



Skills Taxonomy

Background

As the National Evaluation Officer for the National CBT Secretariat in 1992 reporting to the VEETAC Board on the design of our National Competency Based Training system, I was directly involved in the design of qualifications, national training packages and the underlying industrial award reform agenda, following on from the 1988 Award Restructuring process. We aligned broad skill levels to qualifications and established, what is now, the AQF.

The Historical Context

In designing the system we undertook extensive research into international skill regimes, foundational skills and key competencies. The decisions made at that time resulted in the closure of the National Training Board, the establishment of the Australian National Training Authority and the progressive introduction of a skills system that aligned with Industrial Award skill levels.

The other important outcome was the decision to utilise the industrial skills framework to inform the qualifications framework. In that work, skills were to be recognised within a qualification which related to an industrial award skill level. The process was the final component of the 1988 Award Restructuring process.

The skills agenda was then, and remains, principally an industrially driven skills model.

The intent was to regularly update skills in line with industry's current and future training requirements and meet the need for a flexible and adaptable workforce. (Carmichael Report). There was an assumption that every aspect of skills including nomenclature, skills packaging and credentials would be regularly scrutinized and updated in line with technology and workforce changes.

This did not happen and the legacy has been a continuous focus of maintaining the nexus between skill levels and qualifications without any serious attempt to identify actual skills utilised within each occupation. To a large extent the skills agenda has been overtaken by the qualification agenda and the importance of maintaining RTO capacity in delivering qualifications that align with skill levels.

This supply driven approach has hindered any meaningful reform within qualifications and resulted in such creations as micro-credentials to satisfy real skill cluster needs. There has been no serious attempt to reform the AQF or to introduce flexibility between levels other than apportioning a small percentage of units of competency at higher levels within each qualification. It has in short become a system driven agenda rather than a skill driven agenda.

In the interim, we have seen the emergence of skill ecosystems (Finegold) and research such as the NSW Board of Vocational Education and Training "Beyond Flexibility: Skills and work in the future" Report that argued that skill formation is not and can never be a stand-alone issue.

Importantly, that report stressed that the nature of a particular skill ecosystem is shaped by many factors such as business strategy, business environment, government support and the regulatory framework, capital investment, employment relations, work organisation and job design and the capacity of education and training and its ability to meet industry's standards and workers' needs.

Recent NCVET's research has shown that informal learning (employer managed) has grown substantially as accredited training increasingly fails to connect with actual employer and employee skill needs. We are currently in danger of seeing a longer term collapse in the accredited training model (outside of declared vocations) and a loss of portability of skills in a fast changing skill environment.

Bernard Salt has accurately described this current time as the only era in human history when we are experiencing continuous change. Previously, technology was impacting incrementally usually a decade apart. That is no longer the case as technology has revolutionized work and the skills needed to perform work. AI is a case in point where most production machinery and warehousing systems are now AI driven.

Of greater concern is the increasing disconnect between skills taught and skills needed. Employers across most industry sectors are reporting that formal qualifications are less relevant unless the learner is exposed to actual industry systems. The issue is a fundamental quality issue for RTO's in that trainers must maintain currency of their skills through industry exposure and contextualization of the learning resources to meet actual skill needs.

In short, the pace of workforce change is overtaking the training system resulting in our current skilling programs becoming increasingly disconnected from industry. This change has also resulted in industry looking for specific skill clusters that relate to core job tasks rather than embracing qualifications. This is a serious issue that threatens the future of our education and training systems.

The notion that employees will always need to update their skills has been a core component of skill progression as envisaged in the development of the skill system. In this context skill progression is not necessarily qualification progression, although it can be. There is an argument to be made that each industry would be better to identify specific skill clusters (skill blocks) to provide appropriate entry skills and further forms of upskilling rather than subscribing to a full skill level qualification.

This challenges the current vocational training model which is seen to be too removed from actual skill demand and too slow to adapt to skill changes unless the learning is integrated with industry. In this respect, the Joyce Report's emphasis on the urgent need for RTO's to build close linkages with industry was a watershed moment in ensuring that any skills offered aligned with current and emerging industry skill needs. Sadly not much has happened since that report was published which suggests that the system is so embedded it cannot be reformed easily.

At this point it is important to understand that improving our skill system may not fit within our existing classification models. It may require a whole new approach to how skills are identified in the context of differing work environments. In this context, ANZSCO and the AQF may be quite inappropriate to relate skills to and there is increasing evidence of this, especially in relation to new occupations and skills.

If we turn to some fundamentals, we have created ANZSIC and ANZSCO for specific statistical purposes. In the process we have tried to fit different job roles with a similar title into a grouped occupational field e.g. technician.

Whilst we generally understand an electrical technician role, we struggle to fit various horticulture technical roles into a single technician classification. This example is important as the technology that impacts upon different occupational classes is also quite different. Using a catch-all title does not reflect the actual job role that may be performed. Trying to match it to a Skill level will also be difficult as many of these roles are changing due to new technologies that are a different skill levels to traditional occupations and in many instances displaying composite skill levels.

But it is even more complex when we consider the basic assumptions that occupational skills can be allotted a skill level that covers the bulk of the skills utilised.

Three things are undermining that assumption.

The first is that many occupations employ a pyramid of skills that might cover several skill levels.

In the Protected Cropping Industry thousands of Crop Care Technicians are managers of large crop growing sections reporting to the Head Grower or Assistant Grower as well as being Quality and Bio-security Officers, Horticulture Growers, Crop Pickers and Packers. Their Skills range from Skill Level 4 through to Skill Level 2 with some Skill level 1 skills where senior reporting requirements are a key part of the job role.

The second is the level of technology applied to particular job roles.

In the horticulture industry there is a wide variation of technologies from basic growing soil based systems through to advanced AI managed growing technologies that utilise few personnel in advanced hydroponic growing systems. The horticulture workers are classified variously as nurserypersons, horticulturalists, shed managers, operations technicians, operations managers, process operators etc. They all do roughly the same job but with different technologies and different skills.

The National Awards do not differentiate to reflect the skill variances and the training systems (VET) do not adequately cater for these technology differences either. What we continue to do is allocate the nearest ANZCO occupational title **for convenience**. This is due to the ANZCO series not being designed to continually update occupational nomenclature to reflect technology impacts upon skills utilised.

The third is integrated job roles covering different skill sectors.

A prime example is an Aquaculture Oyster Farm Manager who also has a broad acre land holding. They identify as "Farmer" on census forms although the roles may be evenly split. The difficulty here is that apart from the general management skills of a business owner, the two industries are radically different in skills utilised. One has land based mobile plant machinery and crop production and the other maritime and aquatic produce skills through bed growing to management to processing and packing.

In these integrated job roles cases and there are hundreds of them, the "managers" are not only operating in a pyramidal skill model but also in two diverse industries linked by a broad catch all primary industry definition. The lower level skilled workers also work in two sectors. Our skill definition systems do not cater for integrated or composite jobs, it's either one of the other or if both, then we pick a Mixed Farmer definition or a not elsewhere classified (nec) tag. This is not very strategic or reliable.

Getting the Skills Agenda Right

In looking at how we define skills and the purpose of a skills definition we must ask ourselves one key question, “Do we design a model that has an occupational focus for skill definition or do we design a model that has a skills focus for occupations?” They are not the same thing.

Designing a model that captures skills that are central to industry functioning and our industrial award system must be the base for any investigation of new or improved skill modelling. In this skills context, the education and training system is nothing more than a service industry to the skill needs of all national industries and a secondary consideration to industry need and form.

One can argue that much of the VET system, and to an extent the Higher Education system, has failed to effectively deal with the scale of change that characterizes the 21st Century world of work. However, there are more fundamental issues at play including a rigid series of systems that are not subject to continuous review and adaptation. Training Packages, the ASC, ASCED and ANZSCO are cases in point.

The reviews that do exist are far from efficient with long review processes that produce outdated findings due to their long review timeframes. The top down process is alive and well and inefficient. If there is one clear message in any shift towards a NST it is that it must reflect the current skills utilised within industry.

That suggests that our core structure must relate to the skills that are framed by occupational nomenclature but not necessarily interpreted by them due to the preponderance of cross level skills in modern workplaces. Importantly, any classification model must be subject to constant review to ensure that any skill delivery mechanisms are updated on a continual basis.

Not only does the current system work against any reasonable skill recognition process, it actually retards the natural process of change with consequential failures in areas such as skill migration and skill recognition both of which are having a negative impact on our economy during a significant period of demographic change.

Despite the creation of an extensive skill bureaucracy, including National Industry Skills bodies and previously Industry Reference Committees, we continue to assess skill needs against fairly rigid delivery models such as Training Packages. We continually lack effective and regular “grass roots” skill knowledge from industry.

To make matters worse, these issues are not really being addressed in our current occupational descriptor models and one of the main issues relates to a lack of an industry base for occupational nomenclature. If we are to provide a stronger base for skill identification we must start with an industry based occupational model that can provide the evidence for a more relevant skill classification system that may be more nuanced than the simple numerical model we developed in the 1990’s.

Such an approach is a dramatic shift from the current ANZSCO model which mixes common skill levels across a range of industry occupations. This is resulting in significant skill level identification issues as occupations are “fitted into” skill levels based on job titles with generic qualifications and experience e.g. almost all Farm Managers in any sector of the industry being Skill Level 1 with a University Degree and or 5 years’ experience. Out of interest, that came about due to a lack of information from the industry and arbitrary skill judgements within Government when the ANZSCO system was being developed out of the old ASCO. I was part of that decision making process.

No-one is arguing against the skill divisions that are in each workplace. The Modern Awards generally identify jobs by level but often without any clear skill descriptor. Within each industry new job roles are emerging which are creating a range of concerns as they increasingly do not fit Award levels. Much of this is related to technology, but it is impacting upon the narrow incremental skill model that we have used since the 1990's both within Awards and within qualifications.

Where does a Level 4 operator sit when the job role has changed to include Level 3 and Level 2 skills due to new technologies. Does the role require a new descriptor which recognises higher competencies and even a different job title (Senior Operator, Operations Technician etc). More importantly how does the employee acquire the additional skills (for new technology roles). In most cases it appears that industry is training its operatives for new technologies as the RTO's do not have access to the technologies or an understanding of the skills required. This is clearly reflected in the growth of "informal" industry skilling.

More importantly, how does one align a new job role with a qualification, a skill level or an occupational descriptor? Who makes the decision? Back in 2009 Skills Australia, in its Foundations for the Future paper, stressed the need for industry to define the skill levels and descriptors.

This has not been the case in recent years as central agencies defined the skill and occupation model and sought submissions from industry for verification. Without a solid level of industry participation, much of what has been developed by these agencies has little ownership by industry and even less commitment let alone a lack of understanding of the terminology.

Other jurisdictions including the UK have identified one of the problems with their Standard Occupational Classification (SOC) as being well suited to reporting labour market statistics, but not particularly well suited for understanding skills. They identify that this is because the initial split of jobs into nine major groups was based on differences in education and training levels (i.e. Skill level) rather than on differences in the types of skills these jobs require (skill specialisation).

As they correctly point out, "The initial emphasis of SOC on skill level means jobs that require very similar skills can appear in completely different major groups. In turn, it can be difficult to map skill domains onto the SOC and to understand how changes in skill demands are affecting occupations."

In the October 2023 paper, "A Skills Classification for the UK" , the Department for Education summarised the findings of a an employer skills survey as follows:

- A skills classification linked to qualifications and jobs would enable individuals to more easily understand the skills they have or could develop and to discover the education/training pathways they could take.
- The alignment of different courses and qualifications with skills could enable individuals to make more informed choices at all levels.
- Integration of a skills classification with the standard classification of occupations will enable other sources of labour market information to be utilised to better understand the labour market context, for example the supply of and demand for skills and consequently skill shortages/gaps.

It is not surprising that employers were wary of the Government developing a standard skills classification when there were good elements of the existing system such as skill maps. That is why any proposal to develop and implement a new skills taxonomy must have solid industry support or it may inadvertently undermine much of the current system of Modern Awards.

I note and strongly support their view that the scope of the UK exercise will ensure that “the classification is principally focused on the identification and mapping of the tasks, skills, and expertise related to UK “jobs”.

This is an important point in that much of what constitutes jobs is in fact a collection of tasks that employers understand in terms of skills and complexity. The real value of this approach is that it will ensure that any skills mapping that is based at the task level will allow for “specialisations and hybrid roles”.

A potential problem area of their approach, that I envisage, relates to the concept of being so definitive with regard to core and transferable skills that the identifiable major task and skill areas become lost in a maze of capabilities and knowledge that are not really identifiable by employers.

This has been one of the key weaknesses of the current VET system, describing competency standards in a holistic manner that employers have difficulty recognising. This is a very important point in that much of the current competency based training system in Australia was designed for RTO’s rather than employers.

This is one of the reasons that there remains a significant gap between formal accredited training and informal industry training (on the job), something that has resulted in employers shifting to informal training models that match the tasks and skills required in the workplace.

Having been part of a large bureaucracy that worked with industry, mostly through ITAB’s, it is evident that only industry can identify the skills required in the workplace, the level of those skills and the occupational nomenclature used. In relation to nomenclature, industry uses different titles for similar job roles with broadly similar skills which can and does confuse matters. An important task is to have industry define the job roles and common occupational terms.

At this time of significant workplace change, it is incumbent upon us to avoid fitting skills into fixed models. This will accelerate the move away from accredited training. We now understand the wider variety of work systems and the need to have efficient and effective ways to track the range of skills we use in workplaces. This level of variability must be captured as it often requires individual skill solutions.

Our National Training Packages have identified a wide range of units of competency with significant elective choices. However, in practice RTO’s are limited in their delivery capacity which often means that some electives do not form part of the learning program. To compound this problem, the development time for new units of competency can be up to a year or longer, which is often well outside of the actual skill demand timeframe within industry.

So, it appears there are several levels of issues we need to tackle.

1. Understand the occupational skills through a core task analysis within each occupation by industry.

This is a departure from the current ANZSCO model and provides a much clearer understanding of the occupations within each industry sector and the range of skills required for each occupation as well as the progression of skills within workplaces in that industry. Classifying jobs in a hierarchical industry based skill model not only aligns with the concept of progressive competency, but also allows each industry to devise more appropriate skill packages that align with real skill needs from the entry level up.

This would need a new occupational classification model that identifies all occupations by industry by skill level rather than by ANZSCO Code. Industry would then have greater ownership of their skills and be able to recommend adjustments as changes in workplaces and technology change the core tasks and knowledge that workers will need and utilise.

Right now industry struggles to find its occupations within a 1000 odd occupational listing segmented by skill level numbers.

2. Moving away from the current ASC structure

The changes that are occurring in many industry workplaces are challenging simplistic skill segmentation models such as the ASC. These changes may result in some occupations being adjudged to be across skill levels and in areas not covered by the limited ability of qualifications to include more units of competency from higher qualifications in lower level training courses.

There is a strong argument to re-visit the current skill structure and develop a new skill classification model that has more skill levels. This would accommodate new job roles that are between existing narrowly defined skill classifications (Skill Level 2.5 rather than Skill level 2 or 3).

There is nothing wrong in adopting a new skill level that covers occupations that lie between current skill levels or across skill levels especially if they are defined by industry in an industry driven skill model.

Once again it would be industry that makes that decision and it would require a new suite of competencies that match that occupation, not necessarily a generic Certificate III, IV or Diploma. This concept aligns more with a skill delivery model that deals with specific “task related” competencies rather than a fixed qualification model. A good example is the occupation of Fork Lift Driver. The current training system is generally a two day practical course with a licence outcome. No Certificate qualification.

When the current VET system was being developed the concept of identifying skill blocks in a progressive skill system aligned with Industrial Awards was considered but not supported by TAFE and the VET market which preferred full qualification delivery. Hence we have a Qualifications system in Australia rather than a skills system.

Currently we use multiple skill levels for some occupations without determining actual skills. A good example is Aged Care Worker which can be Skill level 4 or 3 depending on the actual job role and skills (not defined). In today’s skills environment, we need to improve the definition of our skill requirements for these occupations.

Educationalists understand that most learning is experiential. Industry provides practical exposure and training for its workers with varying levels of understanding of the more formal training systems. In this context industry sees skilling within the prism of tasks related to each job role.

What the education and training sector has done is re-interpret these tasks into elements and units of competency that form skills by level and qualifications. This has created a very unhealthy disconnect that threatens any notion of skilling people for future skill demand.

3. Re-establish a National State/territory and national Industry skills council network to engage each industry at a local level to identify the significant occupational and skill differences that are evident between States and Territories.

The weak point of our current national skills council model is that it has no State/Territory arms and has real difficulty obtaining information on unique skill operations in new and emerging industry sectors such as geo-mapping, advanced closed system hydroponics, offshore marine farms, collaborative farming systems etc.

Having sat on a number of Skills Insight IRC's I can testify to the very significant occupational and skill differences that are evident across all States and Territories, probably most evident in climate (latitude) based industries such as the Primary industry sector (no cotton industry in Tasmania).

The task of identifying actual skills by occupation will require a more direct industry driven model that defines its skills by level and by occupation. We cannot meaningfully use ANZSCO or the ASC which have relatively fixed systems that relate to a 1990's environment.

A good example of the skill challenge is in the Marine sector where Ships Masters and Engineers mostly obtain a Certificate III (vessels less than 24 metres), yet the skill level is listed as Skill level 1. In this case, the Australian Maritime Safety Authority and ANZSCO views skill levels very differently from qualifications.

Each industry will understand how job tasks have changed and what level the new skills will need to fit within. Understanding what this new skill hierarchy will be, will vary considerably between industries and needs to be investigated by all industry sectors. This is why I strongly support an industry based system that can be owned by the industry and updated by the industry rather than a national statistical system (ANZSCO) that tries to interpret industry skills by notional skill levels (ASC).

Comment

It may be helpful to provide new indicative skill levels to cover such changes as the rise of technicians in many industries, the creation of social media marketers who account for a very high percentage of marketing specialist roles through data analytics and new AI jobs which embody a wide range of roles not to mention Drone Operators!

In setting frameworks that relate to specific industry situations, it is acknowledged that there may be different approaches which are acceptable to a point. The key need is to ensure that the skill classifications are relevant, cover sufficient information about the skills required (not just generalisations) and specify the knowledge required. Consistency is important in the development of skill taxonomies so that as workers move between industries and jobs, there is a clearer recognition of any transferable skills.

Although the proposed development of a NST is welcomed, the existence of existing taxonomies such as ANZSCO, ANZSIC and the AQF, which are considered to be actively hindering the move towards an improved skill model, is a real concern. There needs to be a whole system re-set or we risk having a highly inefficient skill identification and delivery system that perpetuates the current failings.

The limitations of these existing taxonomies are considerable and in the main due to an inadequate and historical development methodology. The AQF in particular does not reflect the range of skills that are required for many occupations despite the current efforts of national skill councils. This is principally due to

qualifications having fairly standard formats that have an educational base rather than a task and skills base.

Although the intent is to separate the NST from industrial relations and Awards, it will have a more direct impact simply because it will re-set skills and skill levels which will have to be addressed by a further review of Modern Awards.

Under table 2 “Identify, Understand and Plan for Future Skills Demand” Government is seen as the main actor. It is highly unlikely that Government would be able to undertake this role without direct industry input. There are numerous examples including advanced hydroponic farming systems and AgTech which are clearly not understood by Governments. These developments are transforming food production on a large scale with new skills that are not listed in ANZSCO.

Similarly under “Define Workforce roles,” Whilst employers will need to embrace HR and skilling as part of their business plans, most employers are unable to identify and embrace this, leaving such tasks to peak industry sector bodies who are in a better position to inform and undertake the work.

Under 2.3, contextualization will remain a key issue. The more standardized the principles are, the less context can be applied.

Under Table 3, under accessible, there needs to be real clarity in the system and a fit for purpose focus or industry will largely ignore it as they do with ANZSCO

Questions 2.1-2.5

2.1 We must avoid designing another system that is divorced from the reality of on the ground work tasks and skills. It has to be principally a model that supports industry in skill recognition, skill development and skill progression, especially in regard to new job roles and technologies.

2.2 If there is no reform of the other taxonomies, the NST will fail. It will be perceived as another Governmental attempt to establish a new system along with existing systems which sadly are largely discredited within industry.

2.3 Regarding a vision for the NST, my suggestion is

“To create a skills framework that reflects the current and emerging skills environment of the Australian economy and supports industry, empowers students and drives economic and social growth”

2.4 Key principles are strong stakeholder ownership, comprehensive and a high level of relevance.

2.5 In terms of trade-offs, interoperability and evolutionary will cause some issues as existing systems (ANZSCO etc) are widely discredited.

3.1 It is easy to see the good and bad points of other taxonomies. There are some elements that should be considered for the NST. These are:

1. Development with industry stakeholders (task, skill and job role identification as well as occupational title). Some descriptors for qualifications, experience and skill progression (next level). I would not include worker characteristics or requirements (far too varied), workforce characteristics or occupation specific information. This is information overkill.

2. I prefer the Singapore Skills Framework definition of skills. Complexity must be avoided. Successful frameworks exhibit simplicity.

Because skills are naturally hierarchical, the structure should reflect specific skills by level, with the ability to have a larger number of levels than we currently have and with descriptors that reflect on the ground reality. If done properly, that should inform the VET sector which can then adjust its delivery towards meeting actual skill needs rather than only offering qualifications. Qualifications are just points in a learning process although we tend to see them as an end in itself.

Robust governance must include industry. We must avoid Governmental control. Governments have a very bad record of system reviews (e.g. ANZSCO). The failure of ANZSCO to be reviewed every 5 years as we originally planned, has had severe consequences on our skilled migration program and continues to have.

JSA should only be a Convener for industry and the education sector bearing in mind that the education sector maintains a narrow delivery focus (convenience). Contrary to the statement, there are representatives from peak bodies such as ITECA. Although Higher Education has called for the development of an NST, their role is likely to be limited in comparison with VET. There are clearly some linkages (e.g. Graduate Diploma which sits above the Bachelor Degree but is considered to be a VET qualification!)

There are some pathway programs from VET into Higher Ed. and in the Agribusiness sector, there is one VET provider in SA which is providing direct pathways into Masters Degrees at three Universities through Graduate Diploma programs in Agribusiness. Having a more relevant Skill Taxonomy should clarify these types of educational and career progressions. Ultimately it all comes down to skills required in jobs at different levels.

Governance Model 4 is strongly favoured.

Table 7

Data driven approaches continue to have high standard error rates. Job advertisement data is also flawed especially in regional areas where recruitment is outside of Seek.com and Indeed and more attuned to specialist job sites such as Lucas Group. Similarly assumptions of demand based upon identified job vacancy numbers is seriously flawed as some occupations are always small in number but extremely important, e.g. Apiarists –Bee Keepers, who contribute billions of dollars of value to crop production.

Consultative approaches are the only way to identify and validate skills. They are not slower if the right stakeholders are involved and resourced to do the work. Governments must pay for advice from the horse's mouth.

Discussion questions 4.1-4.3

4.1. see above

4.2 Updating must be an ongoing process based on CIP, not annual, not every two years.

4.3 If industry participates and owns the process there will be commitment to maintaining currency. This will require a new paradigm of co-operation between Government and industry.

Summary

Having worked in the Commonwealth Government for twenty years and with a number of industry bodies for around 30 years as well as extensive overseas business experience, I have a good appreciation of how skill definition and classification can impact our economy.

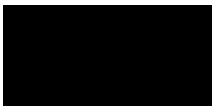
As Australia experiences the largest demographic shift in its history, the need to identify skills has never been more important especially as the workforce proportionately shrinks between now and 2050 to 35% of the population. That will result in 65 dependents for every 100 working Australians.

Whilst technology will continue to transform the skill mix, we will have a much larger population in 2050 (36 million) and having industry continually updating skill information will be essential if we are to avoid serious systemic skill shortages.

Currently we are experiencing record shortages of skilled workers across all industries and the shortage numbers are very big. That is why we need to fundamentally reform the current systems to provide just in time information that can improve policy and career outcomes for the next generations and improved skill recognition models for overseas trained workers.

I am happy to provide any further information you may require.

Sincerely



Mark Cody
Executive Director

7 August 2024