AUSTRALIA 2020 | THINKING BIG

Australia 2020 Summit

Education, Skills And The Productivity Agenda

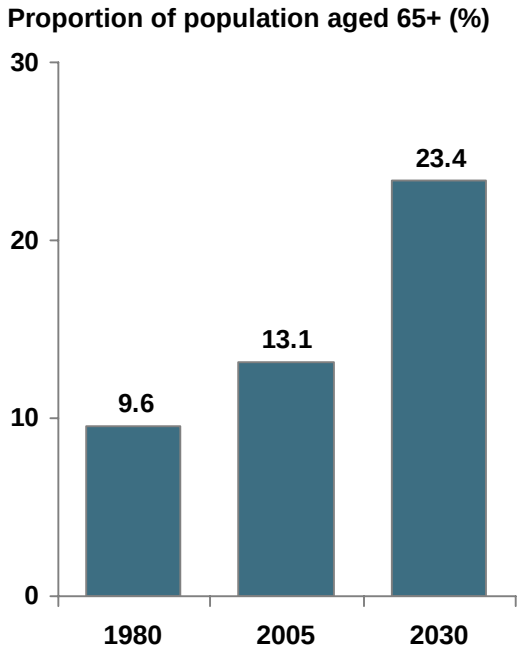
April 2008

These background materials aim to tell an evidence-based story about how Australia is faring. They are not intended to be definitive or comprehensive, but were put together to stimulate discussion on the main challenges and opportunities facing the country and the choices to be made in addressing them. They do not represent government policy.

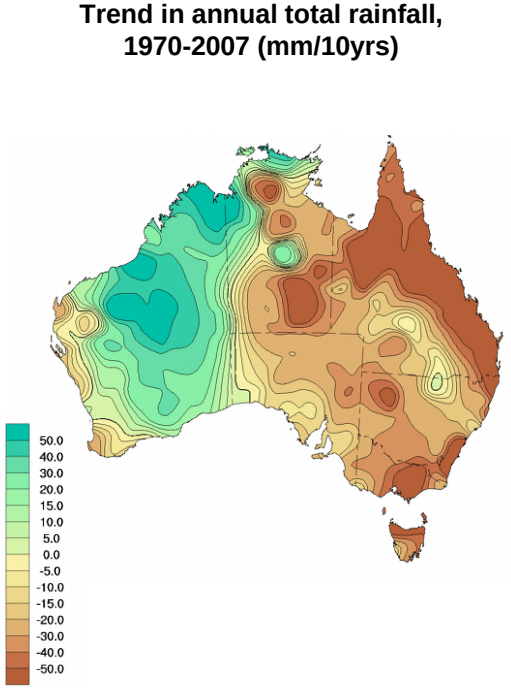
The materials end with a set of questions. We hope that these, along with many other questions, will be the subject of conversation both prior to and during the Summit.

The Australian economy faces a period of significant change both domestically and internationally

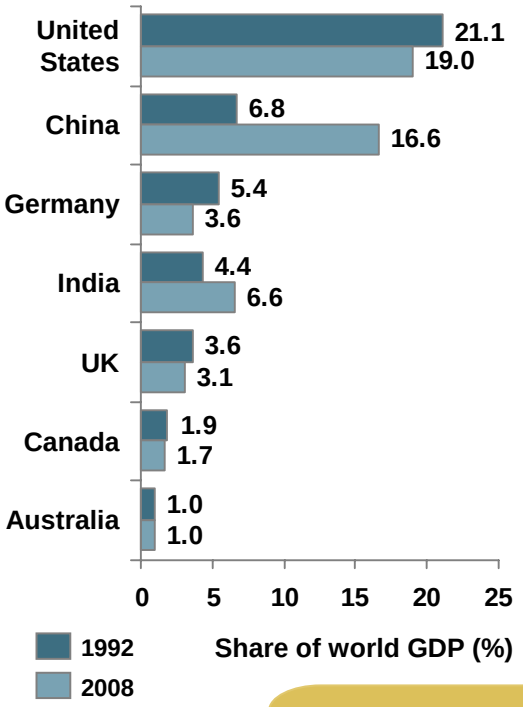
Demographic transition



Climate change



Evolution of the global economic landscape



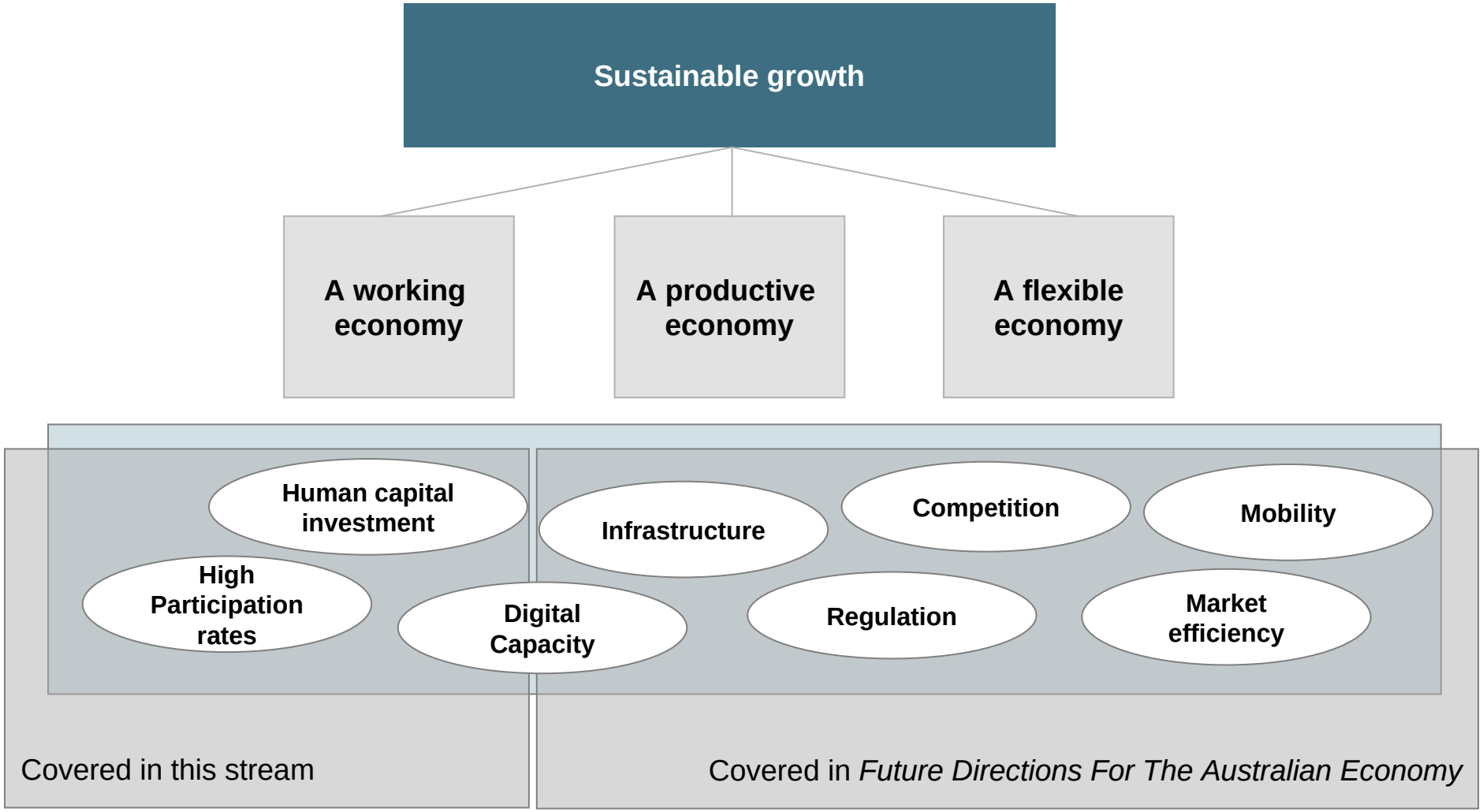
For more on our demographic profile and climate change, see *Population, Sustainability*...

The Australian economy will need to adapt to meet coming challenges while grasping future opportunities

For more on global economic trends, see *Australia's Future in the World* (p2-4, 8)

Source: ABS 3222.0, *Population projections, Australia, 2004-2101* (2006); ABS 3201.0, *Population by age and sex, Australian states and territories* (2006); Australian Bureau of Meterology (2008); IMF, *World Economic Outlook Database* (2007)

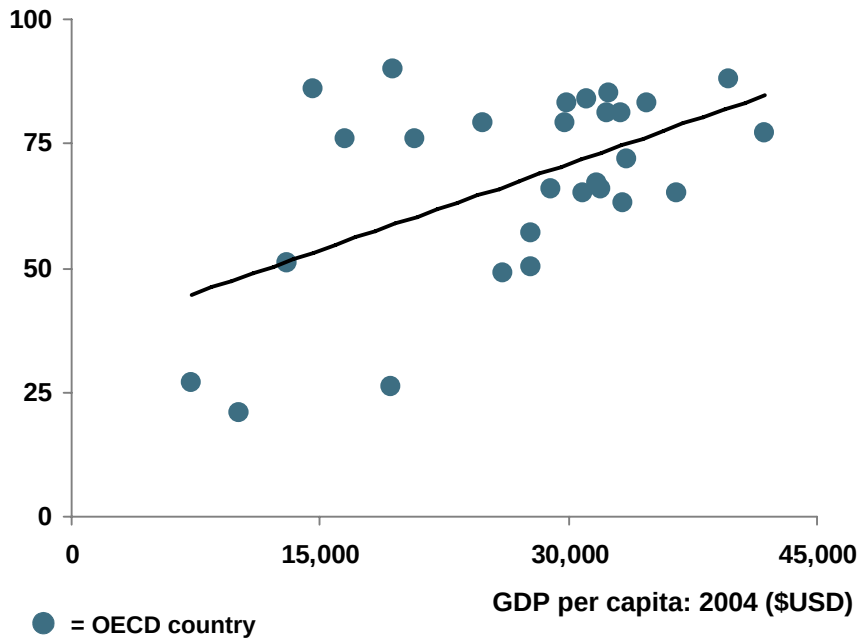
To meet these challenges, the economy will need to be flexible, productive, and highly participative



Knowledge, skills and innovation are major drivers of prosperity, productivity and global competitiveness

Education and economic prosperity go hand in hand

Proportion of the population that has attained at least upper secondary education - OECD countries[1]: 2005 (%)



Productivity and technological improvements drive economic growth

- **Work by Robert Solow and Moses Abramovitz published in the mid-1950s demonstrated that as much as 85% of measured growth in US income per capita during the 1890-1950 period could not be explained by increases in the capital stock or other measurable inputs**
- **The unexplained portion has been widely attributed to the effects of technological change**
- **Between 50% and 60% of Australia's economic growth since 1990 can be attributed to productivity improvements**

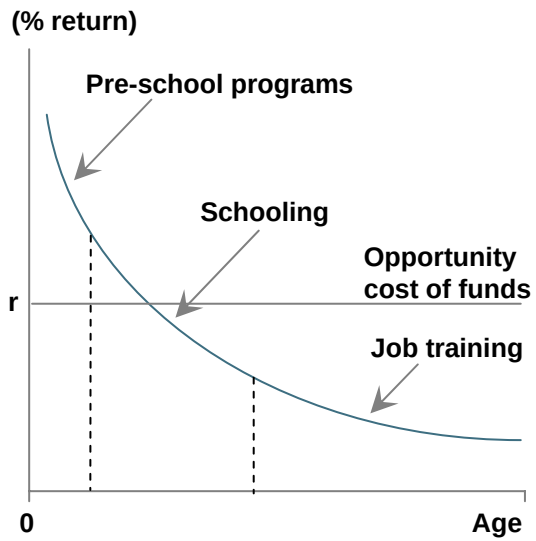
Education is also important for personal development, social mobility and health

1. Excluding Luxembourg and Japan (outlier/small economy and data not available respectively)
Source: OECD, *Education At A Glance 2007*; Committee on Prospering in the Global Economy of the 21st Century, *Rising Above The Gathering Storm: Energizing And Employing America For A Brighter Economic Future (2007)*

Early childhood education and care (ECEC) are critical to outcomes later in life…

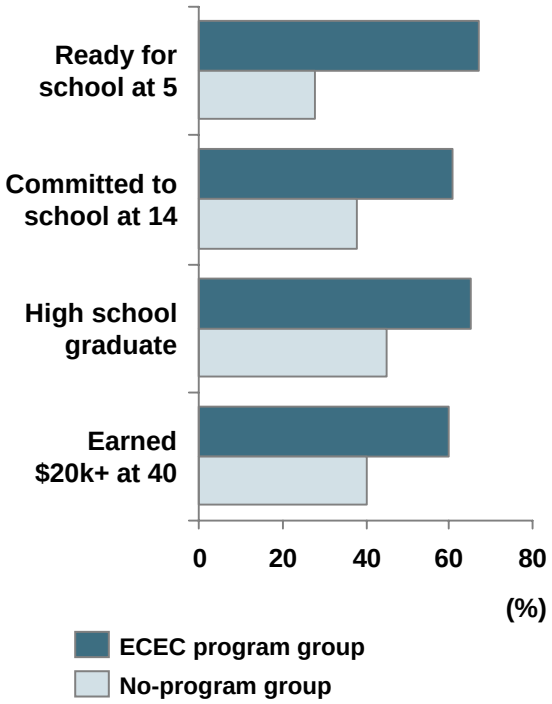
ECEC is a key determinant of outcomes

Rates of return to human capital investment[1] – initially setting investment to be equal across all ages



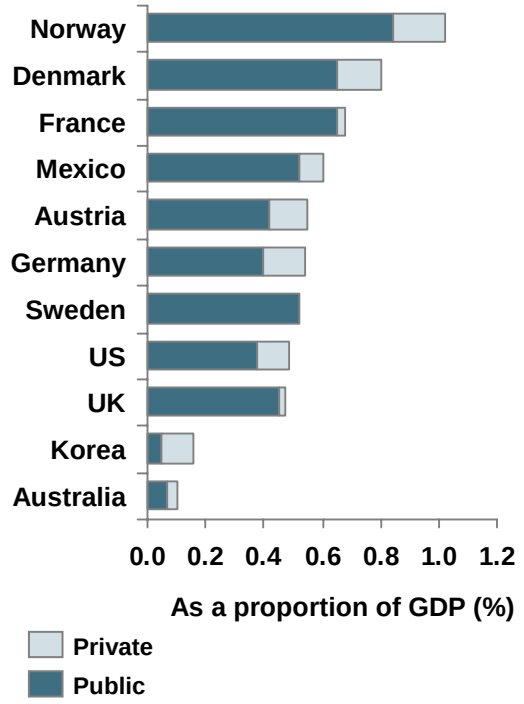
ECEC have both private and public benefits

Longer term benefits of investment in ECEC - 40-year study group



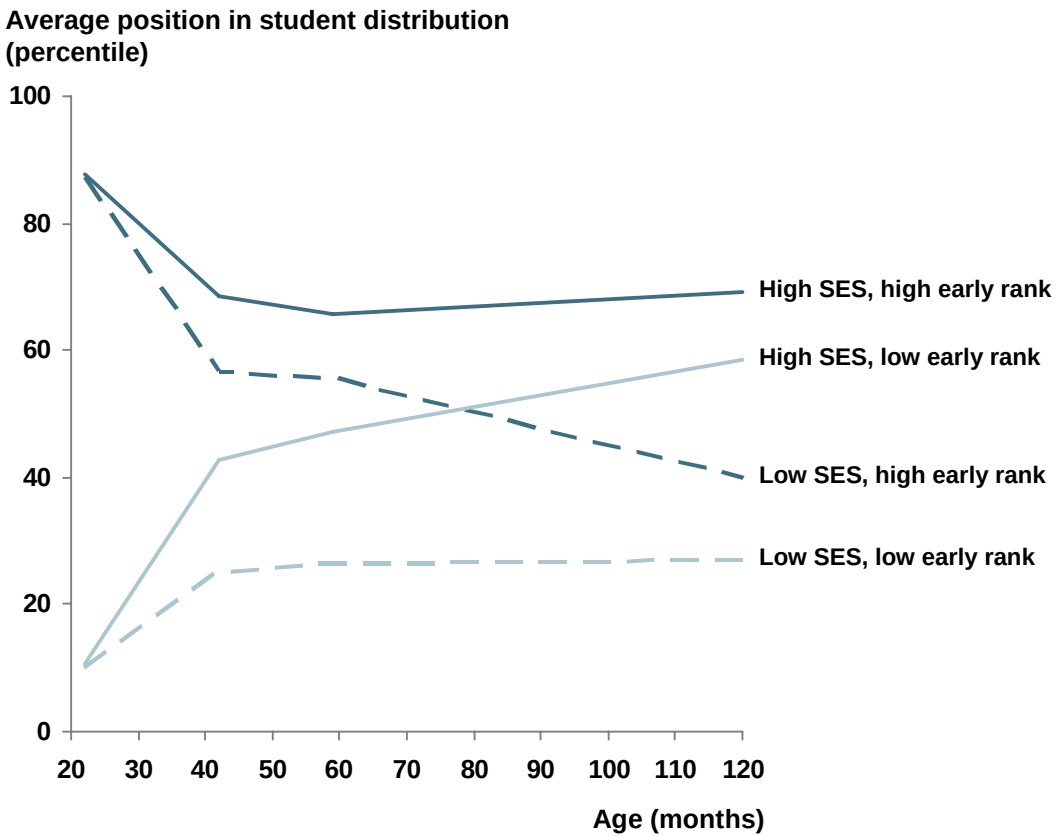
Australia is the lowest spender on ECEC in the OECD

Public and private expenditure on pre-primary education – 3- to 6-year olds only



1. Cunha et al, *Interpreting the evidence on life cycle skill formation (2005)*
Source: OECD, *Starting Strong II: Early Childhood Education And Care (2006)*

…with strong evidence that starting early is essential

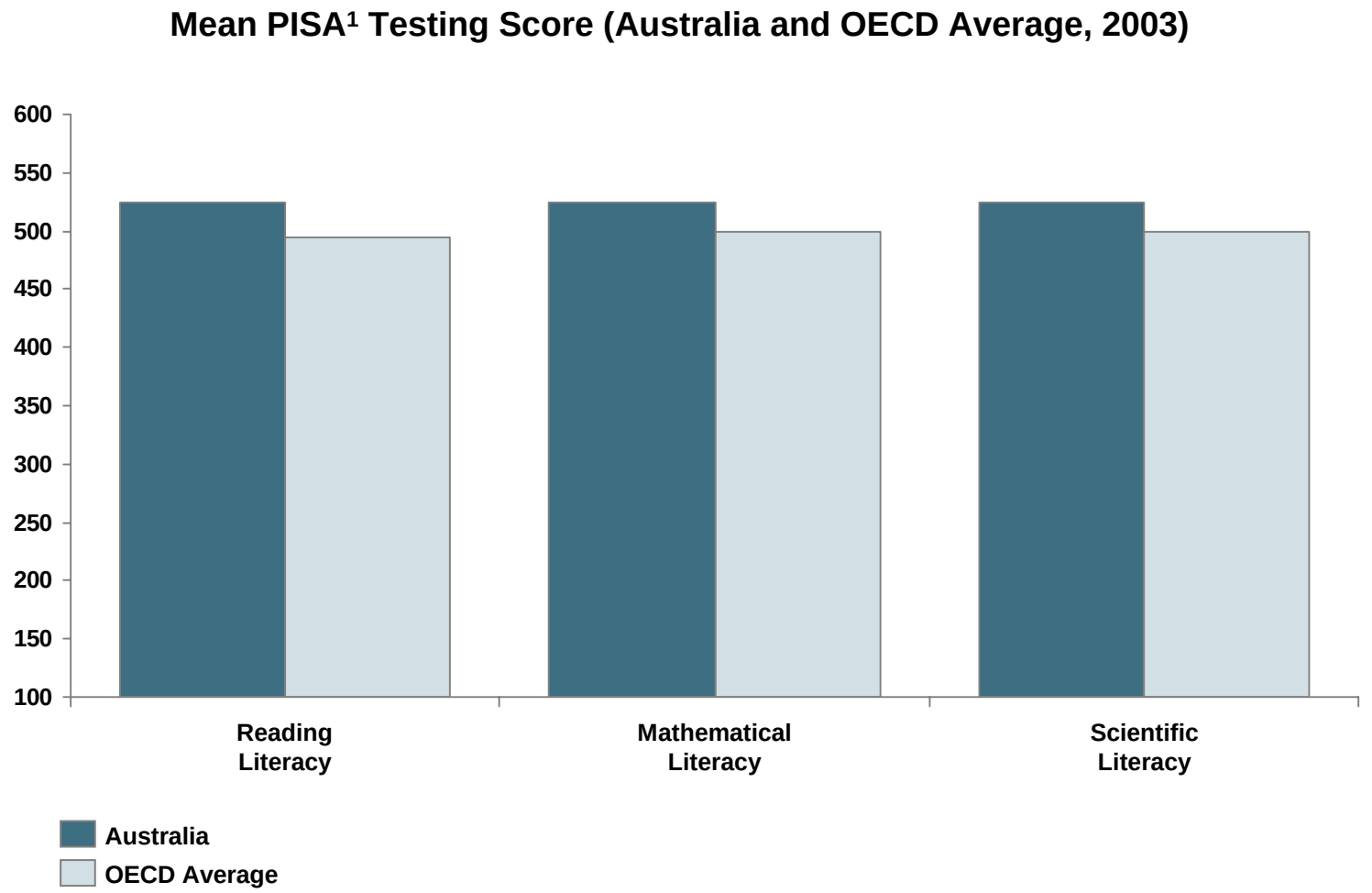


The importance of "starting early"

- **A recent British study showed that social background is a more powerful predictor of educational outcomes by age 10 than attainment at 22 months**
- **It also suggested that less able richer children overtake more able poorer children by the age of six**

Note: SES denotes socioeconomic status
Source: Feinstein L, *Inequality in the early cognitive development of British children in the 1970 cohort*, Economica, (February 2003)

At primary and secondary level, Australian students perform well compared to their international peers…

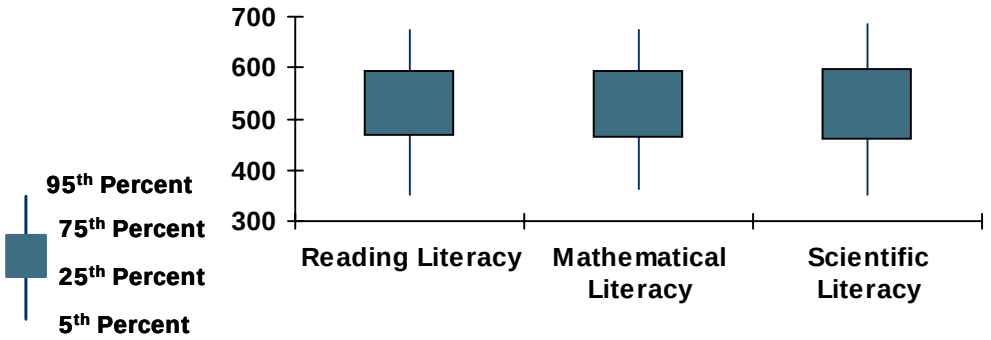


1. Program for International Student Assessment
Source: OECD, *Literacy Skills for the World of Tomorrow – Further Results from PISA (2003)*

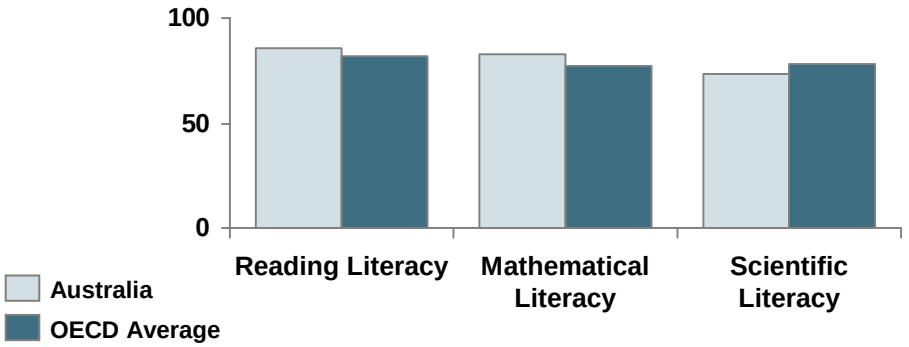
…behind the averages, however, there are wide variations across sectors, socio-economic status and culture

We have high variability in outcomes in reading and mathematical literacy by international standards...

Range of PISA[1] testing score (Australian students, 2003)

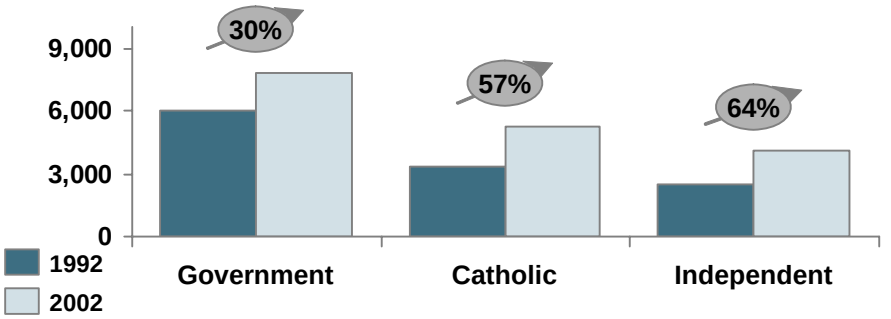


Difference in PISA score between top and bottom SES quartiles

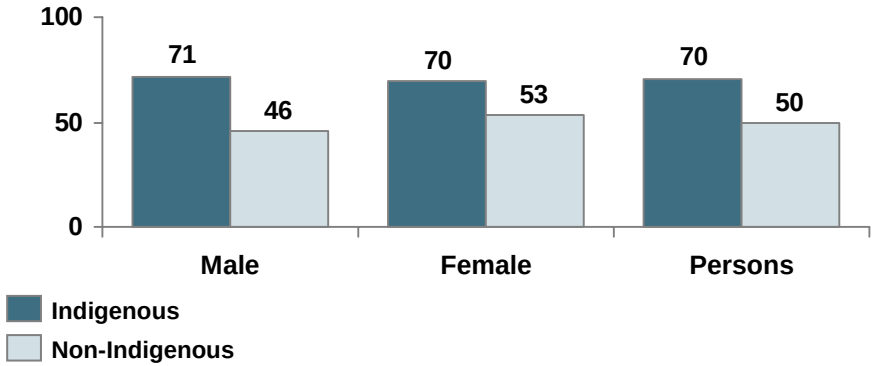


...with significant differences in outcomes across schools, socio-economic status and culture

School income per student from all government funding sources: 1992/2002 ($ per student)



Proportion of population with no non-school qualification – aged 15 to 24 years[2]: 2004-05 (%)

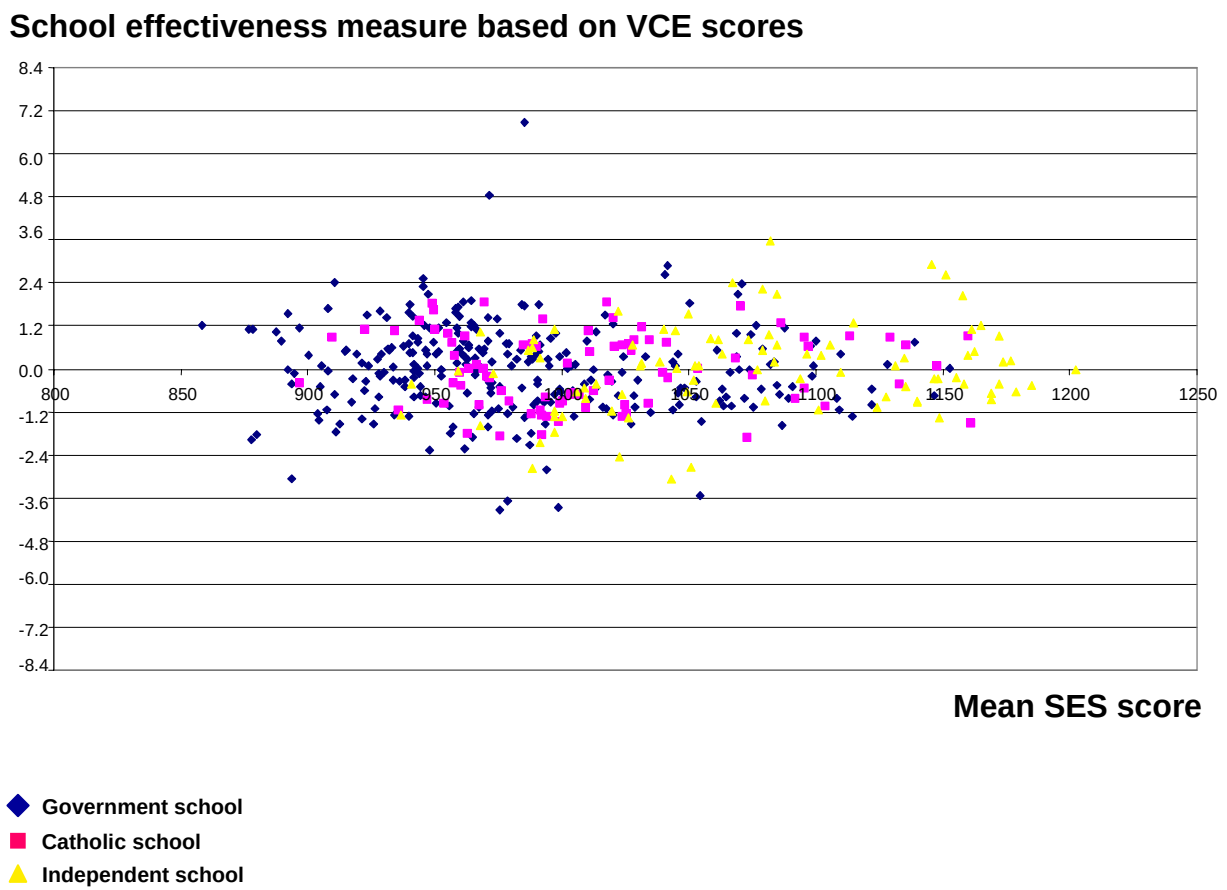


1. OECD Programme for International Student Assessment, a global survey of 15-year-old students 2. Includes 23,200 Indigenous people aged 15-24 years (25.2%) who were still at school and 689,400 non-Indigenous people aged 15-24 years (26.2%) who were still at school

Source: Department of Premier and Cabinet, Victoria, *Governments Working Together (2004)*; Productivity Commission, *Overcoming Indigenous Disadvantage 2007;* OECD, *Literacy Skills for the World of Tomorrow – Further Results from PISA 2003*

School effectiveness also appears to vary widely across sectors and socio-economic status

School effectiveness measure based on VCE scores, by mean school SES and sector – Victoria (2000)



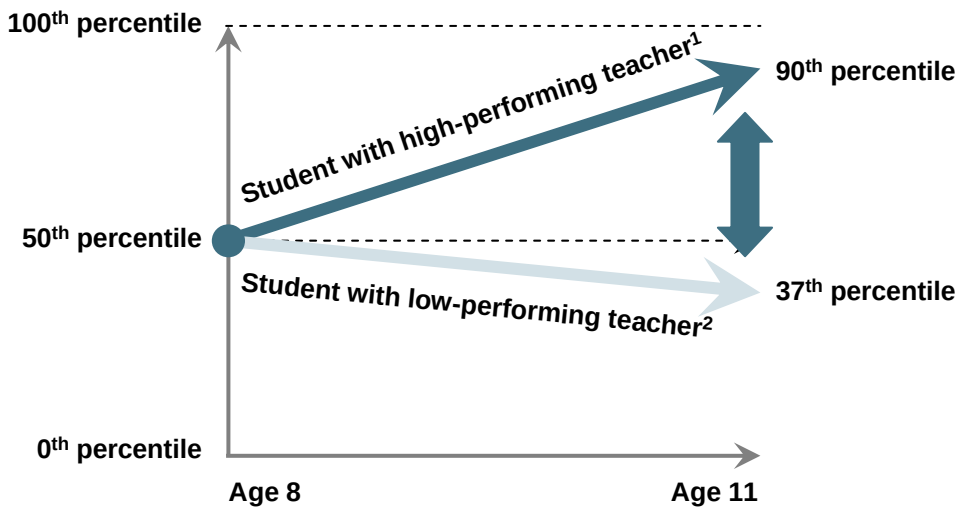
Analysis shows:

- **Wide variance in school performance, not related to incoming aptitude or SES**
- **Many government schools perform very well, in fact 39% of government schools perform above the median for independent schools**
- **A number of independent and government schools perform poorly**
- **Catholic schools are more closely grouped around expected outcomes**

Source: S. Lamb, D. Jesson, R. Rumberger and R. Teese, *School Performance and Value-adding: Results From Analysis of School Effectiveness (2004)*

We know that the quality of Australia's teachers is strongly related to good outcomes…

Impact of teaching quality on student performance in the United States: 1996 (performance percentile)



Importance of teacher quality

- **Research suggests that teacher quality affects student performance more than any other variable**
- **On average, two students with average (50th percentile) performance could diverge by more than 50 percentile points over a three year period depending on the teacher each is assigned**
- **Teacher quality will arguably become better understood when analysed in the emerging context of "value adding" practices in education. This is the use of increasingly sophisticated measures and technologies to monitor the progress of students within a school, compared to students of "similar ability," or with the rest of a state**
- **Research suggests that the quality of school leadership is also an important factor**

1. Among the top 20% of teachers 2. Among the bottom 20% of teachers
Source: Sanders & Rivers, *Cumulative and Residual Effects on Future Student Academic Achievement (1996)*

…making the many issues on the education workforce agenda particularly important

Size of education sector

- There are around 256,000 school teachers in Australia
- Total teacher salaries amount to around $15bn

Teacher education

- Entry requirements for teaching degrees are relatively low
- Few incentives exist for professional development (few Australian teachers hold post-graduate degrees)

Career progression

- Many outstanding teachers leave the classroom for higher-paying administrative roles
- Team leadership roles are not recognised in the same fashion as in other industries

Gender

- Only a minority of school teachers in Australia are male (27%)

Remuneration

- Current salary progression models mean many senior teacher salaries are not as high as in some comparable professions

Status of profession

- Teachers remain represented by unions and no professional body has been established as in other professions

Teacher quality

- Teacher quality is critical to student outcomes, yet performance standards are not well defined or monitored

Teacher performance

- Outstanding teachers are often not recognised for their excellence as might occur in other industries

Emerging teacher shortage

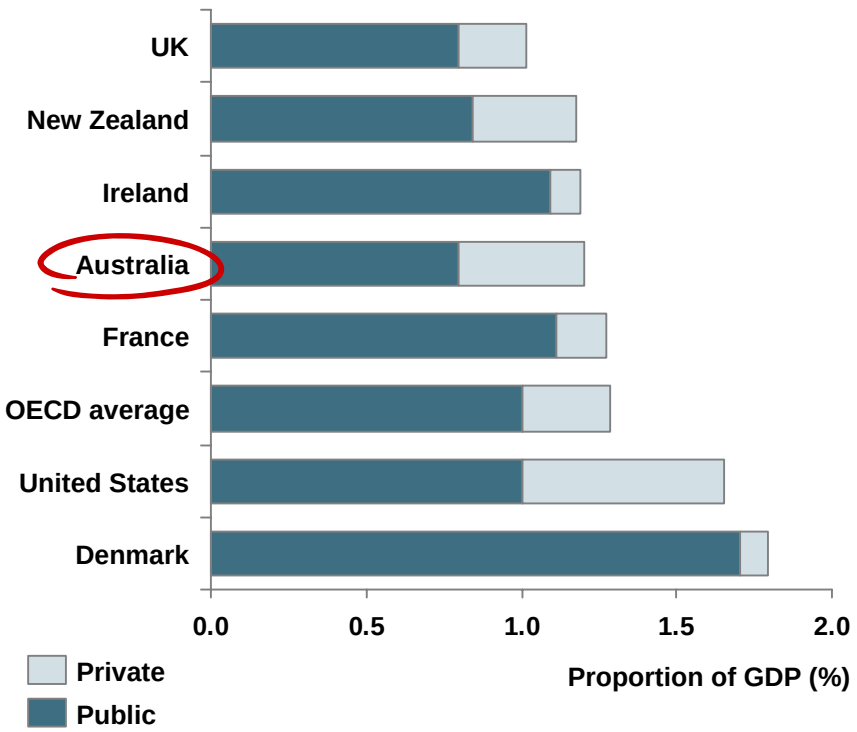
- A high proportion of Australia's teachers are expected to leave the profession or retire in the next 5-10 years
- Fewer students are commencing teaching courses to fill the gap

Source: ABS Census Tables (2006)

Australia's tertiary institutions are modestly funded by international standards

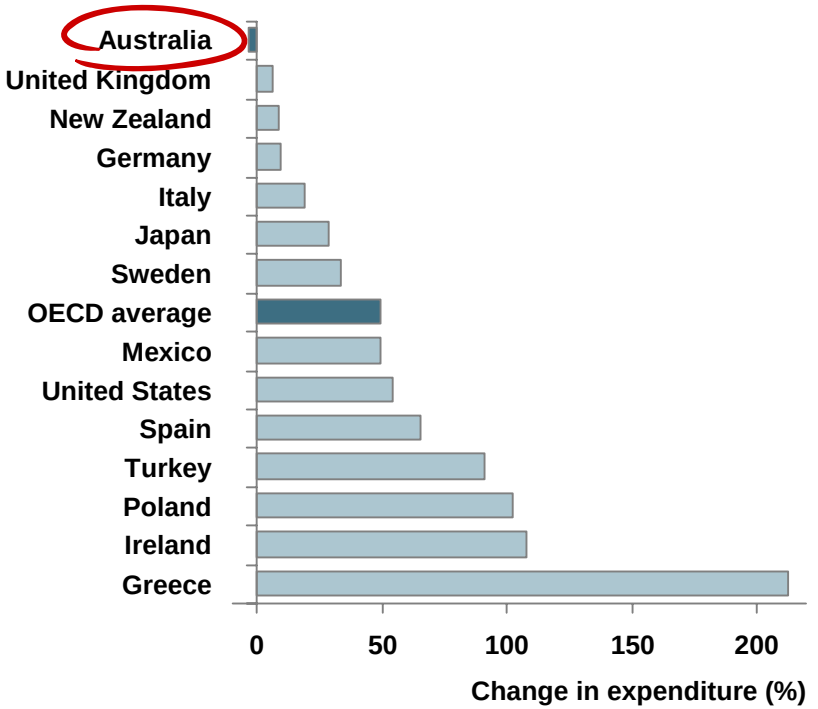
Australia is a moderate spender on tertiary institutions...

Expenditure on tertiary institutions as a proportion of GDP - selected OECD countries: 2004 (%)



...and this spending has decreased over the last 10 years

Increase in public expenditure on tertiary education - selected OECD countries: 1995-2004 (%)

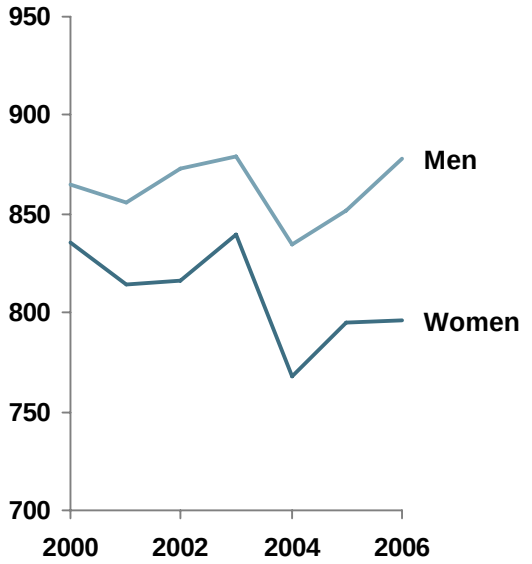


Source: OECD, *Education at a Glance 2007*

Looking at adult skills, we are an increasingly well-educated society, but many are still missing out...

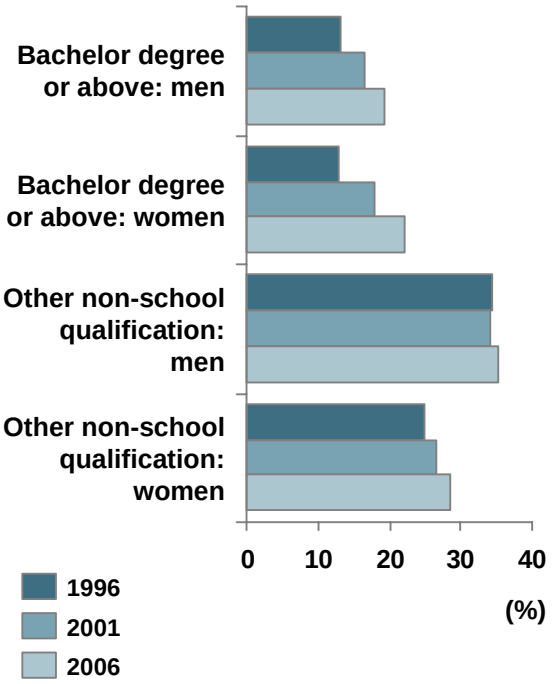
Total VET enrolments have decreased since 2000...

Students enrolled in publicly funded VET: 2000-2006 ('000)



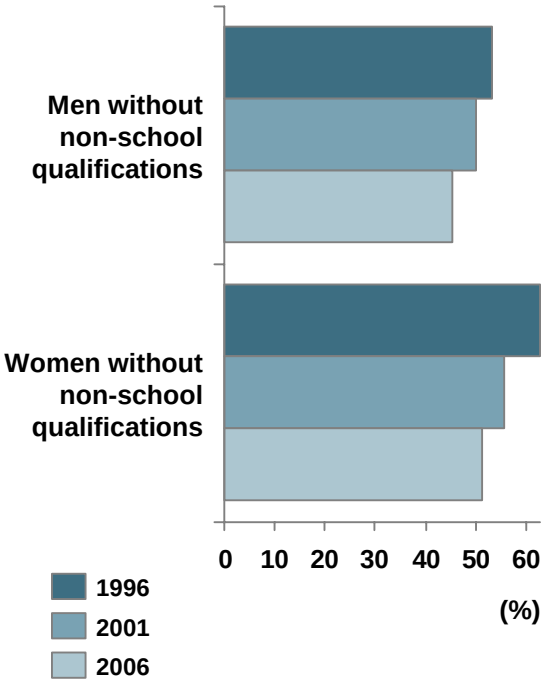
...but our overall qualification profile has improved

Highest level of education[1]: 1996-2006



Despite this, many are still missing out

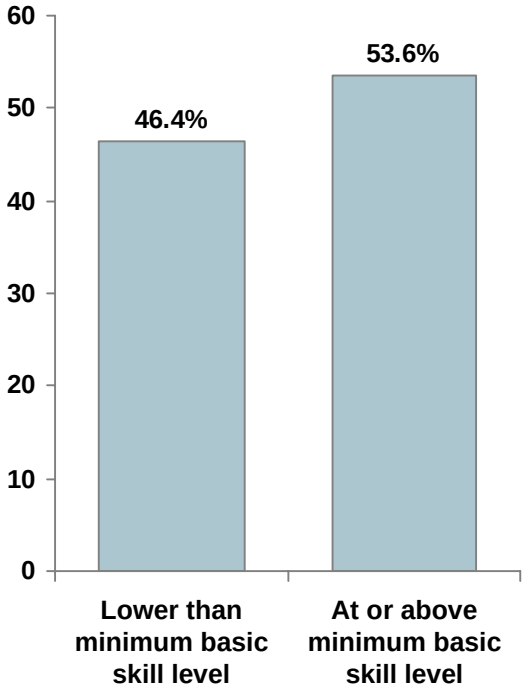
Proportion of people without any non-school qualifications[1]: 1996-2006



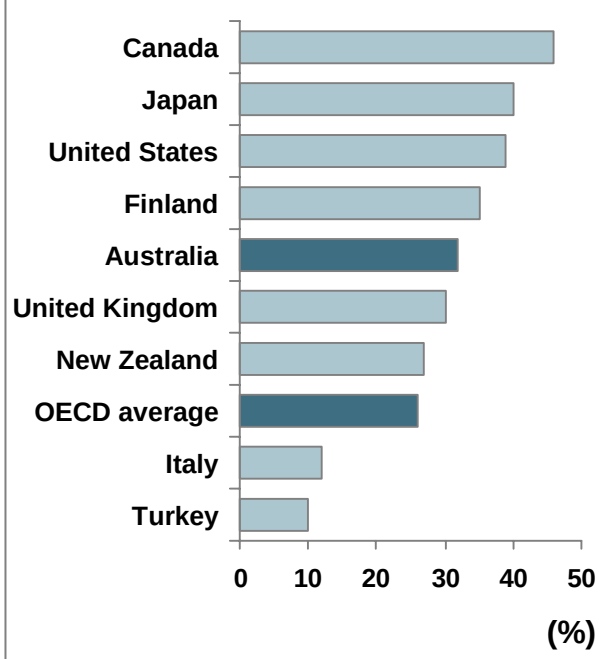
1. People aged 15-64 years
Source: ABS 1301.0, *Year Book 2008*

...with millions of Australians vulnerable to a changing labour market

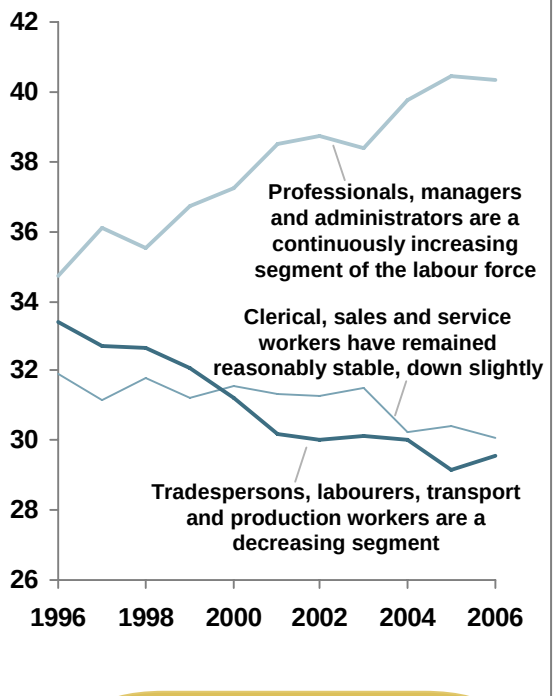
Prose literacy skill levels



Vocational or higher qualification



Labour force by employment type

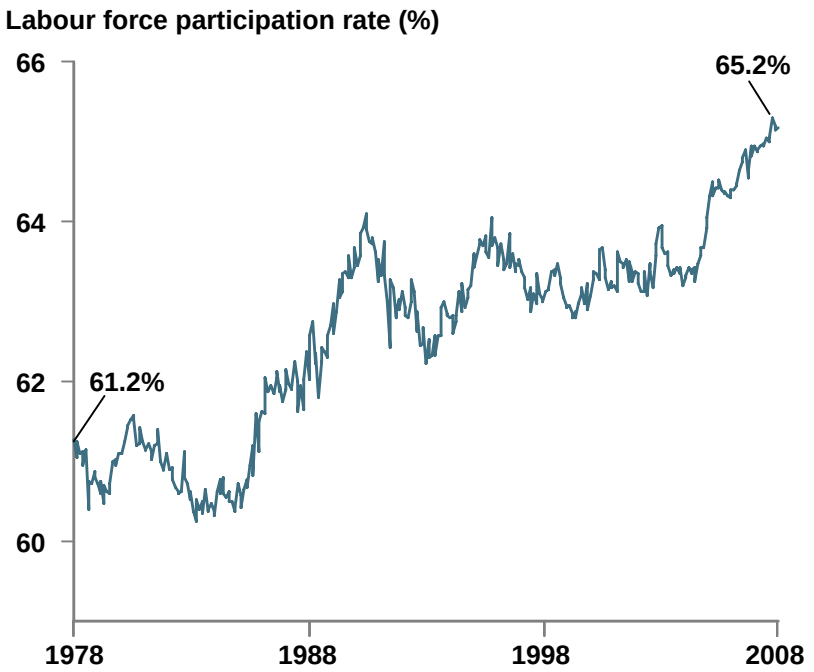


For more on women's education and work, see *Strengthening Communities...* (p7)

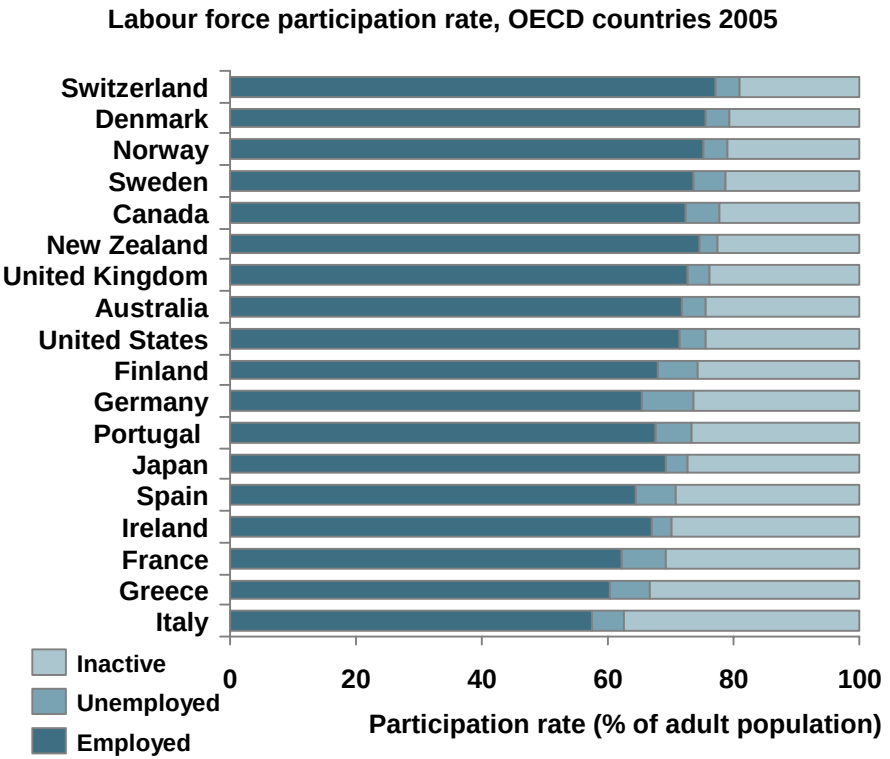
1. ABS study measures skills relative to "the minimum (skills) required for individuals to meet the complex demands of everyday life and work in the emerging knowledge-based economy"
Source: ABS 4228.0, *Adult Literacy and Life Skills Survey (2006)*; OECD, *Education at a Glance 2005*; ABS 6105.0, *Australian Labour Market Statistics*

Although labour force participation has been rising, many other countries are still doing better

Participation is rising...



...but many other countries are still doing better

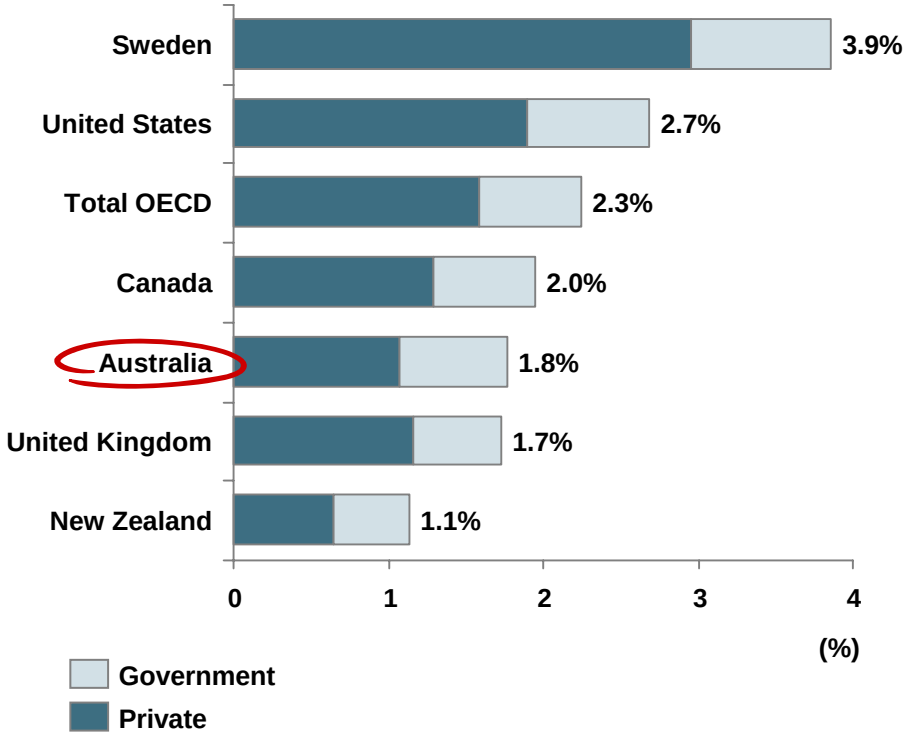


Source: ABS 6202.0.55.001, *Labour Force, Australia;* OECD (2002)

Looking at science and innovation, our performance is mixed

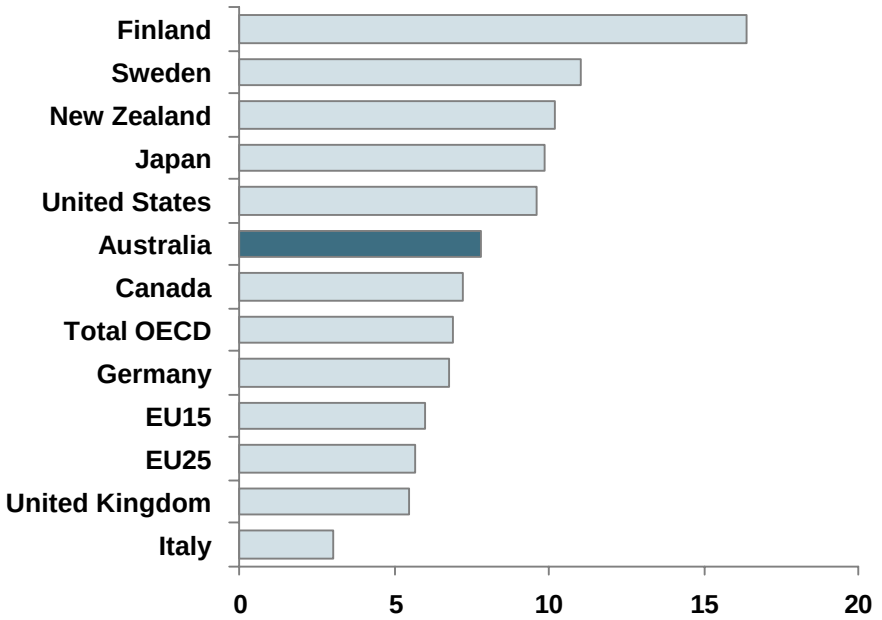
Private R&D expenditure is among the lowest in the OECD...

Gross domestic expenditure on R&D: 2006[1]
(Proportion of GDP, %)



...and, given our population, our research workforce is average in size

Total researchers per thousand workers across OECD countries (2002)



For more on innovation, research and development in the health sector, see *Long-term Health Strategy* (p19)

1. Or most recent available year, back to 2003
Source: OECD, *Main Science and Technology Indicators 2006, 2007*; Productivity Commission, *Public Support for Science and Innovation (2007)*

We need to ensure that our cutting edge research has impact as well as encourage process innovation within existing industries

Innovation

Turning knowledge into wealth	• **Improve commercialisation of leading edge Australian science and research** • **Move beyond low value-add resource exports that leave us heavily exposed to commodity markets** • **Balance innovation and adaptation of global knowledge**
Process innovation	• **Continue to encourage people to find ways to do their jobs better** • **Exploit collaboration tools: web 2.0 technologies, "just-in-time" training and mid-career training** • **Transfer of international best practice**

Questions

What should be our approach to the early years development of our children?

What can be done to reduce the wide variations in outcomes and school effectiveness?

What should the "public commitment" to education be? Can "public" education only be delivered through "public" schools?

What can we do to ensure the highest quality teachers at all stages of the system, and for all subjects?

What can be done to extend participation in adult learning to those with the greatest learning needs and lowest participation rates?

What options are there for funding the education system, given the complexities of federalism?

How does an economy with low private investment in research and development innovate?

What can be done to ensure that Australia attracts and retains the most talented, creative and highly skilled people?

What can be done to foster innovation in the workplace and encourage the transfer of ideas across businesses?

What kinds of collaboration can best connect scientists to others in the economy?

What kinds of differences could the developing digital economy make right across the education lifecycle?

How can we continue to improve student retention rates at secondary school?