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New Normal Part 3:

Why non-traditional education is part of the new normal

20 July 2020

By Marcus S. Bowles

Director, The Institute for Working Futures Pty Ltd

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Abstract

This discussion paper explores the following fundamental systemic issue: COVID-19 has amplified future work trends to a point where business change now occurs at a pace that demonstrably exceeds the rate at which tertiary educational providers are responding. It is therefore imperative to look beyond traditional curriculum and to find new paths that re-establish the relevance and value of vocational education. Exploring this approach further we examine how higher education curriculum can be designed in a non-traditional format to open employment opportunities for people looking to enter fast-growth, emerging digital roles that span disciplines and ignore the Industrial Age boundary between the blue collar worker and the white collar professional.

Introduction

Coronavirus has intensified changes that profoundly affect our future work environment and opportunities. At the same time, companies have also brought forward automation and business transformation projects. Taken together, these circumstances drive significant changes that will challenge the degree to which traditional tertiary education courses—sorted as they are into inflexible occupational and discipline boundaries—maintain their relevance.

This paper confirms these challenges and provides examples of how vocational education and higher education can collaborate to stay relevant in the post-pandemic economic recovery. It argues for a mindshift that champions non-traditional curriculum models whereby vocational education is woven into higher education degrees or integrated through targeted micro-credentials. In short, this new ethos needs to shift non-traditional learning from the academic fringe to the academic mainstream.

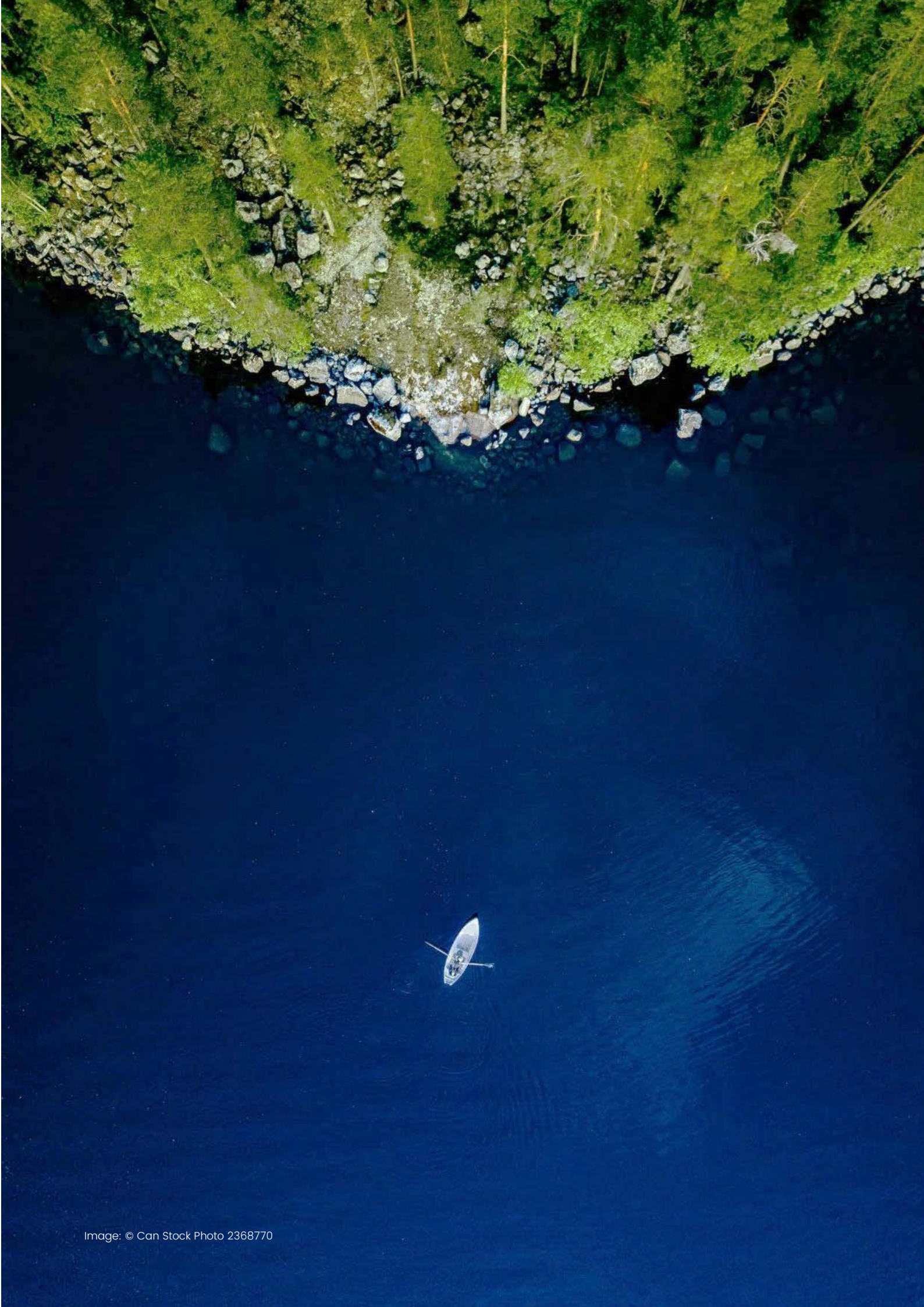
Non-traditional Curriculum

Any course that does not conform to daytime classroom-based delivery models is defined as non-traditional curriculum. As online and distance learning emerge and grow, institutions have narrowed this definition to non-traditional approaches that:

- Use non-standard assessment tasks or types
- Don't lead to a full qualification or are a stand- alone part of a qualification (e.g., MOOC[1] offering, short, professional, or executive education)
- Comply in non-standard ways to teaching and learning quality standards (e.g., work integrated learning, residencies, internships)
- Span vocational and higher education systems or have dual recognition
- Involve recognition of experience or attainment that may not involve formal learning (i.e., volume of learning and duration may be irrelevant)

The non-traditional curriculum actions in Australian universities mainly involve attracting students by offering parts of existing courses in an unbundled, shorter program. This response is inadequate. Instead, we need to use a mix of cross-disciplinary and dual-sector approaches to reinvigorate curriculum design. We need novel, shorter-form courses that are strictly in demand and absent from current course options. We must also move from a focus on learning as the outcome to outcomes tied to evidence of applied capability. This is a critical measure of success expressed by the principal users of non-traditional curriculum: employed adult learners, adults who seek to re-enter the workforce, and employers.

Accommodating non-traditional curriculum targeting wider outcomes allows universities to be more visible contributors to the preparation of the workforce for growing post-pandemic job opportunities. These opportunities surface as automation reshapes traditional occupations and technology creates demand for new and green collar roles; roles that fill the vacuum as the Industrial Age divide between the blue collar worker and the white collar worker disintegrates.



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New Collar Workers

The **new collar worker,** as originally framed by IBM, is an individual who develops the human, digital, and specialist technical capabilities through non-traditional education pathways. This propels them into emerging digital jobs in high demand areas where too few skilled graduates exist to meet employer requirements. As the gap between supply and demand widens, many global employers cannot wait for people to graduate from traditional diploma or bachelor degrees, even if their job readiness was to be guaranteed.[2]

Typical non-traditional pathways into new collar roles involve a seamless mix of working, learning, and earning. A non-traditional pathway, for example, may commence with a vocational or vendor certificate acquired over three to 12 months. It may then segue into an internship or entry-level role where, through further learning and experience, the participant acquires certain digital credentials that grant entry to more advanced roles.

Examples of fast growing new collar roles include those associated with digital activities such as:

- Software development
- Cloud and data
- Data analysis, machine learning, AI
- Data science
- Cybersecurity
- Privacy and trust

New collar roles reside in many other industries besides computing and IT to include banking and finance, health, education, media and communications, agriculture, mining, creative arts, and logistics. Nor do new collar roles, by definition, sit in either blue collar (labourer) or white collar (professional) domains. Consider, for instance, new collar jobs with skill gaps today such as agile project manager, service delivery analyst, systems accountant, market data modeller, crop hydrologist, or the transport systems technician.

Nevertheless, certain new collar jobs will be in more demand than others. For example, estimates by IBM suggest cybersecurity architects will have a talent acquisition shortfall of 1.6m by 2022. The demand for data scientists follows a similar path. If all 8,000 students in relevant courses in Australia in 2022 were to graduate, stay in the country and be hired as a data scientist, this would only meet half the predicted demand.

Green Collar Workers

While new collar jobs centre on the nation remaining competitive in the global digital economy, green collar jobs are emerging in sectors where Australia can play to its natural strength to create new economic activity. The **green collar worker** is a close relative of the new collar worker. Green collar workers have developed the human, technology, and specialist environmental technical capabilities through non-traditional education pathways that speed their entry into emerging green economy jobs.

Green collar work looms across many environmental sectors of the economy. We can already see employment growth in these top six categories:

- Agriculture
- Construction
- Transportation and logistics
- Infrastructure and utilities
- Energy and mining
- Manufacturing

Examples of rising fast growth, green collar jobs include:

- Clean energy engineer
- Bio-manufacturing specialist
- Environmental engineering technician
- Sensor technician
- Food production specialist
- Solar power technician
- Hydrologist

As with new collar jobs, emerging green collar jobs require capabilities that graft certain capabilities of a role onto capabilities from one or more existing disciplines. Whether we are talking about new collar or green collar jobs, the line between technical and professional activities blurs.

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Strawman: Apprenticeship-by-Degrees

As traditional jobs disappear, economic activity that allows technology to create new jobs cannot keep up with the change accelerant that is COVID-19. This means the misalignment between higher education courses and graduate job prospects will only worsen. Educational institutions face dual challenges in that they use traditional courses to prepare students for jobs that, in many cases, will be redesigned or non-existent, and the new jobs are still nascent.

So how can qualifications evolve to meet this new normal?

First, higher education providers have far more flexibility in curriculum design than vocational providers. Second, while course development cycle times may be slow, universities can still create very flexible and adaptive designs. (For instance, the Victoria University block delivery that can be moved and reshaped like Lego®). Curricula can be created where work integrated learning (WIL), internships, or applied practice allow those with current, relevant experience to gain recognition without undertaking learning. Also, common foundation units (i.e., a first year of a bachelor or masters) may be used to assure that soft skills or human capabilities are tied to the field of study, but subsequent units are streamed to accommodate specialisations we know about or that may emerge.

Let us examine an apprenticeship-by-degrees conceptual model that exposes some of an innovative curriculum's key features.

Vocations tied to traditional trades traditionally use apprentices. Typical examples are the 'tradies' (building, construction, mechanical, mining, and such like). Over the past decades, they have expanded to include service industries and traineeship models based on vocational training tied to national competency standards. Australia has also trialled higher apprenticeships as a superficial fix to bridge formal vocational education with structured on-the-job training. This raises participants beyond certificates to diplomas that open entry to semi-professional, associate, and technical roles.

While professions such as accounting, medicine, engineering, teaching, nursing and such like have strong roots in vocational education, we do not call their participants apprentices. Instead, we rely on formal university-based study accompanied by internships, placements, and supervised workplace experiences all wrapped into a bachelor or post-graduate degree.

Years spent designing learning programs to support transformation programs reveals that the vocational training apprenticeship model is too inflexible to meet future workforce needs. This is particularly the case where jobs and occupations simply do not align to publicly funded courses that must fit neatly into occupational classifications that echo Industrial Age ideals about how to organise work.

Evidence-based research surrounding applied projects with a number of large corporations reveals that a combination of vocational training *and* vocational education could achieve excellent results. However, it required non-traditional learning models because the participants could undertake applied skills in the vocational training model but graduate in a program that ultimately nested vocational education within a higher education degree program.

The executed projects appeared to seek four common outcomes:

a) Fill roles where substantial deficiencies existed in the talent supply pipeline.
b) Create a workforce that is productive, competitive, and responsive to future changes.
c) Reskill to rapidly overcome skill mismatches or misalignments where new recruits from school or existing staff

"Tertiary education and higher education in particular are resistant to, or at least very slow to change. Centuries of custom and practice and regulation have conspired to create a robust and self-sustaining system, rarely challenged into new ways of thinking about not just what is taught and learned but how teaching and learning take place. Despite solid evidence against such practices, mass higher education continues with its traditional, transmissive forms of teaching, its passive forms of learning and assessment, and content is king. The system is in entropy and substantial change requires revolution – a systemic and systematic application of collaborative practices that are known to support learning gain and capability development."

Professor Ian Solomonides, Deputy Vice-Chancellor (Academic & Students) Victoria University in Melbourne

held qualifications that fail to prepare them for emerging employment opportunities.

d) Ensure those in the programs acquired capabilities that made them highly employable and, through formal recognition, opened further learning and global work opportunities.

The design is simple yet difficult to execute within the traditional education sectorial boundaries and risk-averse compliance systems. While outside this paper's scope, it is noteworthy that industrial considerations were also an important part of the program design.

The model relied on creating an apprenticeship system that moved workers out of the vocational education and training (VET) system into the higher education system. Rather than prepare workers for a discipline or narrow vocation, the model focused on filling work roles that do not conform to existing professional or occupational boundaries.

Applied in some of Australia's largest wholesale, retail, and mining companies, the model challenged our concept of a 'traditional' curriculum.

Digital Credentials

Instead of focussing on a vocational qualification, trainees commenced a course or work-based learning structured to achieve the soft skills or essential human capabilities. Whether in retail store management, rail transport, or mining, the precedent industrial and apprenticeship models had essential units of competency tied to compliance, ticketing, or safety certification. While the courses retained these components and, to a certain extent, alignment to competency standards, there was no effort to force an alignment with existing Certificate 3 or 4 vocational qualifications. When issued, Statements of Attainment were tied to micro-credentials with a credit value formally tied to a bachelor degree. Each vocational competency or higher-order capability was assessed to the required proficiency standard. So while the Statements of Attainment represented the formal currency in the vocational education and training (VET) system, other modules were only accessing guaranteed 'credits' or advanced standing into a bachelor degree through the micro-credentials. While either the VET or higher education qualification outcome was an intended bonus, it was not the course designers' primary motivation. The outcome was not learning; rather, it was the capability standard using its applied context as evidence.

All the program's learning and experience was tied to capability standards and assessed through a combination of coursework and applied experience. Formal and informal learning (experience, non-structured learning, development activities) were all recorded and assessed by assessors meeting minimum standards, and this resulted in a portfolio of evidence that, on successful assessment, resulted in digital credentials that confirmed a capability's attainment.

Employers did not expect public funding for these non-traditional programs, opting instead to sacrifice funding for the superior learning and long-term workforce outcomes.

While the design could not conform to requirements for an accredited vocational qualification, attainment was confirmed using what was effectively a micro-credential; a digital credential with an established status within a larger macro-credential (the degree qualification). The employer issued the credential, which was often co-branded by a university partner or a professional body.[3] But the holder's achieved outcomes were listed in the digital credential's metadata. This included metadata authorised by a university partner confirming the credit, advanced standing, or entry pathway into a formal qualification.

For learners, it typically meant three to 12 months of intensive study while employed. The initial foundation learning transitioned into structured workplace learning and development as they progressed. At all stages, program participants were in paid work. They were also on a two-to-three-year pathway that allowed them to acquire an associate or bachelor degree. The pathways were also designed to open access to post-graduate degrees and professional status within a range of associations such as accounting, computing, data analytics, management, logistics, or engineering.

Capability clusters and stacks

The apprenticeships-by-degrees model fundamentally challenges vocational education to focus more on the capabilities required to be employable across multiple jobs or occupations. This means the biggest potential failure of this approach could be to develop and recognise capability where the individual cannot use

credentials to study or work beyond the current employer. To overcome this, all capabilities carry a mix of highly transferable and employable human capability standards (related to soft skills and enduring common competencies) and the specific role-related technical capabilities.

As with skill sets in vocational training, capability clusters are capabilities related and stacked together because they have a known relationship with certain types of roles or activities.

Capability clusters allow designers to prepare workers for numerous roles where employment is growing or emerging. The design of apprenticeships-by-degrees allows learners to stack and package capabilities that open what we call job neighbourhoods or job corridors.

Job neighbourhoods are clusters of work roles and activities[4] where capability requirements are common. While we know around 12 human capability standards apply to all roles, at all levels of work, irrespective of context, research confirms management or technical capabilities only apply to some functions, roles, or work levels. Using this methodology, it is possible to remove traditional constraints used to classify and build boundaries between an occupation, function, or industry. Instead, the focus is on where a profile of certain roles and activities may share common capability requirements.

Job neighbourhoods allow us to enhance workforce flexibility. We can more rapidly develop people through learning or experiences that let them change careers or pivot into new roles – and not through chunky, time-consuming qualifications, but through personalised, targeted micro-credential stacks.

Job corridors link a person wishing to transition to a new career or to emerging work opportunities. They identify the specific stack of capabilities that will move a person from one role to another or from a declining job neighbourhood to one offering a sustainable career.

Capability profiles allow staff to match their own profiles to a preferred career or job profile. For employers, they can find staff where capabilities beyond their current role were invisible, underappreciated, or underused and align them towards a skill gap. For instance, a bank discovered that rather than upskill data analysts to fill the talent shortfall in data scientists, the better option was to target those in business intelligence roles. In particular, it was the cognitive and problem solving attributes that made the significant difference. The job corridor established a stack of four capabilities the bank used to realign 120 internal staff to rapidly fill this critical skill shortage.

In another instance, a program covering eight capabilities was created to fill the long-term need for rail engineers. Due to compliance requirements, only degree-holding (professional) engineers could sign off on certain rail and maintenance work. The cost, performance deficiencies, and long cycle time involved in making engineering graduates job-ready resulted in Australia's largest rail employer sponsoring a program targeting employees already undertaking the rail maintenance supervisor role. The corridor upskilled existing supervisors with extensive experience that met the enhanced cognitive, risk management, and critical thinking related capabilities to fill the rail track engineering roles. More importantly, as automation of rail operations lowered the long-term employment prospects for all rail maintenance workers, the opportunity allowed existing workforce capacity to realign to fill a gap where more sustainable employment prospects existed.

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Educational Design Insights

The following section is mainly for educators. It offers practical insight into why the failure to use the same language has caused many well-intentioned educational interventions to be misaligned with employer needs.

The targeting of emerging job roles and efforts to use non-traditional curriculum to achieve these ends involves a fundamental shift. Educators seeking to improve employability in select courses need to move from the mindset that we can always assess a student's understanding of some pre-existing body of knowledge and achieve the graduate attributes (enduring human and soft skills) as a by-product of these same assessments. Rather, educators should seek to place equal weight on content knowledge (know-what) and contextual knowledge (know-how). This combines the codified explicit theory with the tacit knowledge that cannot be taught but can only be learnt through applied experience. Knowledge cannot remain static as job roles change and occupations merge and reshape in the face of automation. Employability is not just about holding specific technical and professional knowledge. It is, more than ever, about the graduate's ability to apply knowledge in a range of real-world contexts, to adapt rapidly to changing requirements, and to work effectively with others in the prevailing cultural setting.

Outcome confusion

Educators must evolve from thinking that learning outcomes and their attainment will satisfy the outcomes employers seek when they hire. Irrespective of the type of learning or assessment, or if it is very innovative WIL with authentic assessment tasks, the achieved outcomes still tie to curriculum that does not set an enduring fixed point. Assessments will vary by discipline, institution, and over time depending on the normative marking bell-curve for a class. This outcome grades a student in rank and position within their class against agreed learning outcomes. This can confuse employers that seek a fixed standard able to translate educational outcomes into a consistent measure with comparable value based on the work context.

Educators rightly believe they are in control of the learning tasks that lead to the set curriculum's intended learning outcomes (ILOs). Assessment tasks tie to the ILOs and show a student has successfully completed the learning tasks. When placed into the work context, the ILOs provided by the institution aren't necessarily preparing each student for a hire process that will be as concerned with their ability to adapt and flourish in increasingly turbulent workplaces.

Higher education providers are making huge efforts to prepare graduates for employment. Approaches such as **Outcomes Based Education** (OBE) emphasise the need to design curricula so ILOs splice into authentic experiences that reflect standards of practice at a level of work within their discipline. Students are assessed for what they know and what they can do in a real-world context. OBE also provides the design and cognitive scaffolding that will allow different learners to adapt and respond to the learning and assessment tasks.

To be compliant, all qualifications run by a higher education institution in Australia must be mapped to an overarching set of employability standards, graduate attributes, or similar graduate learning outcome statements. This hierarchy extends down from course level into alignment of units and their learning and assessment tasks. However, each university has its own set of graduate attributes that is not aligned with a consistent set of national standards or a skills framework.

Formal learning is an employability input. Higher education may make some graduates job-ready, but it fails to confirm their performance, nor should job performance represent the full investment outcome employers seek when they hire. The value, or true graduate outcome, must include the person's potential to adapt, continually learn, and work within the prevailing cultural and social context. This means it is as much about their largely unreported and unassessed human and cognitive capabilities as it is about their course-acquired technical knowledge.

Standards

A related concept that is grossly confused when used in education, business, and human capital fields is the term 'standard'.

The concept of standards when applied in the design and review of traditional higher education curricula is most likely used as a basis for criterion-referenced assessment. **Learning standards** can be part of the constructive alignment framework used to design learning and teaching. Irrespective of the myriad options for assessment tasks and methods, assessment

outcomes should be validated and result in consistent quality of graduates at the level expressed by the ILO. Once written, learning standards establish assessment criteria that delineate requirements students and assessors need to know and understand and that depict levels of attainment shown in the marking rubric.

Standards of learning are not to be confused with competency or capability standards, **National Competency Standards** endorsed within National Training Packages (itself a misleading title), set levels of skills, and knowledge a person must demonstrate at a defined level of work. The outcome is not tied to learning; it is tied to proficiency depicted by the vocational outcomes demonstrating job performance to a standard set, irrespective of the person or place. **Capability Standards** establish a high-level definition of the attributes (skills, knowledge, cognitive attributes, and behaviours) that individuals and workforces need to succeed in the future.[5] When assessed, capability standards have to take a holistic view of an individual's ability to perform and their potential to improve and to perform in a range of contexts. Unlike competency standards, capability standards concern system-level professional or workforce standards that need not be isolated to a job, function, or occupation.

While many in Australia now seem to think learning, competency, and capability standards are interchangeable, this is absolutely not the case. They point to very different outcomes, the most important of which is that in educational curriculum design, competency standards and capability standards are ungraded. Performance or proficiency indicators qualifying the standard are not assessment criteria, nor can rubrics apply because attainment is binary; it is achieved or not achieved.

Dr Marcus Bowles is Director of The Institute for Working Futures Pty. Ltd, and holds honorary professorial appointments at The Centre for Workforce Futures, Macquarie University and The Tasmanian Institute for Teaching & Learning, University of Tasmania. mbowles@workingfutures.com.au | www.workingfutures.com.au

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[1] Massive Open Online Course

[2] Bukszpan, D. (3 October 2019). Why IBM is using AI to find jobs for people that don't have a college degree, *@Work*, retrieved at https://www.cnbc.com/2019/10/03/why-ibm-is-using-ai-to-find-jobs-for-people-without-college-degree.html

[3] Here are three indicative examples of joint branding of jointly issued digital credentials and badges with metadata confirming higher education credit: https://www.youracclaim.com/organizations/microsoft-london-business-school/badges; https://www.youracclaim.com/org/deakin/badge/service-intermediate-pre-bachelor-aligned; and https://www.youracclaim.com/org/pearson-professional-programs/badge/pearson-professional-columbia-university-artificial-intelligence-certificate.

[4] Job neighbourhoods or clusters of capability can aggregate, sort and filter jobs and associated tasks and activities as classified in frameworks such as the Australian & New Zealand Standard Classification of Occupations (https://www.abs.gov.au/ANZSCO), or the International Standard Classification of Occupations (ISCO) as deployed by the US Department of Labour as the SOC in their O*NET online database (https://www.onetonline.org/)

[5] Bowles, M. & Lanyon, S. (2017). *Demystifying Credentials,* Deakin University, Melbourne.