them. The vague answer of, “You should go into IT” does not supply enough information for the average learner to know the variety of positions available, and the skills required for each.
- Current training, e.g. degrees, do not always fit the final job requirements, and additional skills education is often required. A data science degree does not always match the skills needed by a data scientist, resulting in a skills void.
- There is a lack of diversity, equity, and inclusion (DEI) in tech. Women, the elderly, and people of colour are groups that are severely underrepresented, resulting in an unbalanced workforce in which talent is overlooked in many cases.
- The talent pool for many positions is small and narrow where the need is great. While some workers can reskill for these positions, there are still not enough to completely fill them, even with recent tech company layoffs like those at Meta (the parent company of Facebook), Twitter, and others (M. De Witte. Dec 2022).
- Lastly, many countries, in this case, Australia, “lack coordinated effort, analysis, and planning for the tech workforce.”

Taking the above into consideration, it’s clear that closer ties and greater collaboration between the tech industry and educators would go a long way toward helping them reach their goals.

“Industry thinks in terms of skills; Education thinks in terms of knowledge,” but, “both need application - and proof of what they can do with skills and knowledge.”

Challenge 4: The Need for Funding Reform and Co-Development - the Keys to a Better Skilled, Better Trained Workforce

One of the primary concerns educators expressed about the skills ecosystem was funding. “The ability to access funding / investment is creating hard and narrow skills solutions,” was one astute comment made. But skills solutions, by nature, cannot be hard and narrow. The same group wondered if perhaps we need a looser standard given the pace of change. There was agreement around the need for a long-term funding plan, stretching beyond the last or the next change in government. Revising a policy and standard every time there is a change is not a practical or desired solution. All of which raised the question - is the funding system agile enough to keep up?

One group noted: “The underlying funding model is inconsistent, too linear and it affects the capacity to increase volume.” Another query was: “How are these short and sharp pieces of learning going to be funded in a consistent way?”

Other observations on funding challenges were noted:

- Micro-credentials and shorter forms of learning need to be part of the funding model - acknowledging that there have been some initiatives introduced recently, such as the *Microcredentials Pilot in Higher Education* (The Department of Education, 2022).
- “The current funding model is corrupting and misdirect[ing] activity and energy.”
- “Government policy is not supportive of the work that’s happening.”
- “(the system) is driven too much by compliance - the changes in ASQA to a self-assurance model have helped, but there are still too many processes around compliance, consuming both funding and time.”

When asked during the second Skill Meet-Up, what specific actions government could take to improve funding, participants had many ideas, grouped loosely into the following three areas (Table 1).

Table 1: Specific actions government could take to improve funding

Education Funding	Industry Funding	Learning Funding
“Funding needs to enable continuous learning, supporting rapid adaptation - specifically for lifelong learning, reskilling and upskilling and recognition of prior learning (RPL).”	“Incentivise businesses to provide training - % of payroll to be used to conduct training in workplaces (as per the UK model).”	“Tethering student funding to education components - but only upon gaining employment - would better align outcomes with industry needs.”
“Given 84% of skills training comes from RTOs, focus funding where the training is delivered, noting there are some TAFEs that deliver training well and there have been serious quality assurance failures on funding RTOs.”	“Build funding streams to encourage on-ramps to skill gaps for marginalised cohorts - look to Military de mobbing, women out of the workforce, “new collar” workers.”	“Introduce Government backed annual personal learning budget (as per the Singapore model).”
Government		
<p>“We don’t need more dollars but a better use of dollars.”</p> <p>“Need more agile funding systems that focus on outcomes, not processes.”</p> <p>“Focus on skills not occupations and reset the visa system.”</p> <p>“Stop thinking solutions are state-based and think broader.”</p>	<p>“Learners and employers have capped budgets so need to find a way to unlock funding through new mechanisms.”</p> <p>“We need to unpack the existing red tape and create better collaboration between departments at state and federal levels.”</p>	

Source: Skills Meet-Up poll. (July 2022). Edalex and The Bean Centre

If there was a magic wand educators could wield, funding would be one of the first things they would change.

Ultimately, the consensus view on funding amounted to:

- We need a framework that pulls everything together and leverages all existing resources.
- We need a more flexible system for funding so the right solutions are in the right place at the right time. We need funding models that provide consistent funding around skills - acknowledging that creating a meaningful skills architecture will take time, effort, and resources.
- The government needs to provide stakeholders funding incentives to help them make the shift to skills - most initiatives are resource intensive to establish and behaviour change needs to be managed internally and in interactions with other stakeholders.

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Industry and Education Co-development

Australia has an internationally renowned higher education system, but there is significant scope to enhance its engagement with industry to improve transitions from education to work and lifelong learning. Enhanced engagement will also help to fill existing and emerging skills gaps in industry and, in turn, increase productivity and economic growth (Bean & Dawkins, 2021).

Nearly everyone in the room was in favour of co-development and had something to say about it. Educators and employers were keen to make connections and add to their potential collaborative innovation networks. As one group noted “The right industry input, focused on learners, is extremely important. Program design should focus on skills - not just on knowledge or jobs.”

Challenges to co-development were also discussed:

- Regulation often stifles co-development, as educators are obligated to design curricula to meet them.
- Education providers are constrained by the structures in which they operate, which impacts the shape and size of education offerings.
- When we talk about co-development and collaboration, funding is still very much an issue.
- Can we find non-accredited modes of training that are industry endorsed? This may lead to the creation of new entities that can operate with more agility, and not be constrained by academic governance structures.

The key takeaway was that greater opportunities for collaboration and the opportunity to deepen connections would significantly boost co-development efforts and result in programs and courses that more closely meet industry needs and the needs of learners.

Challenge 5: The Need to Address Skills Shortages and Migration System Reform

International students and other skilled migrants face significant systemic challenges and bias in local hiring practices. They find it difficult to obtain work in Australia, even with an Australian degree in hand and a guaranteed multi-year work visa.

“In the employer’s eyes, international students are seen as too complex. So there’s a friction that is being upheld by employers due to these presumed ‘complex visa issues,’ which is preventing international students from being able to get an interview, let alone secure the job itself.”

A guest international student speaker spoke candidly of her personal experiences and that of her peers. She highlighted several challenges faced ubiquitously by international students: “A bridging visa can take 8 months [to get], and students aren’t allowed to work until the visa has been granted. Many are forced to leave Australia as they can’t support themselves for that long without a job.” Employers lack an understanding of the pressure on many international students to repay the debt incurred from their study to families and start making money right away to send home to their families.

Whether or not a student gets a visa and can find an employer is willing to accept it, sometimes becomes irrelevant. International students lack an Australian social network that would help them identify job opportunities. In the experience of our guest speaker and her peers, they discovered most of the best jobs were never advertised, and international students frequently missed out.

Consider one scenario shared: One of her fellow graduates had recently completed a Bachelor of Science and had aspirations to work in STEM. Despite finishing top of her class, due to the pressure of her visa expiring and her inability to secure work in her chosen field, she was forced to take up further study in one of the occupations included on the Priority Migration Skilled Occupation List. It was in an occupation far less skilled than the degree she had just completed, and while in the same ballpark, was not in the area she wanted to build her career in. “Is that the best use of the skills she has at her disposal?” our guest speaker asked. “Would it not be better to provide international students with resources and support that give them access to the kind of networks local graduates have access to here? Keeping their talents and skills here in Australia?”

Evidencing the real-world impacts of our speaker’s point, the in-depth research conducted by the Tech Council of Australia shows clearly that even with a dedicated focus on local skill development, reskilling and upskilling, the tech industry experiences a 66% leakage out of their tech-related graduate pool (over 3,500 in total) - as regular as clockwork. These are the international student cohort, who have completed their degree in Australia and are desperate to find work locally. Maddeningly, systemic failures and the misconceptions and often bias of employers force them to leave the industry and in most cases, return home - taking their skills and human capital with them.

It seems clear that international students and workers face both conscious and unconscious bias. For it to change, stakeholders from the government to employers must ensure they adopt a more equitable and unbiased approach. A revamp of the system is long past due and needs to reduce bureaucracy, offer robust local hiring assistance and remove visa limitations that make it difficult for them to stay - and make no sense in light of our skills shortages. Until we do, employers will continue to miss out on some of the best graduates coming out of Australian universities.

“In the employer’s eyes, international students are seen as too complex. So there’s a friction that is being upheld by employers due to these presumed ‘complex visa issues,’ which is preventing international students from being able to get an interview, let alone secure the job itself.”

Challenge 6: The Need for Long-Term Planning and Frameworks to Sustain Change and Growth of the Skills Ecosystem

At the highest level, grounding the change, growth and evolution of the skills ecosystem in Australia in learner-centricity will be a significant contributor to our success. Placing the learner at the centre will act as the guiding light against which our activities and choices are measured. Currently, “the skills system is not sufficiently driven by learner needs,” multiple participants noted. As was often repeated, “Learners must be placed at the centre.”

To achieve long-term systemic change, interdependent systems need to be aligned to a common vision of the skills ecosystem, how it will operate and how it will evolve.

Bureaucracy must be minimised, as should the multiple disparate systems that currently exist and result in

duplication, delays and/or create barriers. A central goal of the skills ecosystem should be to increase the overall number of skilled workers. Offering micro-credentials that shorten the time to qualification or credential, introducing credential-as-you-go options and making the learner journey more flexible by providing access to historically underserved cohorts will position Australia to better meet our economic and social goals.

Where regulation has become dysfunctional in education and workforce systems, the coordinated efforts of stakeholders must be to reduce regulation and remove barriers to learn-to-earn pathways. Stakeholders must be unified in ensuring new practices are embedded along the

Table 2: If Australia could change one thing to have the greatest impact on skills reform, what would it be?*

Data analysis of skills obtained against skills used and skills required versus qualifications	Understand the value of education and the value of people learning to accrue skills over their lifetime
Deregulation	Tie funding to impactful skills outcomes
Agreement on a skills-based approach	A long-term funded plan, stretching beyond change in government
Funding model that facilitated continuous skills acquisition	A system that builds a national consensus and the technology to be able to scale it
Recognition of transferability of skills	Skills-based ecosystem across all sectors
Common skills taxonomy : skills-based funding	Funding skills not qualifications
Harmonised skills systems	Genuine AQF
Remove barriers to innovation	Direct learner funding
Strategy and plan	Skills-based funding
Create a common skills language that unlocks existing data so it can be used across all learning - formal, non-formal and informal, and then mandate its use	

*Unedited responses

Source: Skills Meet-Up poll. (July 2022). Edalex and The Bean Centre

entire talent pipeline. An agreed-upon mechanism for skills validation of alternative credentials must be introduced and stakeholders incentivised to make the shift to skills.

Develop a Clear and Universal Taxonomy

One of the most persistent topics raised at the Skills Meet-Ups has been the urgent need for the development of a common skills taxonomy. While decentralised systems can be more nimble, they suffer from the lack of ability to communicate. Common language is just one area that will foster the “joining or fitting parts [of the skills ecosystem] together” (Chianese, 2014; Marten, 2001, Self-organisation of biological communities, para. 1). Without it:

- There is tension between employer needs and skills outcomes
- There is no common language or context around skills
- The pace of change is too fast for the systems’ capabilities
- There is insufficient feedback from learners on skills
- There is a lack of visibility and available pathways for learners

A common language of skills would go a long way toward making changes in funding models possible. “[it’s important to] define taxonomy and mapping. [We] must consider state vs. state differences vs. federal vs. international taxonomies.”

“Ideally, a skills taxonomy would bring everyone onto the same page and will act as a framework to pull everything together.”

Ideally, a skills taxonomy would bring everyone onto the same page and will act as a framework to pull everything together.

- “The lack of common language creates both dark and “grey” data that is not easily accessed, further confusing the system itself.”
- “There isn’t a common language across schools, VET, higher education and employers.”

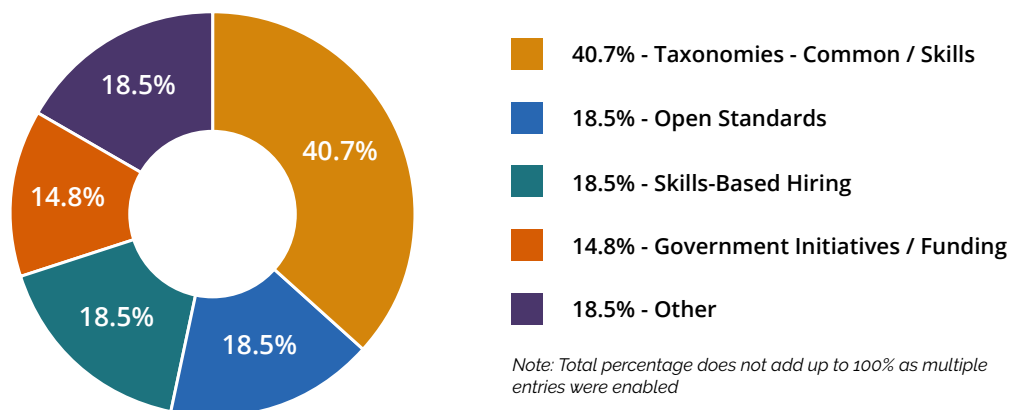
Overall, the group was united around the requirement for a defined skills taxonomy, transparent to all in the ecosystem with sufficient granularity and utility to enable scale.

A common taxonomy was discussed in all of our Skills Meet-Up discussions and is the agreed-upon logical first step. It is also the initiative that could initiate the greatest change in the shortest possible time.

The Tech Council of Australia’s research supported the need for a common skills language too, finding:

- There’s likely a skills language issue here, and while skills might be transferable because they are not defined in the same way across industries, they may be missed.
- [Without it] learners may not know how to articulate their skills to an employer in a different industry.
- Industry may also not have defined the skills they need clearly, making candidates who don’t perceive themselves as qualified hesitant to apply.

Figure 3: What initiatives do you feel will have the greatest impact on the skills ecosystem moving forward?



Source: Skills Meet-Up poll. (July 2022). Edalex and The Bean Centre

Challenge 7: The Need for Open Linked Data to Underpin the Ecosystem

Economic forces are forging new learn-to-earn pathways, facilitated by technology. On the global landscape, we are seeing a move towards equipping learners with the ability to document, verify, share and control their learning achievements through the new currency of skills. This promotion of lifelong learning and the evolution of tools, such as digital credentials and the development of micro-credentials, has led platforms to expand access to opportunities such as Learner Employment Records (LER), Comprehensive Learner Records (CLR) and Digital Wallets.

Several key challenges are emerging through these technological and socio-economic developments:

- **Value in the ecosystem for alternative, micro and digital credentials** - to what extent do employers value these credentials or see a bundle of them as comparable to a degree?
- **A common skills language built on structured data** - a national open skills infrastructure is critical to support the future of work and the development of agile and robust talent pipelines where all individuals can achieve their career goals. The scale and urgency needed for this transformation necessitate a significant commitment to the democratisation of skills as a sharable, interoperable currency through the creation of networks of open, accessible, machine-actionable skills (Saunders and Cox 2022).
- **Access and inclusion** - Technological advancements may be perpetuating the current labour market biases that are skewed towards the educated elite.
- **Data ownership and rights** - the move from a centralised to a decentralised model of data ownership will require governance frameworks that protect learners' individual rights.
- **Interoperability** - mobility is key in forming new learn-to-earn pathways. However, mobility will only be achieved if an individual's data can be seamlessly and dynamically exchanged across platforms, systems and regions. Underpinning this requirement for universal compatibility is open data standards.
- **Trust** - the current formal education pathways for learners has a centuries-old trust network. It is recognised that relying only on that pathway moving forward will not achieve the number or pace of

skilled workers required for the jobs of the future.

Engagement by all stakeholders with digital credentials and digital exchange systems, such as wallets, will only happen with trust in the verification and validity of the learner data. Quality assurance processes are key to improving the perception that non-formal and informal learning is of value in the labour market.

One of models gaining traction is disaggregation - of jobs into tasks, of qualifications into micro learning and of learning outcomes into skills. Once things are disaggregated they then have to be reassembled into new forms. This takes mapping and alignment to create the necessary crosswalks and links.

Data standards are essential for the skills ecosystem to achieve scale. Open data standards are desirable, to address a number of the challenges we face as outlined above.

Open data standards are the agreements that establish a consistent way to create, store and share data and "offer the design principles of openness, consistency, portability, open governance, interoperability, usefulness and structure".

If we develop a public goods mentality, as championed by the Open Skills Network, the focus is on creating resources, such as open-source code and tools, that are freely available and accessible to all. Open-source standards and protocols allow organisations to create common technical infrastructure and language on which to build. Using common tooling, standards and language can be catalytic in creating interoperability that allows learners/earners to share their credentials and skills data with potential employers, academic institutions, and other relevant agencies (Saunders and Cox 2022).

Creating integrated technology systems that facilitate the flow of data will empower individuals with the ability to share their skill achievements where, when, and how they wish. To this end, application, recruiting, and hiring systems will need to be configured with open data standards to unveil the "hidden workers" that represent the missed diverse talent pools (Fuller, et al., 2021).

Open data standards: "offer the design principles of openness, consistency, portability, open governance, interoperability, usefulness, and structure"

Conclusion

With the emphasis on the need for immediate action, it is clear from the participants of our Skills Meet-Ups that engagement, coordination and collaboration of stakeholders will empower the skills ecosystem in Australia to meet the challenges that lie ahead.

Above all, stakeholders must be thoughtful in their approach, open in their collaborations and embrace cooperation for the skills ecosystem to evolve in a meaningful and organised way.

There is no question of whether or not evolution will happen - it's already begun. The question now is how it will proceed, and whether it will lead to the sustainable improvement we seek. We believe that our discussions and their outputs as outlined in this paper will contribute meaningfully to the much-needed reform of our skills development system.

Contributing Authors

Listed below are the participants of the Skills Meet-Ups who consented to their details being included in this discussion paper as "Contributing Authors". Thank you for your lively participation and contribution to the discussions. We are proud of what we have been able to do together so far - we look forward to continuing the journey with you.

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