Broadening Indigenous participation across the disciplines:

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ATSIHEAC policy development framework

1. Broadening access across the disciplines
2. Whole of University Strategy
3. Academic Workforce
4. Sustainable financing
5. System level performance monitoring

Why STEM?

- 11% of Indigenous people are employed in professional occupations, compared to 20% of non-Indigenous people

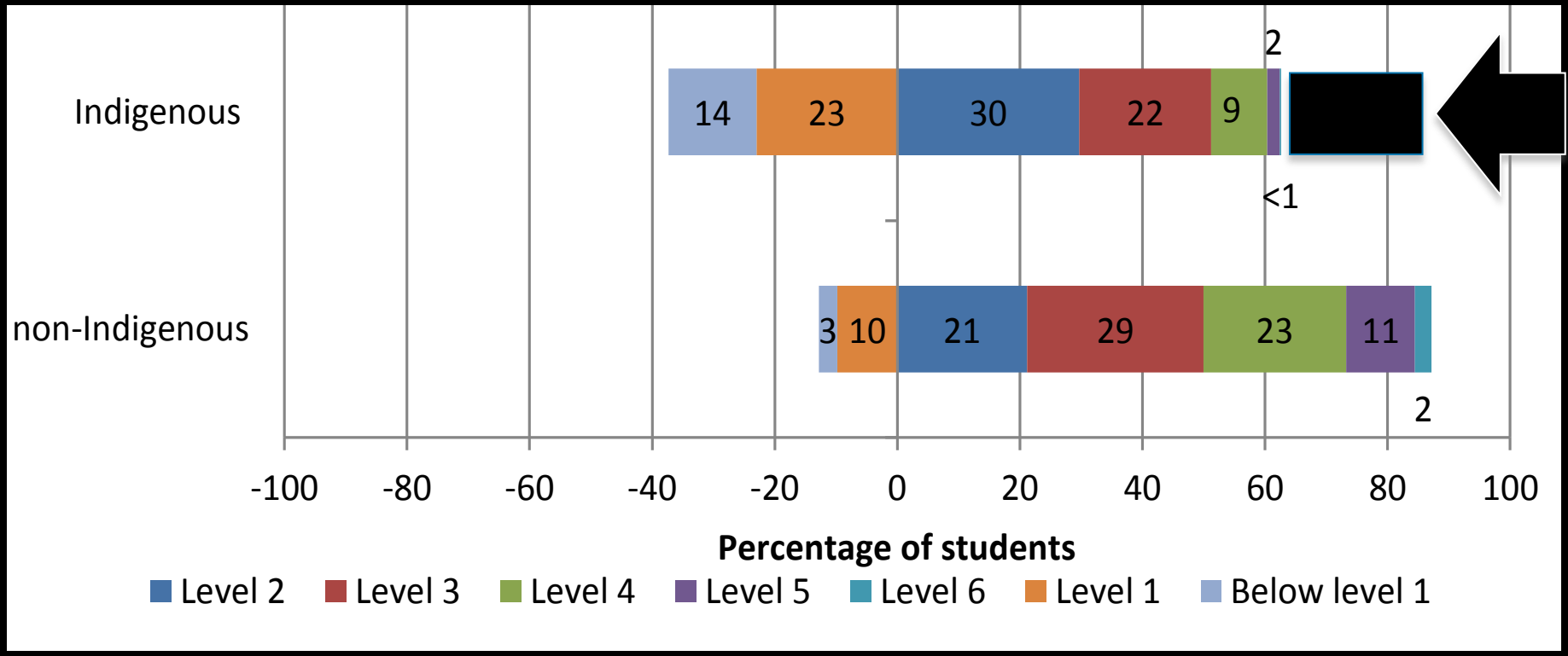
- Most common occupation group for employed people:
  - For Indigenous people - Labourer (24%)
  - For non-Indigenous people - Professional (20%)

- Participation clustered in three fields of study

- STEM education critical to enhancing broader range of educational and employment opportunity

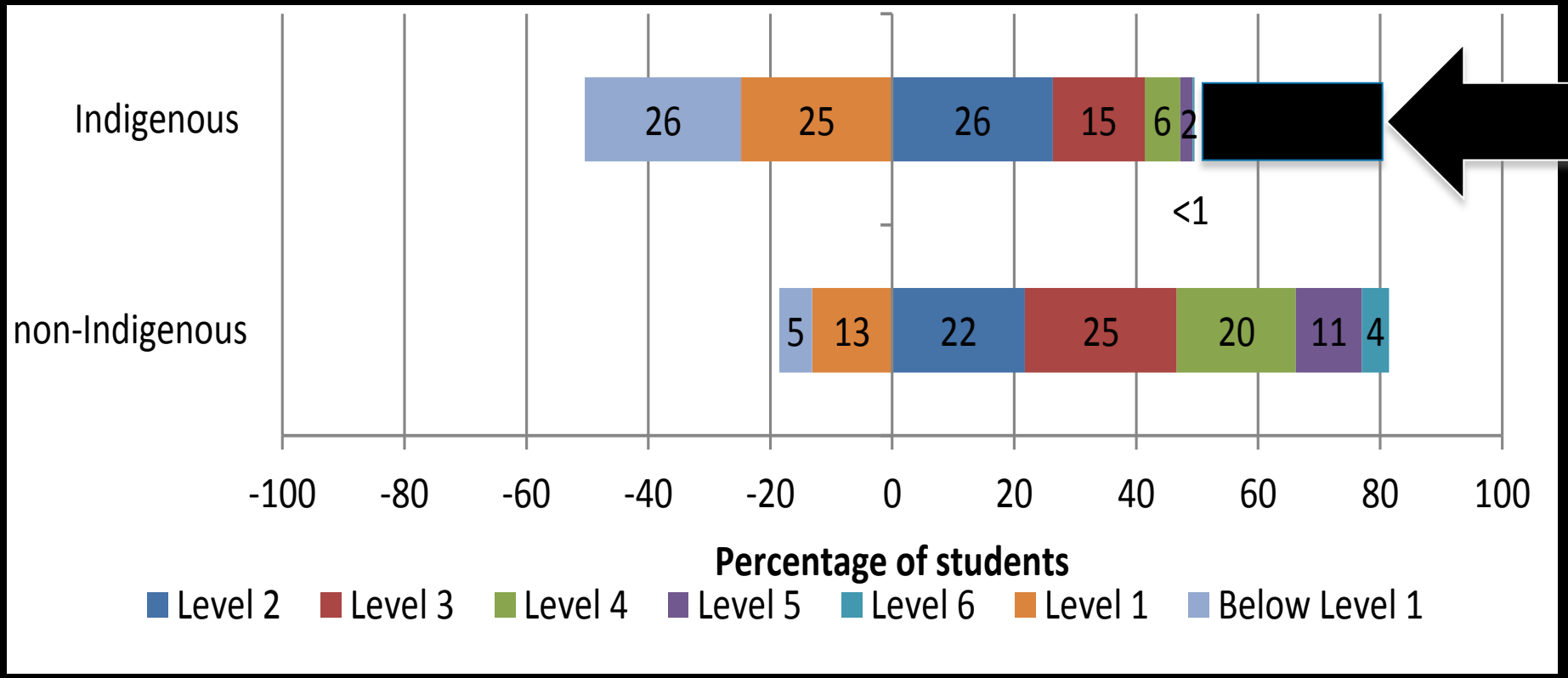
Drawn from Census data 2006 and 2011

PISA 2012 science literacy proficiency



Source: Thomson, S. et al 2014, Indigenous Student Performance on Standardised Tests, (draft report to ATSIHEAC)

PISA 2012 mathematical literacy proficiency



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Science Literacy and Science Interest

Retrospective analysis of PISA 2006 (McConney et al 2011):

- Indigenous science literacy lags non-Indigenous literacy by about 83.5 points (0.76 standard deviation units)
- Indigenous science interest led that of non-Indigenous students by 10 points (0.1 SD)
- Regression modelling: Reading Literacy accounted for 62 per cent of science literacy variance

Implications for schools

- There is a gap in achievement (science literacy)
- The gap is not a result of lower interest in science but instead mainly associated with reading literacy
- Use interest in science to improve reading literacy
  - Recognise that science is more than facts and definitions and knowledge in science can build on what students know

Science Engagement and Literacy

Analysis of 2006 PISA Indigenous/Non-Indigenous Australian and NZ Students (Woods-McConney et al., 2013):

- There is a gap in achievement (science literacy)
- The gap is not a result of lower interest in science but instead mainly associated with reading literacy

Use the interest in science to improve reading literacy

- Recognise that science is more than facts and definitions and knowledge in science can build on what students know

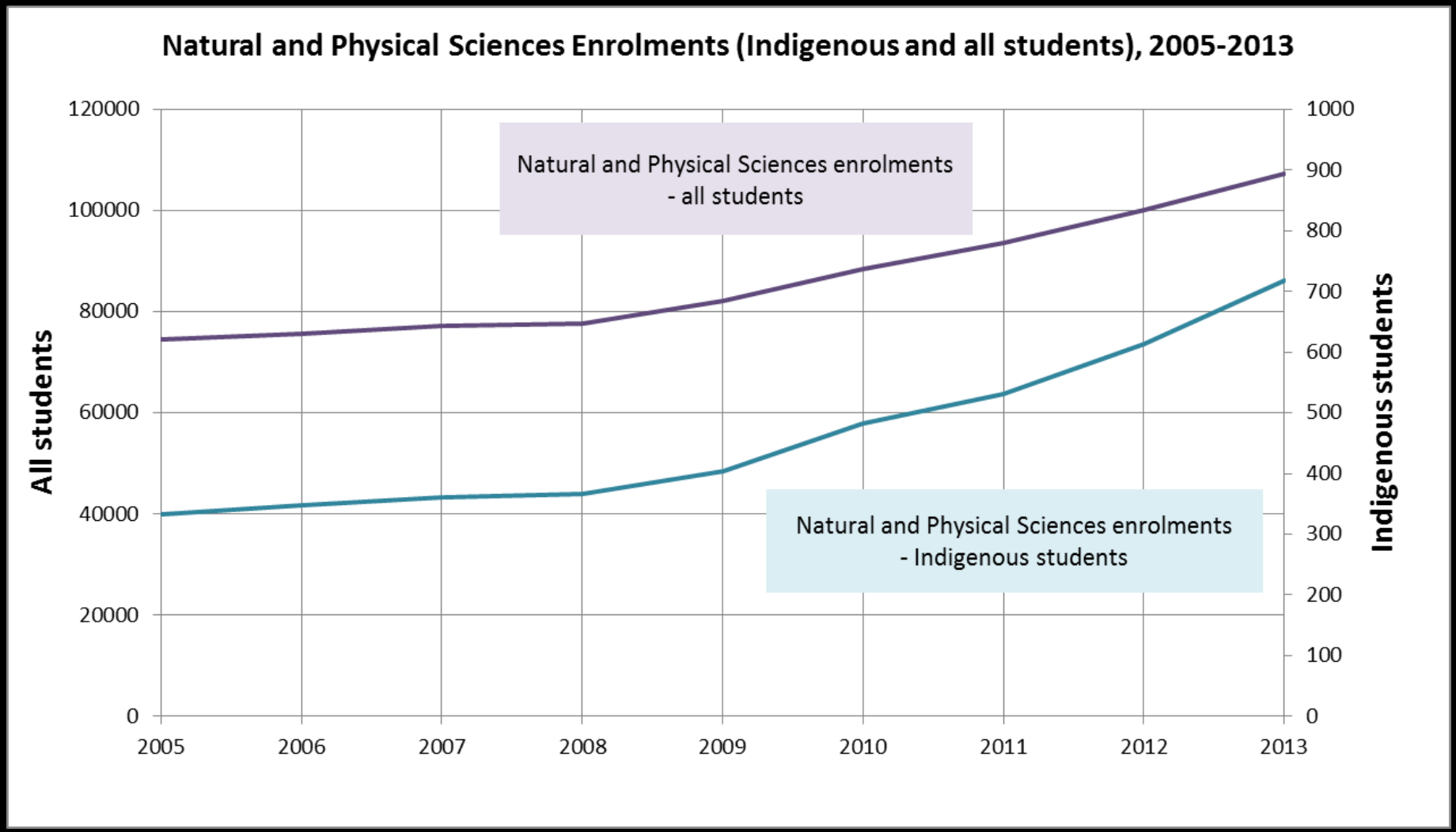
Implications for practice

- Relationship among factors in science literacy and engagement not completely understood
- Engagement in science not always associated with high science literacy
- Engagement in science is valuable on its own, not only as a precursor to science literacy
- Connecting out-of-school activities to ‘school science’ may help improve engagement in science for all students

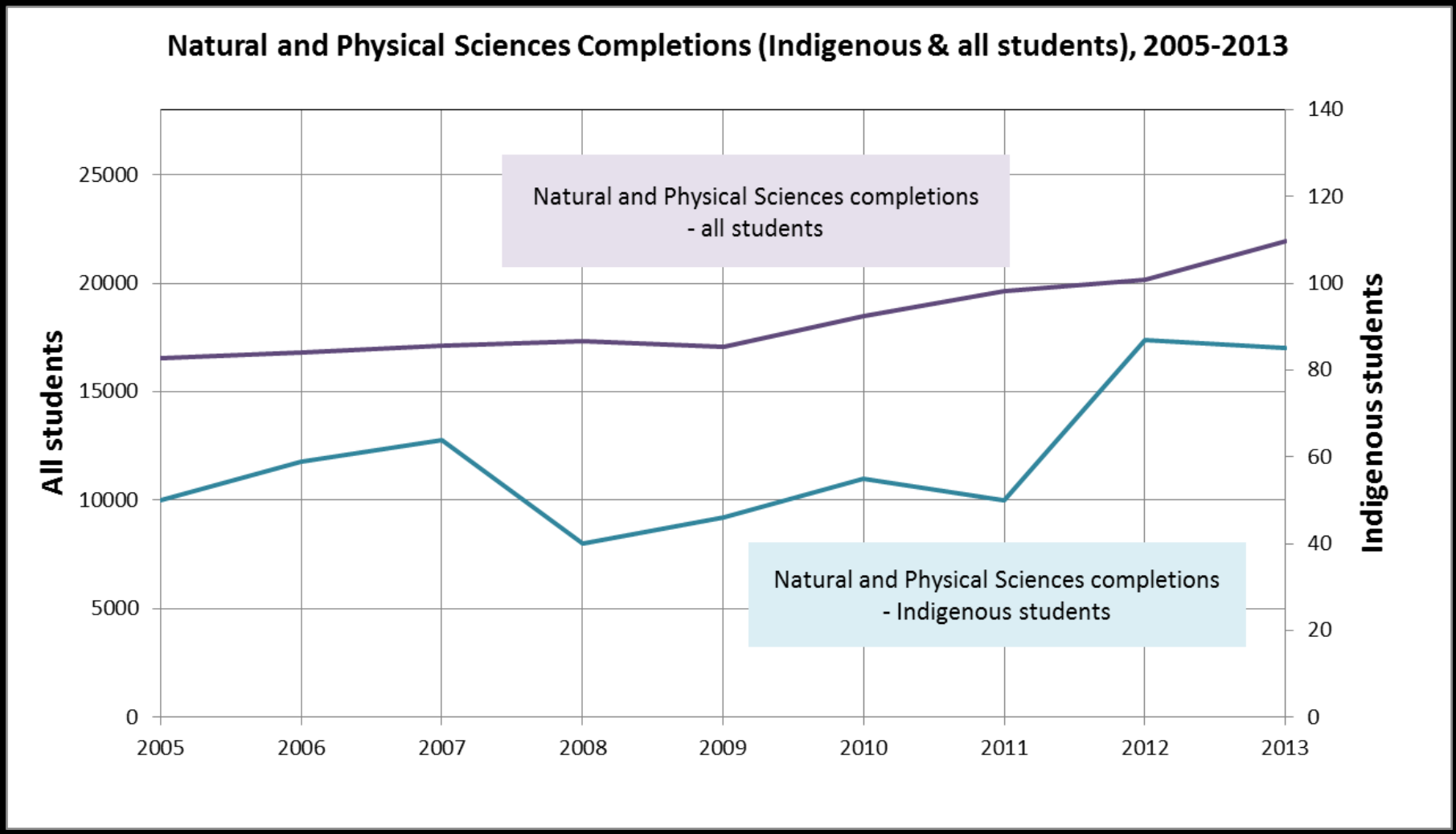
Analysis of High Performing Indigenous Students (PISA) unpublished: KEY MESSAGES

- Celebrate Success of high performers
- Need to better understand the relationships that and factors in high performing Indigenous studies
- Positive association with teacher led strategies. Negative correlation between student led investigations and high performance (for both Indigenous and Non-Indigenous)
- Affective Issues: higher interest in science could be capitalised on. High Indigenous performers have postive profiles compared to all Indigenous and all non-Indigenous
- SES correlation strong. Need to understand this.

Indigenous participation in science - enrolments



Indigenous participation in science - completions



What can Deans do?

- ACDS – Enhanced Training of Mathematics and Science Teachers project (build Indigenous focus)
- Engagement and Success in Teacher Education (build STEM focus)
- Respect, Relationships and Reconciliation (explore STEM focus)