



Pathways into STEM occupations

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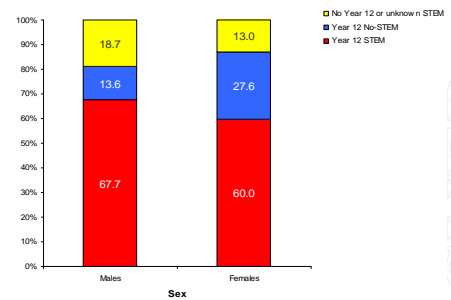
Motivation

- STEM = Science, Technology, Engineering and Mathematics.
- Decline in the participation in post-compulsory schooling in STEM courses and subjects
- Labour market becoming more reliant on STEM skills
- Currently skills shortage which is likely to get worse over time
- Underlying shortages of suitable qualified educators in STEM
- Government is interested in encouraging more students into STEM studies and occupations

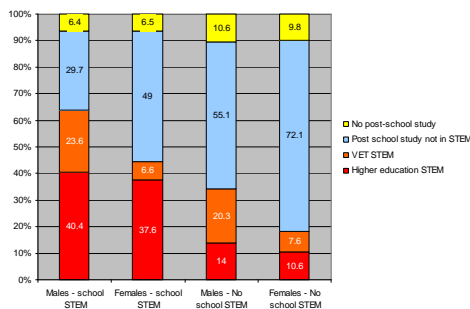
Introduction

- We investigate the pathways and characteristics of students from Year 12 STEM subjects into post-school STEM and employment
- This project used various cohorts of the Longitudinal Surveys of Australian Youth (LSAY)
- Broad definitions of what school subjects, courses and occupations fall into the STEM category.

What % of students undertake STEM in Year 12?

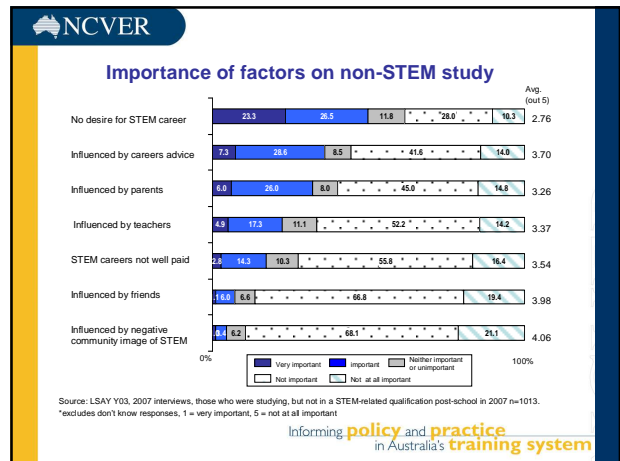
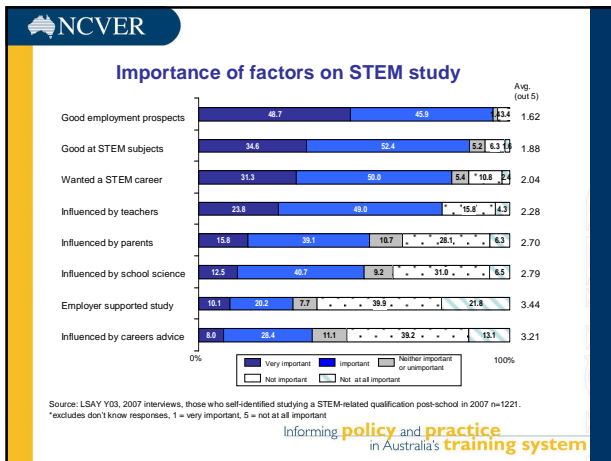


What about post-school study?



Who undertakes post-school STEM

Demographics	Higher education, STEM (%)	VET STEM (%)
Gender		
Male	50	73
Female	50	27
Respondent's Country of Birth		
Born in Australia	96	93
Overseas - English speaking country	2	3
Overseas - Non-English speaking country	12	4
Size of residential location in 1995		
Metropolitan Area (>=100,000)	60	47
Regional Area (1,000 to 99,999)	25	25
Rural/Ramote (< 1,000)	15	28
School Type		
Government	58	77
Catholic	22	15
Independent	19	8
Maths Achievement Quartile		
Lowest	7	24
Second	18	32
Third	34	25
Highest	42	19

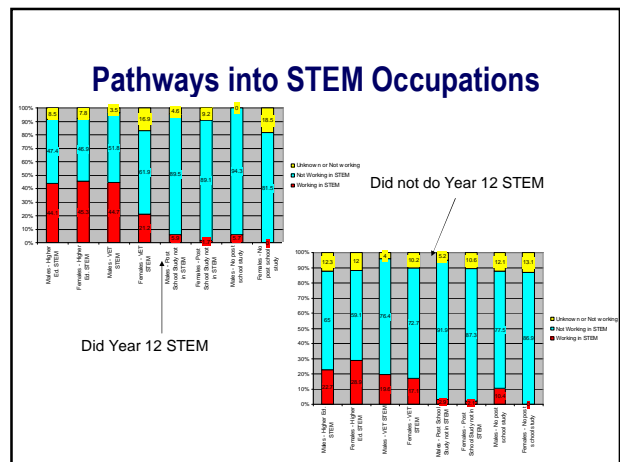


Motivation factors for studying STEM

Factor	% who mentioned (verbatim)	
	Males (n=631)	Females (n=590)
Nothing	60.8	60.3
Better marks	9.1	10.3
More STEM careers information	8.6	6.8
Financial study incentives or future remuneration	4.8	3.4
Improved image of STEM career	2.8	3.2
Better teachers or teaching methods	1.5	2.8

Source: Y03 students studying in 2007, but in non-STEM study areas, who suggested other factors.

Informing policy and practice in Australia's training system



Who is working in STEM?

Demographic	Males		Females	
	In STEM occupation (%)	Not in STEM occupation (%)	In STEM occupation (%)	Not in STEM occupation (%)
Respondent's Country of Birth				
Born in Australia	28	72	15	85
Overseas - English Speaking country	25	75	10	90
Overseas - Non-English speaking country	27	63	25	75
Size of residential location in 1995				
Metropolitan area (> 100,000)	27	73	15	85
Regional area (1,000 to 99,999)	31	69	17	83
Rural/Remote (< 1,000)	31	69	15	85
School Type				
Government	26	70	25	85
Catholic	28	72	15	85
Independent	25	75	27	78
Maths Achievement Quartile				
Lowest	19	81	10	90
Second	28	72	12	88
Third	29	71	17	83
Highest	33	67	22	78

- ### Findings
1. Decision to undertake STEM study is made in early school years (< Year 10)
 2. Pathway into VET STEM study not reliant on undertaking Year 12 STEM – male dominated
 3. Pathways into STEM occupations more broad in VET than Higher Ed.
 4. Less than 50% of those undertaking post-school STEM work in a STEM occupation (much lower for females)
- Informing policy and practice in Australia's training system

Lessons for policy

1. Career advisors more likely to steer individuals out of a STEM career than into one
2. Need teachers and career advisors with good knowledge and experience in STEM to motivate students to undertake STEM (either in Year 12 or post-school)
3. Further career's advice and inspiration needs to be given to those in post-school STEM study to encourage them to stay in STEM occupations
4. Encourage more females into post-school VET STEM

Further research

- Why don't people continue onto STEM careers upon completing STEM courses?
- What information and advice do teachers and career advisors give to potential STEM students?