

Unpacking STEM skills for vocational education

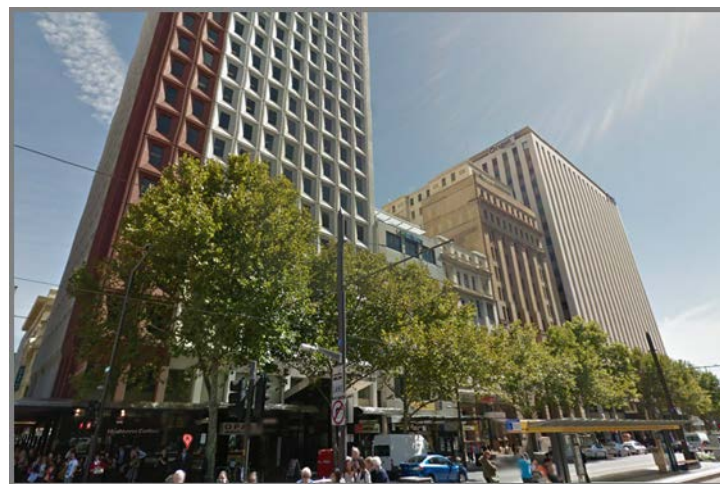


Gitta Siekmann & Patrick Korbel
NCVER, Adelaide

NCVER – what we do

- Data standards
- Statistics
- Research

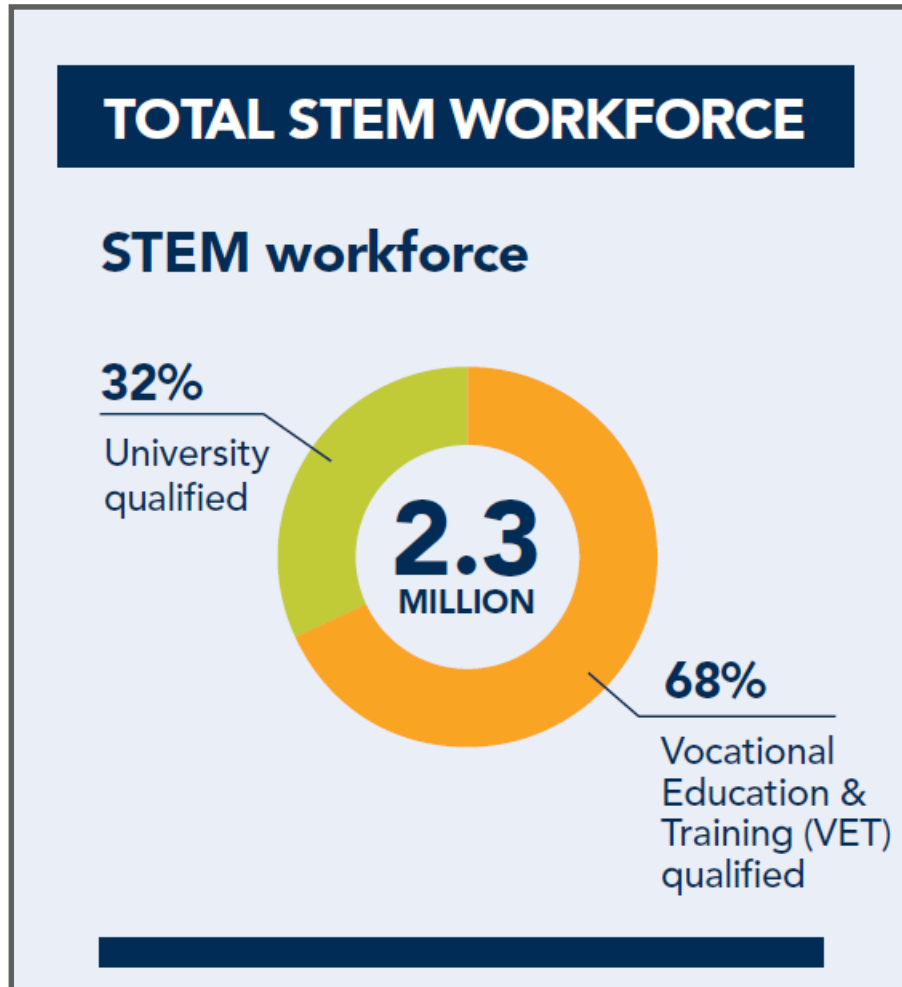
-> vocational education



www.ncver.edu.au



Is VET a major 'STEM' player?



Infographic from Office of the Chief Scientist 2016

Data: ABS Census 2011

What is vocational education and training?

- part of tertiary education and training
- provides accredited training in job related and technical skills
- can 'start' in secondary school (SSC)
- alternative or bridge to higher education (uni degrees)
- covers a large number of careers and industries like trades and business work, social work, health and hospitality
- Entails a range of credentials (Certificates – Diplomas)



VET in schools

- programs undertaken by school students as part of the senior secondary certificate
- typically Certificate I-III
- apprenticeship/traineeship possible
- partnership between schools, industry and Registered Training Organisations (RTO)



Why did we choose 'STEM skills' as a research project?

- > lack of clarity of what STEM skills are
- > different measurements
- > VET contribution is underreported



People with 'STEM' workforce qualifications

Org	Data source	Field of education	Level of education	Number of people	% of total population (>15 yrs, 2011)
ABS	ABS Survey of Learning and Work 2010-11	NPS, IT, ETRS, AERS	AQF Cert III and higher	2,718,300	15%
NILS	ABS Census 2011	NPS, IT, ETRS	AQF Bachelor and higher	651,000	4%



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Outcomes



Skills types

People

Mode of education



Defining 'STEM' skills

People

- Everyone
- General workforce
- Science and technology workforce

Outcomes

- Better Education
- Jobs
- Supporting economy & productivity

Type of Skills

- Technical/task skills,
- Social skills

- Higher-order cognitive skills

Education

- Interdisciplinary, meta-disciplinary, integrated
- Traditional: discipline or subject specific



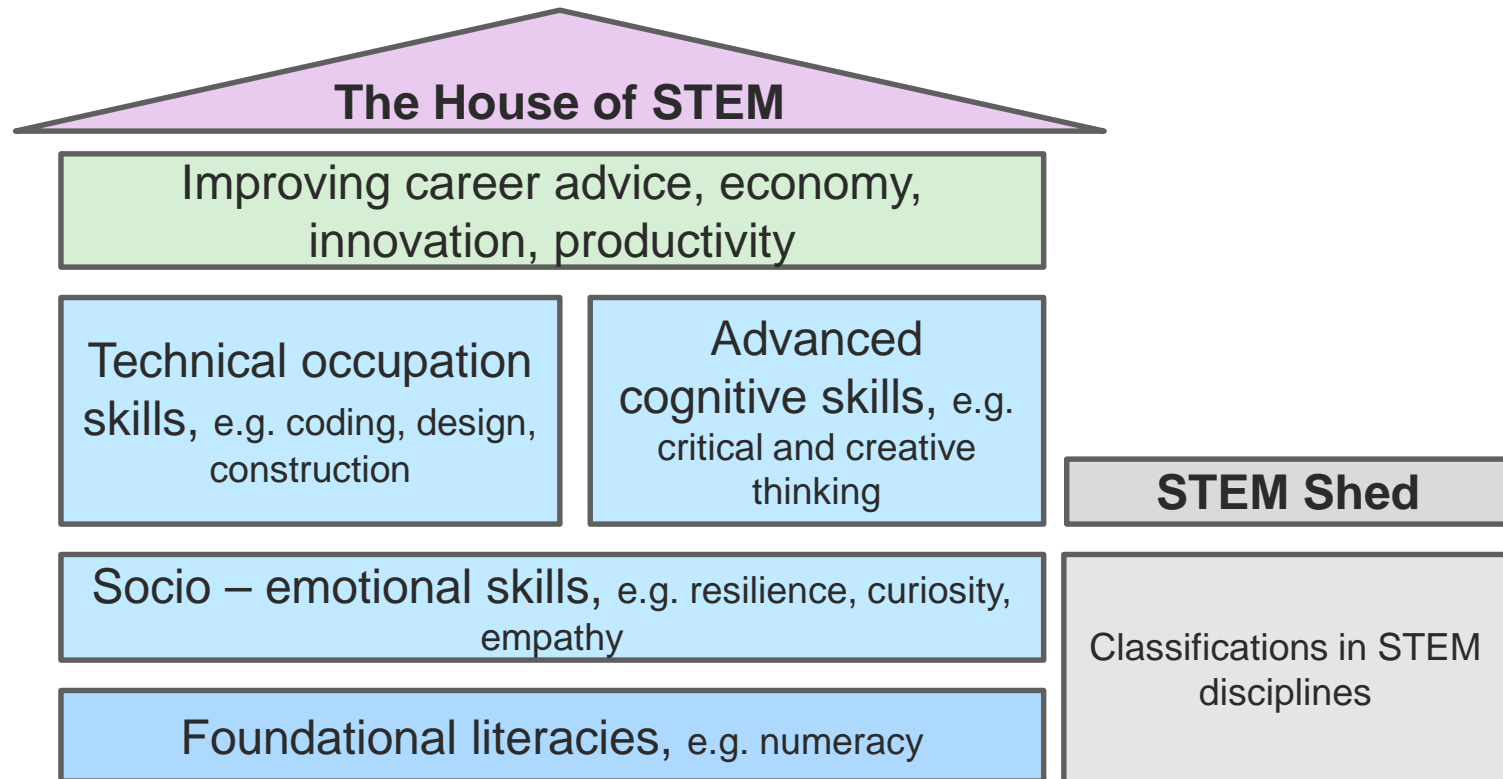
Conceptual definition of STEM education

- STEM taught and applied
 - traditional and discipline specific
 - interdisciplinary and integrated
- Outcome focussed
 - to solve real world challenges
- Investing in people
 - technical and scientific skills
 - critical and creative thinking skills

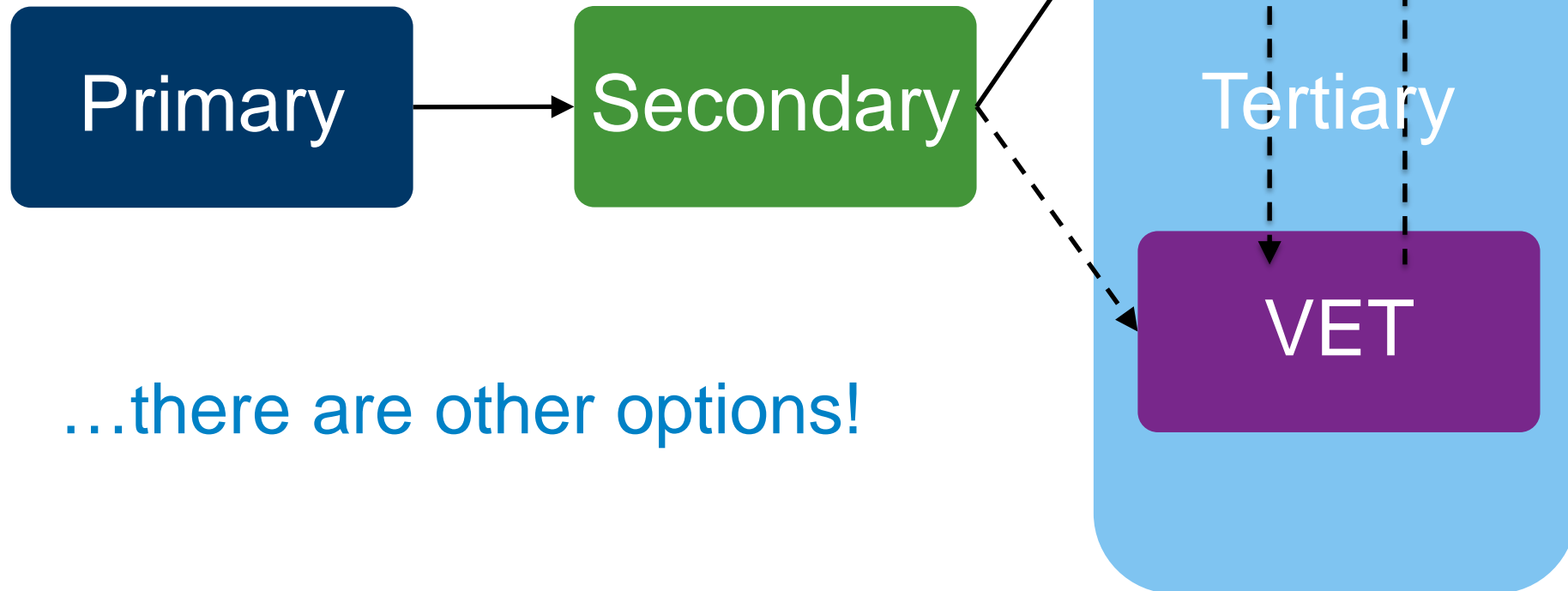


- Teachers/Educators,
- Scientists, engineers and digital specialists
- Technologically proficient workers
- Literate citizens

Unpacking what sits within STEM



The STEM debate has been focused on uni pathways...



...there are other options!

VET contributions

- VET strong in in the technology sector
 - foundational literacies
 - targeted skill training
 - workplace- based, industry collaboration
 - applied research & technology
- New futures?
 - Higher apprenticeships
 - P-tech schools
 - Higher education schools





My Skills



Australian Government
Department of Education and Training

myskills

Australia's directory
of training

SEARCH FOR A COURSE

The banner features a silhouette of a diver against a blue underwater background. The text is overlaid on the image. At the bottom, there is a search bar with a dropdown menu showing 'STEM' and a location field showing 'ANDENONG VIC 3175'. A 'SEARCH' button is on the right.



Course Search

Keyword

Location

Within

25 Km

SEARCH

 See location of course

 Compare two courses

Clear Filters

HOW DO I CHOOSE ?

105 results


INDUSTRY SECTOR

- Utilities Services (47)
- Information and Telecommunications (22)
- Engineering (9)
- Business Services (8)
- Manufacturing (5)
- Design (4)
- Public Safety and Security (3)
- Mining and Drilling (2)
- Construction and Property (2)
- Government Administration (1)

More..

 Show map

Certificate II in Competitive Systems and Practices

MSS20312  Average Price: not available  Average Duration: not available



Certificate II in Split Air-conditioning and Heat Pump Systems

UEE20111  Average Price: \$2684  Average Duration: not available



Certificate III in Competitive Systems and Practices

MSS30312  Average Price: \$4905  Average Duration: 1 Year



Certificate III in Engineering - Production Systems

MEM30105  Average Price: not available  Average Duration: 3 Years



Summary

- Vocational education and training is a viable alternative to university education
- VET strong in
 - skill development for all
 - foundational literacies
 - applied education
 - industry collaboration
- STEM is only an umbrella term!
 - Use specific skill/subject term



Upcoming NCVER releases - 18 Oct

- What is STEM? The need for unpacking definitions and applications
- Measuring STEM in vocational education and training



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