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Skills anticipation systems and their role in informing new qualifications and competencies in VET

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Presenter

Phil Loveder
Executive Manager, Inform and Engage, NCVER

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Acknowledgement of Country

I wish to acknowledge the Traditional Custodians of Country throughout Australia and their continued spiritual connection to land. I pay my respects to Elders past, present and emerging.

Presentation

- Research into new qualifications and competencies (NQCs) - Bridging Innovation and Learning in TVET project – UNESCO BILT
- Framework for developing new qualifications and competencies (NQCs) in TVET – the 3 I’s and 3 M’s
- Challenges and tips!

Research into NQCs

- The Bridging Innovation and Learning in TVET (BILT) program of UNESCO aims to assist VET systems to better **identify**, **integrate** and **implement** NQCs, in the most effective learning settings
- This presentation draws on some of the work NCVER was engaged in with the United Nations on NQC

www.unevoc.unesco.org/bilt/The+BILT+Approach

VET's role and need to respond

- Arguably, VET is the education sector closest to the labour market
- It plays a key role in the provision of skilled labour, helping young people move from school to work, and reskilling and upskilling individuals
- VET needs to respond to current and future economic challenges

Changing economy drives NQCs

- BILT project identified accelerating digital technology innovations, new demands in sustainability and environment protection and increased processes with migration as some areas where VET systems must respond
- These drivers align with those identified in Australia; e.g., the Australian Government's employment white paper identified population ageing, rising demand for care & support services, technological and digital transformation, climate change and the net zero transformation and geopolitical risk and fragmentation

The three I's

The BILT framework focuses on the 3 I's:

- Identification – provisions for identifying relevant NQCs
- Integration – procedures for integrating into curricula and national standard
- Implementation – ways for applying NQCs in classrooms and workshops including innovative teaching and learning practices

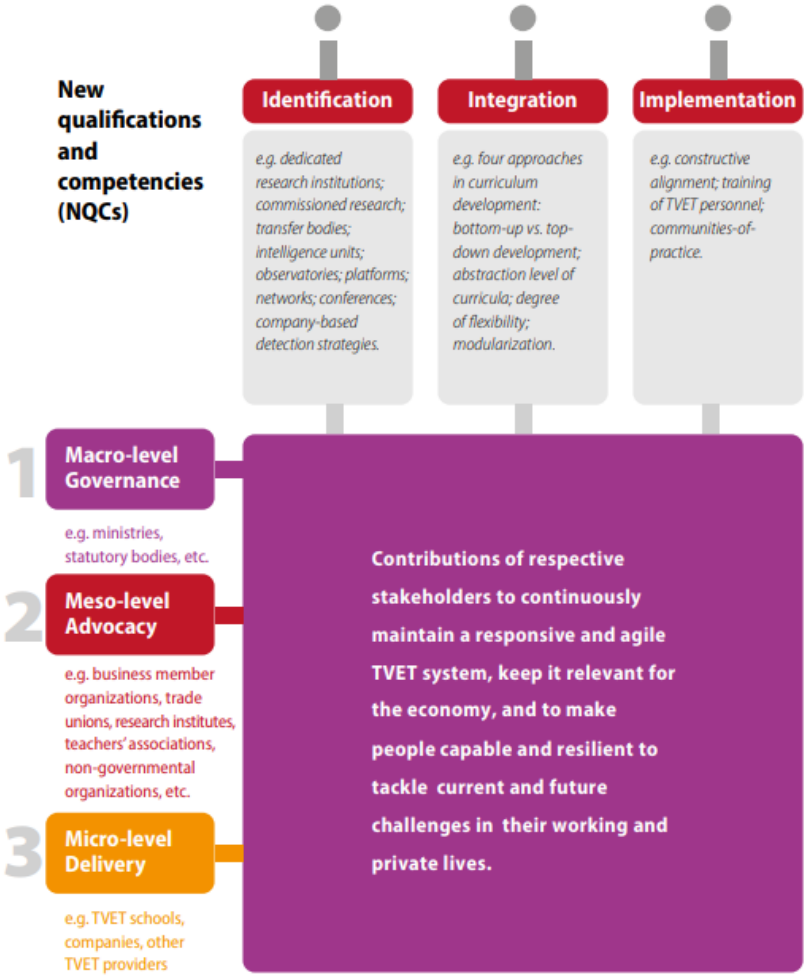
This framework is applied to the contributions of all stakeholders involved with NQCs.

The three M's

Stakeholder contributions are categorised based on the role they play in NQCs:

1. Macro - usually defined as Governance level, steering collective action, comprising ministeries, statutory bodies
2. Meso – usually defined as Advocacy level, ensuring multi-stakeholder participation, comprising industry and provider peaks, trade unions, research institutions etc.
3. Micro level – usually defined as Delivery level, providing innovative solutions, comprising all types of VET providers

Three I's and M's – equally important



Identification - Understanding labour supply and demand

- First step is identification of current and future skills in the labour market
- Identification occurs across all three levels (macro, meso, micro)
- Examples of macro appropriate approaches are skills observatories, stakeholder surveys, industry projects
- Examples of meso-appropriate approaches are AI based learning experience platforms and analytics
- Examples of micro-appropriate approaches are feedback and demands from students and industry partners, labour market data to help identify current and potential skills supply and demands gap, monitoring of enrolment patterns and data collected through student and/or market surveys

Identification - Understanding labour supply and demand

- A range of different approaches being used to understand skills from ‘prospective studies’ to stakeholder consultation and analysis of skills and careers information
- Skills anticipation and labour market information ‘observatories’ are being developed across the world to determine where to invest in NQCs.

Skills anticipation systems – what are they?

- Skills anticipation is a strategic and systematic process through which labour market actors identify and prepare to meet future skills needs, thus helping to avoid potential gaps between skills demand and supply. ILO, 2015
- A skills anticipation system is a type of technology or methodology used to predict and identify the skills that will be needed in the future, especially in the context of employment and workforce development. CEDEFOP, 2018

Skills anticipation systems – why have them?

- Provide insights into what skills are required in the contemporary workforce
- Form the basis of the development of new qualifications and competencies or micro credentials in VET and Higher Education
- Inform updates to qualifications and to licensing conditions in industry occupations
- Identify the extent to which new occupations are emerging, especially in resulting from technology, innovation and greening
- To provide policymakers and the industry with evidence, so that they can agree on training solutions and continue to implement these.

Skills anticipation systems – how do they work?

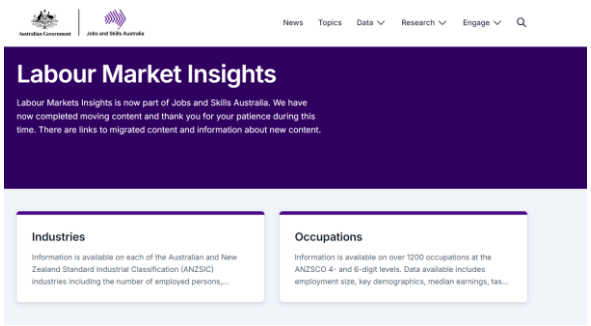
- Data Collection: The system gathers data from various sources, such as labour market trends, job postings, industry reports, and educational outcomes.
- Analysis: It analyses this data using techniques like machine learning, statistical analysis, and natural language processing to identify patterns and predict future skill requirements.
- Forecasting: Based on the analysis, the system forecasts which skills will be in demand in the future. This can include specific technical skills, soft skills, or combinations of both.
- Recommendations: The system provides recommendations for training programs, educational curricula, and career development paths to help individuals and organizations align with future needs.
- Monitoring and Updating: To stay relevant, the system continuously monitors new data and updates its forecasts to reflect changes in technology, industry practices, and economic conditions.

Examples of skills anticipation systems

- Skills observatories
- Skills and employment data modelling
- Stakeholder engagement and employer surveys
- Job Vacancy analysis (including internet job vacancy ‘scraping’)
- Leveraging jobs and careers databases
- Forecasting and modelling
- Cross sectoral projects.

Skills observatories around the world

- Labour Market Information System (LMIS) - Europe
- Labour Market Insights (formerly LMIP) - Australia
- SENAI National Service for Industrial Training – Brazil
- O*NET Online – United States of America
- OVATE – CEDEFOP (Europe).



Modelling and forecasting approaches

- Uses selected economic, educational, demographic and labour market indicators to make predictions of skills supply, skills demand, skills mismatch and skills development – data linkage
- Can involve additional scraping of internet job vacancy information such as through the Burning Glass Institute Labour Insights data
- Development of integrated data assets combining information on education, skills with other health, taxation and social data a priority!

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Australian data sources – Macro/Meso level

- Seek high-level information on skill supply and demand to support purchasing and targets and on trends and training focus

Institution	Data source
• Government ministries • Training authorities • Regulators • Statutory bodies • Statistical agencies • Industry and provider bodies • Training providers	Integrated data • Person Level Integrate Data Asset (PLIDA) • Business Longitudinal Analysis Data Environment (BLADE) • VET National Data Asset (VNDA) • VET pathways and outcomes analysis (NCVER) National VET data • Student enrolment data (NCVER) • Apprentice and trainee data (NCVER) • Student results (NCVER) • Survey responses (NCVER) • Funding data (NCVER) Employment data • Labour accounts, Job mobility, Job vacancies, employment/ unemployment (ABS) • Employment projections, shortages and future demand, priority lists (JSA) • Employers' recruitment experiences (JSA) • Skills Classification and taxonomy (JSA)

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Australian data sources – Micro level

- Seek information to align and implement NQCs, innovate training delivery

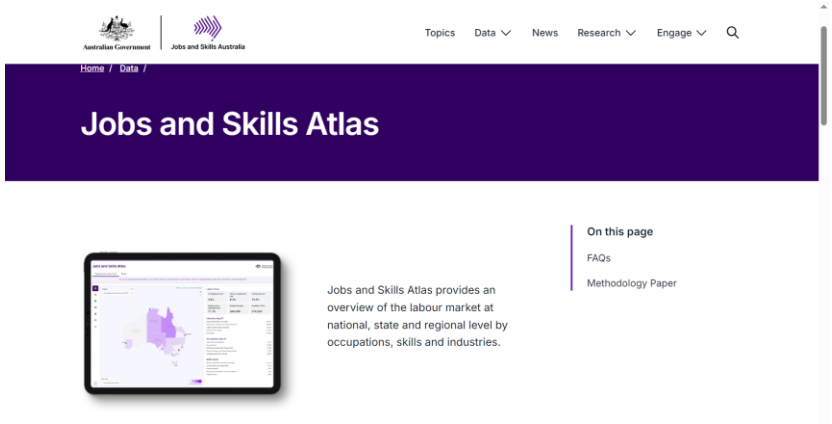
Institution	Data source
• Students, Training providers (public & private), schools that deliver VET, community-based providers	• Career databases such as myfuture, mycareers • Demands of students, their industry partners and the communities in which they are located • Labour market data based on job placement scanning software can be used by education and training institutions as part of their skills and curriculum alignment processes • NCVER RTO Data Hub • NCVER Student Outcomes Survey results

Cross sectoral projects focusing on new competencies

- Projects established in key industries focused on addressing common needs shared across multiple or emerging industries
- Involves a coordinated approach between government, industry and the skills sector
- Examples include the Australian cross-sector projects in cybersecurity, supply chains, digital skills.

Leveraging jobs and careers databases

- Existing databases on jobs and competencies are a good place to obtain information on NQC needs rather than undertaking own analyses
- Examples include Job Outlook and the new Jobs and Skills Atlas.



Consultation with EMBOs

- Stakeholder surveys with Employer and Business Membership Organisations (EMBOs)
- Valuable in understanding the demand for new qualifications and the extent of ‘skills deepening’ occurring in occupations and industry
- Additionally, the NCVER Survey of Employer Use and Views of VET provides valuable insights.

Additional approaches

- ‘Early detection’ systems through systematic identification of NQC through monitoring of VET and occupational related trends and indicators (such as occurs in Germany)
- Involves identifying changes in technologies, ways of working and societal trends and preferences which are likely to have an impact on skills and training.

What are some of the challenges of using this data?

- Availability, quality and consistency of data – especially time series
- Can be affected by unexpected ‘shocks’ to the system – such as the COVID-19 Pandemic
- Better at assessing the current situation and becomes weaker over time - ‘future casting’ can be a dark art!
- Challenges in the process of translating analysis into policy and practice on the ground.

Integration – Four approaches

- Cross cutting approaches – competencies integrated in all curricula or training
- Sectoral approaches – focused on integrating specialist competencies into single or related industries
- Occupational approaches – involving integrating occupational specific competencies into either training curricula or training regulations
- Additional modular approaches - ‘Fast response’ optional modules focused on emerging needs.

Cross cutting approaches

- Cross cutting approaches – competencies incorporated broadly into multiple/all industry sectors training or curricula and across many occupations
- These are competencies that are relevant and important to all learners, occupations and industries such as digital skills, green skills, problem solving etc.
- Examples are the Singapore Skills Framework which incorporates certain job-related generic skills across all 6 levels including knowledge and analysis, application and adaption, innovation and value creation, ethics and learning to learn.

Sectoral approaches

- Sectoral approaches – competencies incorporated into individual (or related) industries and occupations
- These are specialist competencies that are relevant and important to learners in particular industry sectors only
- Examples are TKNIKA (Basque Country Ministry of Education) who have developed innovation hubs focused on a few prospective industries and addressing special job and skills needs as part of their growth objectives.

Occupational approaches

- Occupational approaches – competencies incorporated into specific occupational contexts
- These are specialist competencies that are relevant and important to learners in specific occupations or occasionally families of related occupations
- Examples are in several European countries such as Finland who use occupational clustering approaches for jobs that have relevance across like occupations.

Additional modular approaches

- Modular approaches – developed by industries and employers jointly with the training sector to address local or regional employment needs
- Examples are Netherlands and Finland where a high-degree of flexibility is built in allowing for broader-based competencies and fewer hurdles to their implementation or updating in local contexts.

Implementation - Establishing frame conditions and buy-in

- Establishing the frame conditions – achieving ‘buy-in’ of key stakeholders and parameters on the ground for structural support
- Establishing confidence in NQCs amongst industry, learners and the community
- Accepting the importance of micro-stakeholder influence – the voice of the student and the teacher
- Support for practitioners in NQC implementation.

Implementation – Acceptance and assurance

- Achieving industry and community acceptance and ensure they have relevance and are attractive to learners
- Establishing how NQCs will be implemented, updated and rolled out
- Adopting quality assurance measures and cross-checks
- Assign who has the final word in terms of their regulation!

Implementation – Clear indications of structural support

- Providing supportive funding for stimulating the take-up of NQCs – and beyond the initial piloting stages
- Integrating them into the formal structures in the VET sector
- Ensure adequate investment in their roll-out and sustainability.

Implementation – Support for practitioners

- Investment in the professional capacity of VET practitioners through upskilling and support – especially in NQCs
- Providing digital access to processes and toolboxes, often as part of a comprehensive NQC process (such as the Ministere de l'Education du Loiseir et du Sport in Canada).

Final thoughts

- Ensuring VET systems are ‘future ready’ involves the continual evaluation of labour market data and improving the evidence base of NQCs
- Organising and disseminating information and data to assist in training and curriculum ‘renewal’ is essential, and for consumers to make good choices and is a role that macro stakeholders such as government must play
- Additionally, providing a supportive environment for NQC implementation requires investment and oversight.

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