Demand and Supply of
Primary and Secondary School Teachers in Australia

Part F

Complementary Research
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1. Implications of the ageing of Australia’s teaching workforce for teacher supply

Introduction

This paper has been developed as part of research being undertaken by the Department of Education Science and Training for the Ministerial Council on Employment, Education, Training and Youth Affairs (MCEETYA) on demand and supply for teachers.

In July 2001 MCEETYA released a report, Demand and Supply of Primary and Secondary School Teachers in Australia which found that, at that time, the teacher labour market was broadly in balance across Australia, in both the primary and secondary sectors, and that teacher graduations were expected to be sufficient to meet the demand for new teachers until 2003. However, MCEETYA noted that there were recruitment difficulties during 2000 in a number of disciplines such as Mathematics, Science and Information Technology, and in rural and remote regions. Further, MCEETYA indicated that the age profile of the teaching workforce raises concerns about potential losses of older teachers from retirement. MCEETYA noted that

"retirements as a proportion of the teaching workforce will rise in the current decade and this will increase the pressure on the teacher labour market. This pressure is expected to be greater in the second half of the decade than the first" (p.74);

"there is some uncertainty about the precise patterns of future retirements" (p.74). The report noted (p.74) that the annual loss of teachers through future retirements would vary depending on whether future retirements would concentrate about the 55 years age limit or be distributed across a broader age range, such as 55-60 years;

"there is a general belief that the impact of retirements will be greater for secondary science and mathematics teachers" than possibly other secondary teachers (p.78).

In July 2002 MCEETYA endorsed a new framework for analysis of teacher supply and demand issues including research on ageing of the teacher workforce. This paper addresses the implications of ageing of the teacher workforce for the future supply of teachers.

Background

The majority of OECD countries are undergoing a major demographic transformation with a larger proportion of older people in the population. In Australia, a number of factors, including the baby boom following the Second World War, the post war immigration program, and more recently, a decline in mortality and in the birth rate, have contributed to this changing demographic profile.

The implications of this demographic change have been studied from both general economic perspectives and from social science perspectives (Productivity Commission 1999, Department of Health and Aged Care 1999, Access Economics 2001). This paper examines broad population trends in Australia, demographic trends in the national labour force, and provides a snapshot of the current teacher workforce before examining recent and likely trends in the age structure of the teaching workforce, both at broad and more detailed levels.
Demand for school teachers is dependent on two key factors:

- the number of students in schools; and
- the teacher student ratio.

While demographic changes may result in a decline in the proportion of school age persons in the national population the number of school students will remain relatively static over time. This implies that the level of demand for teachers is likely to continue to be significant in the future, if there are no major changes in teacher student ratios. Hence, the potential for significant retirement of the teaching workforce in the near future becomes a critical issue in regard to teacher supply.

Data for this analysis are drawn from a range of published information. Of these, the Australian Bureau of Statistics (ABS) population projections (ABS 1998), the MONASH Employment Forecasts prepared by the Centre of Policy Studies from Monash University (CoPS 2001), the DEST 2002 Government and Non-Government School Staffing Surveys and the 1999 Australian College of Eductors (ACE) National Survey: Teachers in Australian Schools (Dempster et al 2000) are the major data sources. The CoPS MONASH model covers information on the Australian distinguishing 112 industries, 56 regions and 340 occupations. It is developed on the basis of employment data from the ABS second national household survey and employment labour force surveys. The 1999 ACE National Survey was a quantitative survey of over 20,000 teachers employed in more than 1,000 government and non-government schools in Australia. Data for the DEST School Staffing Surveys were supplied by State and Territory Education Departments and approximately 45 per cent of non-government schools.

**Australian Population Trends**

Australia’s population is ageing — the proportion of older persons in the population is rising. Projections undertaken by the ABS, as illustrated in Chart 1 below, show that the proportion of the population aged 0 - 14 years will decrease to 16 per cent of the total population, while the proportion of population aged 65 years over is projected to increase to 24 - 27 per cent by 2051. However, the likely change in the age structure of Australia’s population does not bring a reduction in population size for all age groups. As seen from Chart 2, the number of the school age population will remain relatively constant over the next 30 years.

The important message here is that demand for school level education will not decline in the period ahead as a result of overall demographic changes. However, as discussed in more detail below, ageing of the teacher workforce in line with general population and workforce ageing may have an adverse impact on teacher supply.
Chart 1

Projection of Population
Selected Age Groups

Source: Population Projections 1997 to 2051 (Cat No 3222.0), ABS, 1998

Chart 2

Projection of school-age population,
1999 to 2035

Source: Population Projections 1999 to 2101, (Cat No 3222.0), ABS, 2000
Broad Workforce Trends

The Australian workforce, like the population more generally, is also ageing. The share of older workers in the labour force is increasing as shown in Chart 3. The 45 to 64 year old age group, which includes the older ‘baby-boomers’, is projected to become an increasingly larger proportion of the Australian workforce — rising from about 31 per cent in 1999 to about 41 per cent in 2051. At the same time, the proportion of the population likely to be in the labour force by the year 2051 is also falling. In 1999 the working age population accounted for approximately 66 per cent of the total population. By 2051 the working age population will represent 48 per cent of the population (Chart 4).

A similar trend is evident with respect to the Australian teacher workforce, as documented below. However, as outlined in later sections of the paper, overall national data are not necessarily reflected at the State level, or with respect to the government or non government school sectors, and the situation also varies somewhat between the primary and secondary school sectors.

Chart 3

Projected Australian Workforce by Age Groups
1999 – 2051

Source: Population Projections 1997 to 2051 (Cat No 3222.0), ABS, 1998
Snapshot of Australia’s Current Teacher Workforce

The proportion of older teachers in the teacher workforce is already significant. At the time of the 1999 ACE National Survey, the national mean age of teachers who responded to the survey was 41.1 years with a national mode of 47 years and a median of 42 years. The mode is the most frequently occurring age in the teacher workforce. There is therefore potential for a bunching of retirement of older teachers. For survey respondents, teachers from the government schools sector were marginally older than those from the non-government sector: nearly 60 per cent of the government school teachers were aged 40 years and over, compared to around 50 per cent in the same age band from the non-government schools sector. Other data indicate that compared to the Australian workforce as a whole (Chart 5), the teacher workforce had few employees under age 25 (Chart 6). Employees under 25 years comprised only 6 per cent of the teacher workforce, compared to 18 per cent of the Australian workforce in the same age categories. This difference reflects the need for university study prior to commencing teaching. Notably, this data indicate that teachers aged between 45 - 54 comprise a large proportion (a third) of the entire teacher workforce.
Chart 5

Age composition of the Australian workforce at 2000 - 01

Source: Centre of Policy Studies (CoPS), Monash University, 2002

Chart 6

Age Group Composition of Teacher Workforce

Source: ABS 2001 Census of Population and Housing
The proportion of older teachers in the teaching workforce has been rising

The share of older teachers in the teacher workforce has risen over the past three decades. In 1999 the proportion of teachers older than 51 years of age was 17 per cent compared to 8 per cent in 1989 and 7 per cent in 1979. The proportion of teachers in the 41 - 50 age band has increased remarkably during the period between 1979 and 1999, from approximately 14 per cent in 1979, to 25 per cent in 1989 and to 39 per cent in 1999. That is, while age retirement may not have been a significant issue for teacher supply in the past decade, this is no longer the case.

The teaching workforce will continue to age

Charts 7 and 8 provide projections of likely employment changes between 2000 and 2010 arising from the Centre of Policy Studies, Monash University. The projections suggest that:

- Both workforces will experience a continuing growth in employment and the employment share of older workers will increase.
- The ‘baby booming’ effect comes earlier in the teacher workforce and will be sustained over the next 10 years.

By comparison with the national picture, significant increased workforce participation past age 55 is not projected for the teacher workforce, as shown in Chart 8. Instead, the employment of teachers aged over 55 in the teacher workforce is projected to remain relatively steady over the forecast period.

The data hence suggest there is potential for significant losses of older teachers from the teacher workforce in the next decade. However, while the overall ageing of the teacher workforce raises concerns about possible teacher losses, there are differences in the age structure of the teaching workforce considered by gender, by State, by government and non government schools and between primary and secondary teachers. These differences are examined below.
Chart 7

Projection of the Australian workforce by age groups, from 2000 to 2009

Source: CoPS, Monash University, 2002

Chart 8

Projection of the Teacher workforce by age groups, from 2000 to 2009

Source: CoPS, Monash University, 2002
Teaching workforce - age profile by gender

The teacher workforce is predominately female, especially in the primary school sector. The proportion of women in the teaching workforce has increased over time. (This topic is examined in more detail elsewhere in this report).

Data on number of teachers employed, by gender and age, as at 2001 is shown in the table below, drawn from data from the ABS (2001) Census of Population & Housing (Table 1).

Table 1:
Proportion of teachers employed by age & gender : 2001

<table>
<thead>
<tr>
<th>Age</th>
<th>Males %</th>
<th>Female%</th>
<th>Age %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td>4.0%</td>
<td>6.8%</td>
<td>6.0%</td>
</tr>
<tr>
<td>25-34</td>
<td>20.3%</td>
<td>23.7%</td>
<td>22.7%</td>
</tr>
<tr>
<td>35-44</td>
<td>27.2%</td>
<td>28.9%</td>
<td>28.5%</td>
</tr>
<tr>
<td>45-54</td>
<td>36.8%</td>
<td>32.0%</td>
<td>33.3%</td>
</tr>
<tr>
<td>55 &amp; Over</td>
<td>11.6%</td>
<td>8.6%</td>
<td>9.4%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>


The data emphasise the extent of age 45+ teachers, particularly male teachers. Some 48.4 per cent of male teachers were aged 45 years and over at 2001, compared to 40.6 per cent of female teachers. Younger to middle age teachers comprised a higher proportion of the female teacher workforce (9.4 per cent females compared to 51.5 per cent males).

Age Profile of Australia’s teaching Workforce by Government and Non Government Schools Sectors

The 1999 ACE National Survey revealed that teachers aged over 40 comprised a larger proportion of respondents (59.9 per cent) in the government schools compared to those in the non-government sector (49.4 per cent in Catholic schools and 56.1 per cent in independent schools). By comparison, data from the Government and Non-Government School Staffing Surveys (DEST 2002), and Monash Centre of Policy Studies, reveal that:

- Primary – 47.5 per cent of government teachers, compared with 35.7 per cent of non-government teachers, were aged 45 and over in 2001 (Table 2).

- Secondary – 50.6 per cent of government teachers, compared with 40 per cent of non-government teachers, were aged 45 and over in 2001 (Table 3).

- More than 50 per cent of older teachers (45 plus) in secondary Government school sector were male at 2001 ((Table 3).

- Female teachers comprised between 75 and 88 per cent of the primary teacher workforce in all groups (Chart 10).
Chart 9

Age Group Composition of Government Primary Teachers by Gender: 2001

Source: Government Schools Staffing Surveys, DEST, 2002
Chart 10

**Age Group Composition of Non-Government Primary Teachers by Gender: 2001**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 and over</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Non-Government Schools Staffing Surveys, DEST, 2002

Chart 11

**Age Group Composition of Government Secondary Teachers by Gender: 2001**

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percentage</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-34</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-54</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 and over</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Government Schools Staffing Surveys, DEST, 2002
Age Profile by Geographic Areas

There are considerable variations in the age composition of the teacher workforce between the States and Territories. As seen from Table 2, at 2001:

- The proportion of Government primary school teachers aged at 45 - 54 years ranged from 28.7 per cent to 45 per cent respectively across States and Territories. In three States, South Australia (45 per cent), Victoria (43.2 per cent) and New South Wales (42.2 per cent), the proportion in this age group was higher than that of the national average (38.8 per cent);
- The proportion of Non-Government primary school teachers aged at 45 - 54 years ranged from 25 per cent to 32.7 per cent respectively across States and Territories;
- Data in this table indicate that ageing of the teacher workforce is of particular concern for South Australia in which the proportion of ‘old’ Government primary and Government secondary teachers was much higher than that of the national average.
Table 2:

Percentage of Primary Teachers Aged 45 and over by Sector and State/Territory, 2001

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Government 45 - 54 years</th>
<th>Government 55 and over</th>
<th>Government Total</th>
<th>Non-Government 45 - 54 years</th>
<th>Non-Government 55 and over</th>
<th>Non-Government Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>42.2%</td>
<td>10.4%</td>
<td>52.6%</td>
<td>25.1%</td>
<td>7.9%</td>
<td>33.0%</td>
</tr>
<tr>
<td>VIC</td>
<td>43.2%</td>
<td>6.6%</td>
<td>49.7%</td>
<td>30.3%</td>
<td>9.2%</td>
<td>39.5%</td>
</tr>
<tr>
<td>QLD</td>
<td>30.4%</td>
<td>6.9%</td>
<td>37.3%</td>
<td>26.0%</td>
<td>10.1%</td>
<td>36.1%</td>
</tr>
<tr>
<td>SA</td>
<td>45.0%</td>
<td>10.0%</td>
<td>55.1%</td>
<td>25.5%</td>
<td>7.6%</td>
<td>33.1%</td>
</tr>
<tr>
<td>WA</td>
<td>37.0%</td>
<td>11.1%</td>
<td>48.0%</td>
<td>25.1%</td>
<td>5.4%</td>
<td>30.5%</td>
</tr>
<tr>
<td>NT</td>
<td>28.7%</td>
<td>9.9%</td>
<td>38.5%</td>
<td>25.3%</td>
<td>5.7%</td>
<td>31.0%</td>
</tr>
<tr>
<td>TAS</td>
<td>35.6%</td>
<td>9.2%</td>
<td>44.8%</td>
<td>32.7%</td>
<td>12.9%</td>
<td>45.5%</td>
</tr>
<tr>
<td>ACT</td>
<td>42.0%</td>
<td>11.2%</td>
<td>53.2%</td>
<td>25.0%</td>
<td>10.2%</td>
<td>35.2%</td>
</tr>
<tr>
<td>National</td>
<td>38.8%</td>
<td>8.7%</td>
<td>47.5%</td>
<td>27.1%</td>
<td>8.7%</td>
<td>35.7%</td>
</tr>
</tbody>
</table>

Source: Government and Non-Government Schools Staffing Surveys, DEST, 2002

Table 3:

Percentage of Secondary Teachers Aged 45 and over by Sector and State/Territory, 2001

<table>
<thead>
<tr>
<th>State/Territory</th>
<th>Government 45 - 54 years</th>
<th>Government 55 and over</th>
<th>Government Total</th>
<th>Non-Government 45 - 54 years</th>
<th>Non-Government 55 and over</th>
<th>Non-Government Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>43.2%</td>
<td>10.4%</td>
<td>53.6%</td>
<td>27.7%</td>
<td>8.4%</td>
<td>36.1%</td>
</tr>
<tr>
<td>VIC</td>
<td>44.3%</td>
<td>8.2%</td>
<td>52.5%</td>
<td>29.1%</td>
<td>11.3%</td>
<td>40.4%</td>
</tr>
<tr>
<td>QLD</td>
<td>31.9%</td>
<td>6.9%</td>
<td>38.8%</td>
<td>30.7%</td>
<td>12.4%</td>
<td>43.2%</td>
</tr>
<tr>
<td>SA</td>
<td>49.2%</td>
<td>11.6%</td>
<td>60.8%</td>
<td>30.0%</td>
<td>14.8%</td>
<td>44.8%</td>
</tr>
<tr>
<td>WA</td>
<td>34.5%</td>
<td>13.9%</td>
<td>48.4%</td>
<td>28.9%</td>
<td>10.2%</td>
<td>39.2%</td>
</tr>
<tr>
<td>NT</td>
<td>35.6%</td>
<td>13.8%</td>
<td>49.4%</td>
<td>28.1%</td>
<td>12.5%</td>
<td>40.6%</td>
</tr>
<tr>
<td>TAS</td>
<td>41.5%</td>
<td>10.2%</td>
<td>51.7%</td>
<td>36.1%</td>
<td>12.0%</td>
<td>48.2%</td>
</tr>
<tr>
<td>ACT</td>
<td>44.2%</td>
<td>12.1%</td>
<td>56.3%</td>
<td>30.6%</td>
<td>13.7%</td>
<td>44.3%</td>
</tr>
<tr>
<td>National</td>
<td>40.9%</td>
<td>9.7%</td>
<td>50.6%</td>
<td>29.2%</td>
<td>10.8%</td>
<td>40.0%</td>
</tr>
</tbody>
</table>

Source: Government and Non-Government Schools Staffing Surveys, DEST, 2002
Retirement Issues

One of the major issues in respect to the teacher workforce is the potentially high retirement by the ‘baby boomer’ generation. Patterns of age based retirement from the teacher workforce are likely to be critically influenced by superannuation arrangements. Superannuation arrangements vary from State to State – some had voluntary superannuation arrangements prior to the introduction of the Superannuation Guarantee in the early 1990s.

In several States, however, superannuation arrangements may tend to result in heavy retirement at age 55. Early retirement may also be triggered by the nature of teaching — classroom teachers need to physically fit and also face considerable stresses in classroom management. The nature of superannuation arrangements in the non-government schools sector are likely to be somewhat different to those of the States and Territories, as well varying between different independent schools.

Nonetheless, with the possibility of retirement at age 55, teachers aged 50 in 2000 will be eligible to retire by 2005. Those aged 45 over should be able to retire by 2010. Given teachers within the 45 - 55 age band constitute a large proportion of the current teaching workforce (32 per cent), if these teachers were going to leave teaching at age 55, the potential impact on the entire workforce could be substantial. A relatively high proportion (32.4 per cent) of government sector teachers want to retire in the 51 - 55 age band; compared to 18.8 per cent and 17.7 per cent for the Catholic and the Independent sectors respectively.

On the other hand, the data presented above show that there is still a proportion of teachers remaining in teaching after reaching age 55. As reported in the 1999 ACE National Survey:
• nearly 25 per cent of the current teachers intended to retire from teaching at age of 55 years;
• 4 per cent of teachers planned to retire from teaching between the ages of 56 and 59 years;
• a further 20 per cent of respondents indicated their retirement intention at age 60 years;
• over 10 per cent (12.5 per cent) planned to continue teaching after reaching age 61.

Using these retirement intention figures (proportion), and assuming most teachers would retire between 55 and 60 years of age, there will be 30,000 and 40,000 teachers retiring from the teacher workforce by 2010, as shown in Chart 14. This level of separations would impact on the supply of teachers with respect to both primary and secondary schools, in the government and non-government sectors, although the impacts will vary:

Age band retirements are likely to impact more severely on the supply of teachers in the government schools sector than in the non-government sector given the higher proportion of older teachers and a higher level of retirement intention. The extent of retirement from government teaching positions may also be greater than in the non-government school sector due to the nature of the respective superannuation arrangements.

Secondary schools are likely to face high levels of age band retirements by male teachers. This may have particular adverse implications depending on the concentration of this retirement male group in particular teaching specialisations.

The data highlight an emerging problem. However, at the same time the data give only limited guidance to the possible extent of retirement, suggesting the need for further research on teacher superannuation arrangements to better quantify the scale of the problem.

**Chart 14**

*Retirement Intention of School Teachers*

- **Total**: 
  - at 51-55
  - at 56-60

- **Sector**:
  - **Primary**: 20
  - **Secondary**: 30
  - **Others**: 10

*Source: author's calculation based on ACE 1999 National Teacher Survey and CoPS, Monash University, 2002*
Conclusions

This paper has provided data on the impact of population ageing on potential demand for school teachers and with respect to potential ageing of the teaching workforce. While Australia’s population is ageing, with the result that there will be a higher proportion of older persons in the population, the number of persons of school age will not decline substantially in the next 5 - 10 years. There will be sustained demand for teachers, assuming no radical changes in student-teacher ratios.

On the other hand, in line with general trends across the labour force, the teaching workforce has aged in the last two decades, although the teaching workforce is “older” than the labour force more generally. Moreover, the teaching workforce will continue to age in the next 5 - 10 years, with the result that a substantial proportion of the teacher workforce will be eligible to retire on age grounds in the next 5 - 10 years.

The extent of retirement will depend on a variety of factors, including incentives to remain in teaching, and the nature of particular teacher’s superannuation arrangements. Overall, there is a higher proportion of older teachers in the government schools sector than in the non government schools sector, and the government schools sector may therefore be more affected by age retirement. It is also noteworthy that there are a higher proportion of male teachers that will become eligible for age based retirement.

Overall, this analysis indicates that ageing of the teacher workforce will be more intense than for the general workforce given the relative higher share of older teachers in the teaching workforce and the early arrival of the ‘baby booming’ effect. The potential losses through retirement are therefore significant, which may add to difficulties in staffing in some subject areas.

It is also important to consider the impact of teacher workforce ageing on teaching quality. The loss of older teachers through retirement will impact on teaching quality. Older teachers have rich teaching experience which contributes substantially to a high quality of teaching. Hence, it is even more difficult to effectively replace the lost subject knowledge, teaching methodology and expertise that older teachers have accumulated through their years of teaching.

Moreover, older teachers not only influence students, they also have an influence their colleagues — younger teachers. Older teachers are an important learning resource for younger teachers. A successful knowledge transfer, role model and mentoring process for younger teachers will not only ensure improved retention of the teacher workforce, but also will attract and retain talented people to the teaching profession.
2. Gender Trends in Australia’s Teaching Workforce

Introduction

This paper examines trends in employment of school teachers by gender. The main purpose for undertaking this analysis is to examine recent trends in teacher employment by gender, and to consider the possible impacts, if any, of changes in the gender mix of Australia’s teaching workforce with respect to the supply of teachers, with particular emphasis on the quantity of teaching skills in some specialisations.

Elsewhere in this report we have noted that at the secondary level the government and non-government schools sector are facing recruitment difficulties in certain specialisations. These specialisations include Science (especially the Physical Sciences), Mathematics, Technology (including Information Communication Technology) and Languages other than English (LOTE) (although the extent of recruitment difficulties varies considerably between specialisations and in different States and regions).

Another chapter in this report addresses a related issue, the impact of ageing on the future supply of teachers. This issue is in part influenced by the gender composition of the teaching workforce. We have not considered that issue, however, but rather examined the issue of gender in isolation.

As is the case for many other developed countries, there is a growing proportion of female teachers in the teaching profession in Australia. The number of female school teachers rose significantly over the last decade, in both primary and secondary education. By contrast, there was a slight decline in male teacher numbers. Considered together, the two movements significantly expanded the female share of teacher employment.

In the next section of this chapter we examine trends in teaching employment considered by gender in Australia in more detail. The following section then compares Australia’s experiences with other OECD countries. In the subsequent sections we then examine the implications of teaching employment gender trends for supply of teachers, including factors leading to greater female employment as teachers, recent trends in Australian graduations in teaching courses, and factors that may influence recruitment of male teachers.
Trends in teacher employment by gender

Table 1 below presents data on changes in employment of male and female primary school teachers (full time equivalent) between 1991 and 2001.

Table 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>71,363</td>
<td>25,416</td>
</tr>
<tr>
<td>1992</td>
<td>72,653</td>
<td>25,303</td>
</tr>
<tr>
<td>1993</td>
<td>73,352</td>
<td>25,174</td>
</tr>
<tr>
<td>1994</td>
<td>73,850</td>
<td>25,017</td>
</tr>
<tr>
<td>1995</td>
<td>76,875</td>
<td>24,160</td>
</tr>
<tr>
<td>1996</td>
<td>77,894</td>
<td>24,373</td>
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<tr>
<td>1997</td>
<td>79,796</td>
<td>23,978</td>
</tr>
<tr>
<td>1998</td>
<td>81,052</td>
<td>23,551</td>
</tr>
<tr>
<td>1999</td>
<td>84,926</td>
<td>23,939</td>
</tr>
<tr>
<td>2000</td>
<td>86,200</td>
<td>23,877</td>
</tr>
<tr>
<td>2001</td>
<td>88,534</td>
<td>23,981</td>
</tr>
</tbody>
</table>

Source: Schools Australia (Cat. No. 4221.0), ABS, 2001

Over the period between 1991 and 2001 the number of female primary teachers rose, while the number of male primary teachers declined. Employment of female primary teachers rose by 24.1 per cent over this period, while male primary teacher numbers declined by 5.6 per cent. Considered together, this resulted in the share of female primary teachers rising from 73.7 per cent to 78.7 per cent of primary teaching employment between 1991 and 2001.

Table 2 presents equivalent data for secondary teachers.

Table 2

<table>
<thead>
<tr>
<th>Year</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>51,803</td>
<td>50,951</td>
</tr>
<tr>
<td>1992</td>
<td>52,709</td>
<td>51,400</td>
</tr>
<tr>
<td>1993</td>
<td>52,881</td>
<td>50,505</td>
</tr>
<tr>
<td>1994</td>
<td>52,101</td>
<td>49,376</td>
</tr>
<tr>
<td>1995</td>
<td>52,996</td>
<td>48,369</td>
</tr>
<tr>
<td>1996</td>
<td>53,514</td>
<td>48,192</td>
</tr>
<tr>
<td>1997</td>
<td>54,879</td>
<td>48,408</td>
</tr>
<tr>
<td>1998</td>
<td>55,899</td>
<td>48,578</td>
</tr>
<tr>
<td>1999</td>
<td>57,766</td>
<td>49,094</td>
</tr>
<tr>
<td>2000</td>
<td>58,709</td>
<td>49,265</td>
</tr>
<tr>
<td>2001</td>
<td>60,052</td>
<td>49,361</td>
</tr>
</tbody>
</table>

Source: Schools Australia (Cat. No. 4221.0), ABS, 2001

In secondary education, between 1991 and 2001 the number of female teachers rose from 51,803 to 60,052, a 15.9 per cent increase. Employment of male secondary teachers
contracted by 4.1 per cent over the same period. Overall, the male share of the secondary teacher workforce declined from 49.6 per cent to 45.1 per cent between 1991 and 2001.

One factor that has influenced the share of male and female employment among teachers has been increased representation of women in the government schools sector. Chart 1 below provides data on this.

In 1991, the government sector had a lower female employment share, at both primary and secondary levels than the non government schools sector. By 2001, the gap had entirely closed in secondary education and was only 2 percentage points in primary education.

Chart 1

Female share of teacher employment, government and non-government, 1991 and 2001

The recent trend towards an increasing share of female employment among teachers is reflected in data on the gender composition of age groups. Chart 2 shows women comprise over 70 per cent of schoolteachers in their 40s, and close to 80 per cent of teachers aged under 30. That is, women have been the majority of recent new recruits to teaching in Australia (although it should be noted that two-thirds of female teachers are aged over 30, with a significant proportion aged over 40).
International Comparisons

The share of female employment in the teaching workforce has also increased significantly in other OECD countries. The OECD notes

*In all OECD countries, pre-primary and primary teachers are predominantly women…The trend is less pronounced in lower secondary education… in upper secondary education the percentages of male and female teachers are similar.*

The following table shows the share of female employment among teachers across OECD countries.

---

1. OECD, Education Indicators at a Glance, 2001, p.213
The next chart provides data on teaching employment across the OECD by age and gender, which indicates that the female share of teacher employment is significantly greater in younger age groups, as was the case for Australia.

---

1. Public institutions only

Source: OECD.

---

2 OECD Table: m – Data not available; x – Data included in another category.
Chart 3  Female share of schoolteacher employment by age group, OECD mean, 1999

Percentage of women among teaching staff in public and private institutions, by level of education and age group, based on head counts. Country mean among nations supplying figures.


For primary education in the OECD, the average employment share for the female under-30 age group is a very high 85 per cent. Older age groups have progressively lower female representation, with the over-60 age group having the lowest female employment share of 62 per cent.

While female representation in secondary-level teaching is considerably smaller, there is a similar pattern of the female employment share falling as the age classification rises. In lower secondary education, the employment share for under-30s is 72 per cent.

This compares with 62 per cent for teachers in their 40s. For upper secondary education, women account for 60 per cent of teachers under 30. In comparison, the share is below 50 per cent for the 40 to 49 age group.

As noted by Siniscalco (2002) in a study for UNESCO

The percentage of female teachers varies considerably across the world. However, it rose in all regions during the 1990s, continuing the trend observed during the 1980s. In general, the education sector is a more important source of employment for women than for men in developed countries, influenced by opportunities to combine employment and family responsibilities and better pay rates and career advancement potential relative to other occupations (Wylie, 2000), whereas the opposite is often true in developing countries. The countries where teaching is still mainly a male profession are mostly in sub-Saharan Africa and in South Asia, although also in these regions the 1990s marked a move towards slightly higher percentages of female teachers'.3

In terms of more direct comparisons with other countries, in New Zealand in 2001, 20 per cent of primary teachers in Government schools were males. In 1981, 35.7 per cent were males. Of the students enrolled in pre-service primary teacher education courses as at July 2001, 20.6 per cent were male.

In the United Kingdom males accounted for 11.9 per cent of all full-time regular qualified teachers in Government nursery and primary schools, a proportion which has changed little over the past 5 years.

In April 2002, the UK Teacher Training Agency announced that it would be aiming to increase the proportion of men on primary teacher training courses by 20 per cent each year for the next three years until the ratio of men to women on these courses rises to one in five. At present the proportion is 12.8 per cent.

By comparison, in the United States, the National Center for Education Statistics advises that males currently make up approximately 27.1 per cent of teachers in all public schools, with male elementary teachers representing approximately 16 per cent of the elementary teacher population.

**Recent trends in graduations in teaching courses considered by gender**

Recruitment of men and women as teachers is largely a function of trends in graduations from teaching courses. The trend towards a greater share of female teachers is being reinforced by trends in supply from teaching courses.

The proportion of Australian males undertaking tertiary qualifications in Education dropped by 9.5 percentage points between 1983 and 2000 (from 34.1 per cent to 24.6 per cent). The proportional decline appears to have stabilised since 1997.

As shown in the Table below in 1983, 25,369 males were undertaking studies in education. By comparison in 2000 17971 males were undertaking studies in education. This comprises a decline of 29 per cent. By comparison and over the same period, the number of females increased from 48,945 to 55,709 (an increase of 14.3 per cent). Male university enrolments in education have declined in absolute terms, compared with an increase in nearly every other field of study, over the period 1983-2000.
Table 4

Enrolments in education studies, Australia, 1983 to 2000, by gender

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>% Males</th>
<th>% Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>25,369</td>
<td>48,945</td>
<td>74,314</td>
<td>34.1</td>
<td>65.9</td>
</tr>
<tr>
<td>1984</td>
<td>25,212</td>
<td>48,339</td>
<td>73,551</td>
<td>34.3</td>
<td>65.7</td>
</tr>
<tr>
<td>1985</td>
<td>25,850</td>
<td>49,200</td>
<td>75,050</td>
<td>34.4</td>
<td>65.6</td>
</tr>
<tr>
<td>1986</td>
<td>25,591</td>
<td>51,566</td>
<td>77,157</td>
<td>33.2</td>
<td>66.8</td>
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<tr>
<td>1987</td>
<td>22,182</td>
<td>49,930</td>
<td>72,112</td>
<td>30.8</td>
<td>69.2</td>
</tr>
<tr>
<td>1988</td>
<td>21,484</td>
<td>51,132</td>
<td>72,616</td>
<td>29.6</td>
<td>70.4</td>
</tr>
<tr>
<td>1989</td>
<td>20,323</td>
<td>52,336</td>
<td>72,659</td>
<td>28.0</td>
<td>72.0</td>
</tr>
<tr>
<td>1990</td>
<td>20,630</td>
<td>54,145</td>
<td>74,775</td>
<td>27.6</td>
<td>72.4</td>
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<tr>
<td>1991</td>
<td>21,706</td>
<td>57,868</td>
<td>79,574</td>
<td>27.3</td>
<td>72.7</td>
</tr>
<tr>
<td>1992</td>
<td>21,309</td>
<td>56,782</td>
<td>78,091</td>
<td>27.3</td>
<td>72.7</td>
</tr>
<tr>
<td>1993</td>
<td>20,925</td>
<td>55,643</td>
<td>76,568</td>
<td>27.3</td>
<td>72.7</td>
</tr>
<tr>
<td>1994</td>
<td>19,645</td>
<td>52,669</td>
<td>72,314</td>
<td>27.2</td>
<td>72.8</td>
</tr>
<tr>
<td>1995</td>
<td>19,153</td>
<td>51,482</td>
<td>70,635</td>
<td>27.1</td>
<td>72.9</td>
</tr>
<tr>
<td>1996</td>
<td>18,606</td>
<td>51,919</td>
<td>70,525</td>
<td>26.4</td>
<td>73.6</td>
</tr>
<tr>
<td>1997</td>
<td>19,144</td>
<td>54,388</td>
<td>73,532</td>
<td>26.0</td>
<td>74.0</td>
</tr>
<tr>
<td>1998</td>
<td>18,817</td>
<td>54,437</td>
<td>73,254</td>
<td>25.7</td>
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</tr>
<tr>
<td>1999</td>
<td>18,201</td>
<td>54,322</td>
<td>72,523</td>
<td>25.1</td>
<td>74.9</td>
</tr>
<tr>
<td>2000</td>
<td>17,971</td>
<td>55,709</td>
<td>73,680</td>
<td>24.4</td>
<td>75.6</td>
</tr>
</tbody>
</table>

Source: Higher Education Statistics, unpublished data, DEST

Factors influencing recruitment of male teachers

While teaching continues to be a relatively attractive career option for women in Australia and in other OECD countries, the proportion of young males choosing to work as teachers has declined significantly. Why has the female share of teaching employment increased over recent decades in Australia and other OECD countries? There are a number of possible explanations. However, in part the issue may be that fewer males are being attracted to teaching careers.

The following chart shows changes in the share of education professionals among overall female employment in Australia between 1996 and 2002. Data is sourced from the ABS Labour Force Survey and uses the sum of the classifications ‘School Teachers’ and ‘Other Teachers and Instructors’ prior to the ASCO revision of 1996, and ‘Education Professionals’ for post 1996 data. In August 1985, 60 per cent of males and 76 per cent of females in these classifications were school teachers.

The data indicate that teaching as an employment destination for women has not declined significantly over the last 14 years (3.6 per cent in August 1986 compared to 3.5 per cent in August 2002).
On the other hand, the share of male employment accounted for by education professionals has declined more markedly over the same period, from 1.51 per cent in August 1986 to 1.29 per cent in August 2002, as shown in the next Chart. It should be noted that teaching employment provides a much smaller proportion of male employment than is the case for women. The male share of employment has fallen by 14.8 per cent in the last 14 years, compared to a fall of just 2.9 per cent for females.

The male and female series both show peaks in the teaching employment share around the time of the early 1990s recession.
Chart 5

Teaching share of employment - males

The share of teaching employment by gender, as well as by age, is also of interest. As the chart below shows, employed males aged between 45 and 54 are almost twice as likely to be employed as school teachers than males aged between 25 and 44. The comparison for females is less marked. This indicates while younger age cohorts of both genders appear to be increasingly entering into occupations other than teaching, the trend seems to be more pronounced for males.

Source:  Labour Force Survey (Supertables) , (Cat. No 6203.0), ABS

Note:  Data is for the August quarter of each year.
Classifications used:  the sum of the classifications ‘School Teachers’ and ‘Other Teachers and Instructors’ prior to the ASCO revision of 1996, and ‘Education Professionals’ for post 1996 data.
Research on why males are tending to steer away from school teaching as a career has identified three major causes:

- Salaries are uncompetitive and career advancement opportunities too limited;
- Teaching is perceived as an occupation for women; and
- Fears of being labelled a child abuser or sexual deviant have grown.

**Teaching salaries**

One factor that may influence male recruitment to teaching positions is salary levels relative to other professions. We have examined this issue in another section of this report. However, to summarise, teaching remuneration levels tend to fall below those of other professions, particularly for men. Moreover, pay differentials widened overall during the 1990s.

As shown in Chart 7 female teachers earn just under $20 per week less than female professionals generally. However, although male teachers are about $54 per week better off than female teachers, they lag behind other male professionals by $107 per week on average. Male teachers earn about 10 per cent less than male non-managerial professionals in general, compared to a deficit of just 2 per cent with respect to women.
Perception of teaching as an occupation for women

Some writers suggest that men are not attracted to teaching, particularly at the primary level, is the perception that teaching is “women’s work”. Clifford (1989), for example, suggests:

*The expectation is that women will be found working in 'traditional', 'feminine" areas. Thus it is seen as 'natural' for women to work with young children and to adopt a caring mother/teacher role. Conversely, male teachers in ... schools are often viewed with suspicion and their sexual orientation may well be called into question.*

Similarly Wilson (1999) states:

*Research in Canada and the United States tends to show that strongly-entrenched values are a determining factor in the male-female ratio in the lower grades of elementary schools … There is a perception that teaching remains mostly a woman’s profession – in Primary-Junior grades in particular.*

Farquhar (1999) expresses similar views:

*Research indicates the tremendous peer pressure that male school leavers can face in breaking with the macho image and entering teaching. Men more likely to be attracted to teaching are those who have already tried another occupation, who in many cases have fathering experience, and those who cannot find work in a traditional male area.*

Child abuse associations

Overseas researchers have suggested child sex abuse issues are a deterrent to males pursuing teaching as a career.

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4 (Margaret Wilson, Registrar of the Ontario College of Teachers in Giguère (1999)).
In New Zealand, Farquhar (1999) has argued that, along with gender stereotyping, sex abuse associations are a major cause of declining numbers of male primary-school teachers:

*My research on men in early childhood teaching, which was nationally publicised in 1997, identified fear of accusation of sex abuse and the social stigma attached to being a man in a women's field as leading factors scaring men off becoming teachers. In a subsequent paper, I also proposed that these factors were probable causes for the decline of men's participation in primary teaching, and questioned whether the teaching profession should be allowed to continue its movement towards becoming a women-only profession.*

To support her argument, Farquhar points to the outfall from charges of child sexual abuse:

*In recent years, male teachers have mainly received negative press, especially surrounding accusations of child sex abuse. In April 1998, a (male) primary school teacher … after being acquitted of charges of sexual abuse, warned men not to consider teaching as a career, and advised male teachers to get out because of the dangers.*

In the United Kingdom, research has highlighted how the stigma of child abuse makes it difficult for male primary teachers to feel comfortable about normal physical contact with students:

Fear of being seen as a child abuser or pervert may be deterring men from applying to train as primary teachers. Male trainee teachers are now concerned that their actions will be misconstrued, according to a researcher at Hertfordshire University. Dr. Mary Thornton, who studies male teacher recruitment, says that physical contact with young children is now a key concern for BEd students. (David Budge, 1998, London Times, Education Supplement, August 28 _ in Giguère (1999)).

**Lack of male role models in classroom settings**

Some commentators have expressed concern about a lack of male role models in schools teaching. In announcing an inquiry into male teacher numbers, the then NSW Minister for Education, John Aquilina, said:

*Male teachers are vital role models for both boys and girls. “They reinforce positive messages about masculinity and education, and help dispel the myth that it is uncool to do well at school. Primary school is a place where young people get their first experience of life outside their immediate family. A strong, positive role model can benefit all students.* (Minister’s Press Release, 13 March 2002).

The imbalance in the teacher gender mix can be understood as harmful based simply on the proposition that diversity is good. As with racial, ethnic and age diversity, gender diversity in teaching gives children a more balanced impression of the world and helps them learn how to interact with a greater variety of people. It assists and broadens the social development of children, ultimately strengthening community cohesion.

One issue that has not been canvassed as broadly is the lack of women in senior management positions in schools. In a recent report, the United Nations Educational, Scientific and Cultural Organisation (UNESCO) drew attention to a lack of representation by women in management positions in primary schools throughout the world. The UNESCO report noted:
Despite the increasing feminisation of the teaching profession, women are still underrepresented in management positions in schools in the majority of countries. UNESCO further noted that while in various high and middle income countries there was greater participation by women in management positions, especially at the secondary school level, this was not universally the case. UNESCO stated:

…women managers remain severely underrepresented in some high income countries (such as Australia, Cyprus, Denmark and Republic of Korea).

Teacher shortfalls in some subjects

Accompanying increased participation by women in the teaching workforce has been an alteration of the skill profile of the teacher workforce. This is in terms of the proportion of teachers able to specialise in each subject area. It is a consequence of males and females having widely varying subject preferences. Increased participation by women in the teaching workforce may create a tendency for disciplines favoured by female teachers to be oversupplied and, correspondingly, shortfalls to occur in the subjects traditionally taught by men. Imbalances are mainly a problem in secondary education where there is greater specialisation.

An indication of the extent to which specialisation is gender-dependent is provided by Chart 8. It shows the number of education professionals (including university lecturers and secondary school teachers) who have science degrees. This is by major discipline and gender.

There are significantly more male teachers holding science qualifications overall, with women outnumbering the men only in the case of Psychology. Over 60 per cent of teachers with Mathematics and Statistics majors are male. Men outnumber women by factors of greater than two-to-one with respect to Physics, Chemistry and Earth Sciences.

Chart 8 Science degree holders employed as education professionals, 1996

![Chart 8](chart.png)


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5 Siniscalco, op. cit. p. 18
6 Ibid.
Conclusions

The analysis has indicated that numbers of male teachers have declined in recent times leading to a greater proportion of female teachers in the national teaching workforce. Participation by males in teacher training courses has also declined significantly over time.

Some of the decline in male recruitment may reflect a growing perception that teaching is “women’s work”, heightened male fears of being the subject of child sex allegations, and a preference for work in other, possibly better paid professions.

Increased participation by women in the secondary teaching workforce may pose some problems in terms of supply of teaching specialisations where recruitment difficulties currently exist, unless more women can be attracted to teach in these specialisations. Males have tended to dominate supply of Mathematics, Science (especially Physics and Chemistry) and Technology (including ICT) teaching in the past, and only a small proportion of women elect to teach in these specialisations.
3. Career Paths of People with Teaching Qualifications

Introduction

This chapter addresses career choices made by people with teaching qualifications. A significant minority of teachers leave teaching to pursue other careers. The aim is to examine the types and earnings levels of occupations where people with teaching qualifications tend to seek and find work.

This chapter uses Australian Bureau of Statistics (ABS) data on occupations of people with teaching qualifications, from the Transition from Education to Work 2001 survey. The data relate to a person’s highest level of attainment. They will not pick up all people in the target group with higher level qualifications.

Data on average earnings were sourced from the ABS Survey of Employee Earnings and Hours, May 2000.

Supporting data have been sourced from the Graduate Careers Council of Australia Graduate Destinations Survey and the Australian College of Education 1999 Teachers Survey, conducted by Dempster et al at Griffith University.

Employment considered by Industry

Transition from Education to Work survey data indicate there were around 367,000 people whose highest qualification was a teaching qualification in May 2000. Of these, around 250,000 (68.2 per cent) worked in the Education industry. Effectively this means that there were around 115,000 qualified teachers employed in other industries.

Where do the 31.8 per cent of people with teaching qualifications work if they are not employed as teachers? As shown in Chart 1, the industry with the highest level of employment behind education was Health and community services, where 6.3 per cent of people with teaching qualifications were employed. A further 4.9 per cent were working in the Property and business services industry, 3.6 per cent in the Retail trade industry, 2.2 per cent in the Personal and other services industry and 2.0 per cent in the Government administration and defence industry.
The range of industries where people with teaching qualifications were employed was consistent across age ranges.

Looking at other research on this issue, Morgan and Banks provided data to the New South Wales Ramsey Review\(^7\) on teacher employment by occupation. The data covered applicants with Bachelor of Education qualifications who had approached the company seeking placement in an industry other than teaching in the twelve months prior to February 2000.

Of 443 applicants, 105 (23 per cent) were currently working in education. The majority were working in industries such as human services, retail, information technology, government, financial services and property as Chart 2 shows. The data also suggest that people with teaching backgrounds are generally well represented in the middle and upper level management of these industries.\(^8\)

\(^7\) p.40 Ramsey, G
\(^8\) p.40 Ramsey, G
For males, ABS data indicate the industry providing the highest level of employment for persons with teaching qualifications behind education was Property and business services, where 4.1 per cent of males were employed. A further 3.6 per cent were working in the Personal and other service industry, 3.2 per cent in Construction, 2.6 per cent in Cultural and recreational services, and a similar percentage in the Retail trade industry.
Young males with teaching qualifications were largely employed in two industries – Education, and Cultural and Recreational Services.

For females with teaching qualifications, the industry providing the highest level of employment after Education was Health and community services (8 per cent), followed by Property and business services (5.2 per cent), Retail trade (4 per cent) and Agriculture, forestry and fishing (1.9 per cent). The majority (56 per cent) of females with teaching qualifications employed in Agriculture, forestry and fishing were aged 55-64 years.
Across most age groups females with teaching qualifications worked in a broad range of industries, with the exception of 15-24 year olds where employment was concentrated in a few industries. The most common industries of employment were Retail trade, and Health and community services (all five age groups), Property and business services (four of the age groups).

**Employment considered by occupation**

ABS data indicate that people with teaching qualifications were employed in a diverse range of occupations. The largest proportion (61 percent) were employed in Education Professions, including School Teachers, University and TAFE lecturers and tutors, and Education Officers. Employment in other occupations was more common for older workers.
Of Education Professionals, the highest proportion were employed as Primary Teachers (51.7 per cent), followed by Secondary School Teachers (29.5 per cent).

### Table 5

**Proportions of People in Education Professions**

<table>
<thead>
<tr>
<th>Occupation</th>
<th>% of Ed Professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>PrePrimary School Teachers</td>
<td>4.2</td>
</tr>
<tr>
<td>Primary School Teachers</td>
<td>51.7</td>
</tr>
<tr>
<td>Secondary School Teachers</td>
<td>29.5</td>
</tr>
<tr>
<td>Special Education Teachers</td>
<td>3.6</td>
</tr>
<tr>
<td>University Lecturers and Tutors</td>
<td>1.9</td>
</tr>
<tr>
<td>Vocational Education Teachers</td>
<td>4.1</td>
</tr>
<tr>
<td>ExtraSystemic Teachers</td>
<td>2.3</td>
</tr>
<tr>
<td>English as a Second Language Teachers</td>
<td>0.7</td>
</tr>
<tr>
<td>Education Officers</td>
<td>1.9</td>
</tr>
<tr>
<td><strong>Education Professionals</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

*Source: ABS, Transition from Education to Work, 2001*
People in Occupations other than Education Professional

Chart 6

Top five non-education occupations of people with teaching qualifications
2001

After Education Professionals, the other largest occupation groups for people with teaching qualifications were significantly smaller – for example, 5.4 per cent were employed as Specialist Managers. It needs to be acknowledged, however, that this classification includes those who identified themselves as “Education Managers”, including School Principals.

The level of aggregation does not enable identification of the proportion of those “Specialist Managers” who are working as School Principals. This classification also includes Policy and Planning Managers, who “plan, develop, administer and review policy advice and strategic planning within a government agency or corporate business”9.

The Specialist Managers classification was followed by Intermediate Service Workers (4.8 per cent), Intermediate Clerical Workers (3.8 per cent) and Business and Information Professionals (3.8 per cent). The occupations in which people with teaching qualifications were most prevalent are concentrated in Professional, Managerial, Clerical and Service categories.

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Employment by occupation by gender

Males with teaching qualifications tended to be employed in a limited range of occupations, as shown in the Chart below.

Chart 7

After Education Professionals (57.7 per cent), Specialist Managers make up the next largest proportion of males with teaching qualifications, accounting for 10.4 per cent of the target population, followed by Business and Information Professionals (4.2 per cent), Managing Supervisors (Sales and Service) (3.7 per cent) and Intermediate Clerical Workers (2.9 per cent).

For all age groups, Education Professionals is the most prevalent occupation classification. The age group in which the highest proportion of males with teaching qualifications is employed as Education Professionals is 25 to 34 years (67.7 per cent). In the oldest age group, 55 – 64, where most teachers would aim to retire, the percentage drops to 41.3 per cent.

While Specialist Managers ranks in the top three occupations for all age ranges, the highest proportion of this classification occurs in the 45 – 54 age group (17.3 per cent of 10.4 per cent across all ages). This trend is reflected in the results of the ACE Teachers in Australian Schools survey of 1999\textsuperscript{10}, where the highest proportion of teachers employed in Executive/Managerial positions was in the 41 to 50 years age group.

Most women with teaching qualifications worked as Education Professionals (62.8 per cent)

The range of occupations in which females with teaching qualifications were employed was also diverse, as shown in the Figure below.

\textsuperscript{10} Dempster, N; Sim, C; Beere, D and Logan, L, Teachers in Australian Schools – A Report from the 1999 National Survey, Griffith University, September 2000
Intermediate Service Workers make up the next largest proportion of females with teaching qualifications, accounting for 6.2 per cent of the teaching qualified population. The remaining top five occupations of females with teaching qualifications were Intermediate Clerical Workers (4.2 per cent), Business and Information Professionals (3.6 per cent) and Specialist Managers (3.5 per cent).

The age group in which the highest proportion of females with teaching qualifications is employed as Education Professionals is the 15 – 24 age group (79.4 per cent).

In the oldest age group, 55 – 64, the percentage drops to 54.7 per cent. Specialist Managers (which includes School Principals) ranks in the top five occupations for all ages (3.5 per cent), but only in two separate age groups – the 25 – 34 (4.7 per cent and ranked second) and the 45 – 54 (6.6 per cent – again ranked second).

**Are Career Choices Driven by Earnings Potential?**

A number of factors influence the career paths of people with teaching qualifications away from teaching. This portion of the paper investigates the comparative earnings of those occupations and industries where people with teaching qualifications work.

When it comes to starting salaries, education graduates appear to do quite well. Education graduates ranked equal eighth according to level of starting salary in 1997, maintaining similar levels in subsequent years.
The median annual starting salary for new bachelor degree graduates aged less than 25 in their first full-time position in 2001 was $35,000.\textsuperscript{11} For Education graduates it was $36,000, behind fields such as Dentistry ($46,450), Medicine ($45,000), Engineering ($40,000), Computer Science ($40,000), Geology ($36,900) and Mathematics ($37,000). It should be pointed out, however, that some of these starting salaries – including teaching – relate to a four-(or more) year, rather than a three-year, full-time course.

\textbf{Chart 9}

\begin{figure}[h]
\centering
\includegraphics[width=\linewidth]{chart9}
\caption{Comparative median starting salaries - 2001 New Bachelor degree graduates under 25 in their first full-time position}
\end{figure}

\textbf{Earnings by Occupation}

Full-time Average Weekly Ordinary Time Earnings (AWOTE) for all occupations was $799.30 in May 2000. For professionals it was $1293.92, although this figure was bolstered significantly by Medical Practitioners ($1765.00).

The full-time AWOTE for Education professionals was $976.33. Of this, the full-time AWOTE for School Teachers, encompassing Pre-Primary School Teachers, Primary School Teachers, Secondary School Teachers and Special Education Teachers, was $897.00.

\textsuperscript{11} The Grad Files, August 2002, Graduate Careers Council of Australia,
The second most common occupation for people with teaching qualifications was Specialist Managers. Full-time AWOTE for Specialist Managers of $1286.70 exceeded that of school teachers, and comes close the earnings for all professionals.

The next most common occupation was Intermediate Service Workers, (including carers, teachers aides and hospitality workers). Full-time AWOTE of $593.03, for Intermediate Service Workers significantly behind that of Education professionals. It seems unlikely that earnings would be the key lure for people with teaching qualifications in this occupation!

The fourth ranked occupation for people with teaching qualifications was Intermediate Clerical Workers, (including keyboard operators, receptionists, despatch clerks, library assistants and personnel clerks), with a full-time AWOTE of $643.37. Again, earnings alone would seem unlikely to lure teachers to this occupation.

Business and Information Professionals rounded out the top five most common non-education occupations for people with teaching qualifications (3.8 per cent of persons with teaching qualifications. This occupation offered a full-time AWOTE well above that of Education professionals.

**Earnings by Industry**

Full-time Adult Non-managerial Average Weekly Total Earnings (AWE) for all industries in May 2000 was $783.50. For the Education industry it was $878.00. The second most popular industry for people with teaching qualifications is Health and Community Services, where the full-time AWE was $765.20. The third most popular industry for persons with teaching qualifications was Property and Business Services, with a full-time AWE of $727.00.
The fourth ranked industry for people with teaching qualifications was Retail trade. A full-time AWE of $612.10 places earnings in this industry well behind those of Education Professionals. Retail trade would seem unlikely to attract few teachers on earnings alone, although earnings vary considerably within the industry. As shown in Chart 11, earnings in the Education industry were higher than in the next top five most popular industries for qualified teachers. Education had the fourth highest full-time adult non-managerial AWE of the sixteen industries behind Mining, Electricity, gas and water supply, and Communication services.

Earnings by Industry by Gender

Full-time adult non-managerial Average Weekly Total Earnings (AWE) of males employed in Education compared favourably with those for the average male employee ($936.60 compared with $835.30). The second most popular industry for males with teaching qualifications was Property and business services, where the full-time adult non-managerial AWE was $905.20. The third most popular industry was Personal and other services, with a full-time AWE of $914.20. The fourth ranked industry for males with teaching qualifications was Construction, with a full-time AWE of $871.30.
As Chart 12 shows, the male full-time AWE of the fifth-ranked industry employing people with teaching qualifications, Cultural and recreational services, $632.90, trail that of the Education industry, as does that of the sixth-ranked industry, Retail trade ($494.00). As seen in Chart 12, male full-time non-managerial earnings in Education were higher than in the next top five most popular industries for qualified teachers. Male earnings in Education were the fourth highest of the sixteen industries after Mining, Electricity, gas and water supply, and Communication services.

Full-time adult non-managerial AWE of females generally compared unfavourably with males ($706.20 in all industries, and $836.70 in Education). In the Health and community services industry, where females where teaching qualifications are commonly employed, AWE of $729.80 was less than that for Education. This was also the case for third-ranked Property and business services ($674.50), the fourth-ranked Retail trade (considerably lesser earnings of $577.50) and the fifth-ranked Government administration and defence ($769.90). In other words, female adult non-managerial earnings were higher in Education than in the next five most popular industries for those with teacher qualifications. Education is the third highest paid industry for adult non-managerial female employees after Mining and Communication services, as Chart 13 shows. (Note, an adult non-managerial earnings figure for the fifth-ranked industry in popularity, Agriculture, forestry and fishing, is not included in the ABS data, due to wages and salaries rarely being paid in the industry.)
Exits from teaching due to lack of career path for experienced classroom teachers

The Senate Employment, Education and Training Reference Committee Inquiry into the Status of the Teaching Profession, *A Class Act*, reported that “the disadvantages suffered by teachers, relative to other professionals with similar qualifications, relate not so much to their starting salaries but to their compressed salary scale. This means that they reach the top of their salary scale after nine years teaching… The teaching profession compares unfavourably with many other professions which have both more extended salary scales and more opportunities for promotion ‘at the coal face’.”

For most State and Territory teaching awards, there are about eleven increments to achieve the top of the classroom teacher classification, with variations on the increment at which four- and five-year trained teachers commence. In WA and Queensland, for example, 4-year trained teachers commence at the fifth increment, in Victoria they commence on the first increment, in the ACT they commence on the second increment of the scale.

Once classroom teachers have reached the top of the classification, they are largely faced with the prospect of relying on increases negotiated under new Enterprise Agreements to increase their salaries, unless they are prepared to take on additional responsibilities, and advance into the highly competitive “Promotion Classifications”, such as “Experienced Teacher with Responsibility, Leading Teacher (Vic)”, Level 2 Executive Teacher (ACT), Coordinator (SA).

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Executive Teacher (NSW), Deputy Principal and Principal. Such classifications generally mean a reduced number of class contact hours, and an increase in management or policy-related functions within the school.

As *A Class Act* describes it, “teachers reach the top of their salary range by the age of 30 (assuming they begin their training from school). They remain at this level until they retire unless they are promoted out of the classroom and into administration.” The typical “pyramid” structure of schools means that the proportion of available positions decreases the further a teacher advances.

Working on the assumption that most teachers would enter the profession at age 22, taking annual increments to the top of the classification would see them achieve this position by their early to mid-thirties.

**Conclusion**

This paper confirms that, while the majority of people with teaching qualifications work in education, a significant minority are employed in other occupations and industries.

Remuneration alone does not explain such losses from the profession as, particularly in the case of women, the earnings in the Education industry and the Education Professional occupation remain competitive with most of the top fields of employment for people with teaching qualifications working outside education. The occupations filled by men with teaching qualifications working outside education tend to have higher earnings than those of females with teaching qualifications. Across the board, there is a marked tendency towards employment in management, administrative, and people-oriented roles.

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Introduction

This chapter of the report examines trends in the national supply of Mathematics, Science and Information Communication Technology (ICT) teachers from new graduates.

The 2001 MCEETYA report identified shortages in teachers in these specialisations, and analyses presented in earlier chapters of the report suggest that both the government and non-government schools sectors continue to face recruiting difficulties in these secondary teaching specialisations.

New supply of teaching graduates arises from two main sources

- Graduates from initial teacher education courses, including those graduating with Bachelor of Education degrees and those completing Graduate Diploma of Education courses
- Net immigration of teachers (i.e. immigrant teachers less emigrant teachers).

The net immigration of teachers has been examined in detail in chapter X of this report. Chapter Y focuses on the pool of qualified teachers who are not working in the profession. The primary focus of this chapter is trends in graduations from initial teacher education courses at university. We are interested in graduates who are qualified to teach Mathematics, Science or ICT. It should be noted that a proportion of new graduates do not go on to work as teachers.

This chapter also examines trends in upper level school participation in Mathematics, Science and ICT subjects, as this impacts on later participation in university level in degrees in related disciplines and the choice of these subjects in teacher education courses.

The data show that trends in participation in Mathematics and some areas of Science (physics, chemistry) that may be of concern to the future supply of qualified teachers, both in terms of participation at school and in teacher preparation higher education courses. The situation in respect to ICT is less clear. Participation in this area at school and teacher preparation courses in higher education has increased, but the extent to which people who have studied ICT enter teaching is limited.

Data sources and caveats to the data

Data in this chapter is largely drawn from three sources:

- The Schools data collection prepared and published by the Commonwealth Department of Education, Science and Training and from aggregation of State government data.
- The Higher Education data collection prepared and published by the Commonwealth Department of Education, Science and Training.
- Graduate destination studies published by the Graduate Career Council of Australia (GCCA).

There are difficulties in compiling national data on trends in enrolments in subjects at school level given differences in subject classification systems between States and Territories. The data on school level enrolments therefore need to be interpreted with caution.
At university level we were able to track participation by subject by examining unpublished data on students undertaking Bachelor of Education courses and post Graduate Diploma of Education courses from the Higher Education data base.

We examined the GCCA graduate destination survey data on the destinations of graduates who had undertaken Mathematics, Science or ICT degrees to establish what proportion of them are employed as teachers. However response rates to the GCCA survey may not be even across disciplines, which could introduce some bias into this aspect of the analysis.

**Trends in participation in schools in Year 12 Mathematics, Science, and ICT subjects**

**Overall enrolment trends**

The number of students undertaking Year 12 subjects has remained reasonably constant in the past decade, as shown in Chart 1. The number of students enrolled in Year 12 declined in the mid part of the decade, but subsequently returned to early 1990s levels.

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Chart 1

![Chart 1: Number of Year 12 students, Australia, 1991 to 2001](chart1.png)

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Chart 2 shows the distribution of Year 12 enrolments in tertiary admission subjects for 2000 for Australia. Science subjects represented 16.3 per cent of enrolments in 2000, Mathematics 18.0 percent, and Technology, including ICT, 9.4 per cent.
Year 12 Mathematics Enrolments

The following table provides data on Year 12 mathematics enrolments for Australia for the period 1991 to 2001.

Table 1

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1991</td>
<td>170,117</td>
</tr>
<tr>
<td>1992</td>
<td>175,987</td>
</tr>
<tr>
<td>1993</td>
<td>168,205</td>
</tr>
<tr>
<td>1994</td>
<td>166,873</td>
</tr>
<tr>
<td>1995</td>
<td>152,019</td>
</tr>
<tr>
<td>1996</td>
<td>154,534</td>
</tr>
<tr>
<td>1997</td>
<td>156,903</td>
</tr>
<tr>
<td>1998</td>
<td>152,794</td>
</tr>
<tr>
<td>1999</td>
<td>155,722</td>
</tr>
<tr>
<td>2000</td>
<td>162,888</td>
</tr>
<tr>
<td>2001</td>
<td>171,185</td>
</tr>
</tbody>
</table>

Source: DEST, unpublished data compiled by Schools Group

average annual numbers of persons enrolled in the period 1997 and 2001 was 2.9 per cent lower than in the period 1991 to 1996.

It is also noteworthy that the share of Mathematics enrolments compared to total enrolments in tertiary admission subjects declined after 1995. This is reflected in data presented in Chart 3, which compares enrolments in Mathematics at Year 12 to total Years 12 enrolments over the period 1991 to 2000.

Chart 3

While the data is volatile from year to year, the long term trend appears to be towards a smaller proportion of Year 12 students undertaking Mathematics subjects18.

Trends in participation in Year 12 Science subjects

The data also indicate that, considered as a whole, enrolments in Year 12 Science tertiary admission subjects declined over the period 1991 to 2000 and have stabilised at significantly lower levels over the latter part of the period, as shown in Chart 4.

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18 As noted earlier, there are however, some difficulties in aggregating national data for this analysis. The NSW education authorities record two tertiary accredited Mathematics subjects: ‘Mathematics in practice or Mathematics in society’ and ‘Mathematics’. In the period 1994-2000, the number of NSW enrolments in the basic/intermediary Mathematics subjects rose, while the number of enrolments in the higher level Mathematics subjects has been falling.
The data also indicate that the proportion of Year 12 students undertaking Science subjects is declining over time, as shown in Chart 5.
Comparisons between Year 12 enrolments in the Physical Sciences and other Sciences are shown in Chart 6. It is clear that the number of Year 12 students doing Physical Science subjects has fallen well below that in other Sciences since the early 1990s\textsuperscript{19}.

\textbf{Chart 6}

\begin{center}
\textbf{Year 12 Science enrolments, Physical and Other Sciences}
\end{center}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{chart6}
\end{figure}

\textbf{Trends in participation in Year 12 Information Communication Technology subjects}

Chart 7 provides data on Year 12 enrolments in Information Communication Technology (ICT) subjects.

\textsuperscript{19} Physical Sciences includes Chemistry, Electronics, Electronics Design, VET laboratory skills, Physical Science, Physics, and Physics/Electronics. Other includes all other sciences, of which Biology is the largest subject in enrolment terms, representing around 42 per cent of 2000 enrolments.
Data was only available for the period 1996 to 2000, over which period enrolments in ICT increased significantly. Over this period around 63 per cent of enrolments were by male students, although as the number of males in ICT subjects was rising over the period compared to relatively static female enrolments, the share of males rose between 1996 and 2000.

As might be expected given increases in numbers of students enrolled in ICT, the proportion of Year 12 students enrolled in ICT has increased in recent years, as shown in Chart 8.
Trends in participation in university initial teacher education courses

Participation in Bachelor of Education courses

The two principle sources of supply of teachers are graduates of Bachelor of Education courses and Post Graduate Diploma of Education courses. Some 62.1 per cent of students who commenced Secondary Teaching Education studies undertook Bachelor of Education courses. The next figure shows the number of students enrolled in these courses in Australia between 1991 and 2000.
Chart 9

Number of students enrolled in Bachelor of Education and Post Graduate Diploma in Education courses, Australia, 1991 to 2001

Chart 10 shows the proportion of Bachelor of Education and Graduate Diploma of Education students undertaking Mathematics, Science and ICT subjects between 1991 and 2000.

Chart 10

The data suggest that participation in Mathematics and Science subjects in Bachelor of Education courses, and Post Graduate Diplomas of Education has declined somewhat in the
period between 1991 and 2000, although participation early in the period may have been high by historical standards which would overstate the decline in later years.

**Trends in participation in Mathematics subjects in Bachelor of Education courses**

Chart 11 indicates the number of Bachelor of Education students enrolled in Mathematics subjects between 1990 and 2000. This gives some notion of trends in supply, although actual numbers completing will be below the number of participants.

**Chart 11**

Number of Bachelor of Education students enrolled in Mathematics units, Australia, 1991 to 2000

The data indicate that the number of students enrolled in Mathematics subjects declined over the period 1991 to 2000. An average of 5,414 students enrolled in Mathematics subjects each year over the period 1991 to 2000. Average enrolments per year in the period 1996 to 2000 were 36.1 per cent lower than in the period 1991 to 1995, although enrolments appear to have stabilised between 1997 and 2000.

**Trends in participation in Science subjects in Bachelor of Education courses**

Chart 12 provides data on the number of people undertaking Science subjects. Note that education students may enrol in both Science and Mathematics subjects, qualifying them to teach in both areas.
The data suggest enrolments in Science subjects in Bachelor of Education courses declined between 1991 and 2000. An average of 7,150 students undertaking Bachelor of Education degrees were enrolled in Science subjects each year between 1991 and 2000. Between 1996 and 2000 6,752 students were enrolled in Science subjects each year, compared to an average of 7,548 students per year between 1991 and 1995. Average annual enrolments in these subjects were 10.6 per cent lower between 1996 and 2000 than in the earlier part of the decade.

The question of trends in particular Science disciplines is also of interest. Figure 13 shows the number of commencing students in Bachelor of Education courses between 1992 and 2000 by Science discipline. While the year on year commencements exhibit considerable fluctuations, some major trends can be see by comparing commencements in the period 1992 to 1996 with the period 1997 to 2000.

With the exception of Biological Sciences, where commencements rose by 16.6 per cent in the latter period, commencements fell in the remaining areas, by 44.2 per cent for Earth Sciences, 40.3 per cent for Physical Sciences, 35.4 per cent for Chemical Sciences and 35.0 per cent for Other Sciences. The share of Physical Sciences and Chemical Sciences among total Bachelor of Education commencements also fell markedly over the period, from 18.3 per cent in 1992 to 6.1 per cent in 2000 for Physical Sciences and from 8.4 to 4.9 per cent for Chemical Sciences.
Trends in participation in ICT subjects in Bachelor of Education courses

Participation in ICT subjects, as shown in Chart 14, was somewhat different, with enrolments rising over the period.
An average of 4083 students undertaking Bachelor of Education degrees were enrolled in ICT subjects each year between 1991 and 2000. Between 1996 and 2000 4531 students were enrolled in ICT subjects each year, compared to an average of 3,634 students per year between 1991 and 1995. Average annual enrolments were 24.6 per cent higher in the latter period than in the earlier part of the decade.

**Supply of Mathematics, Science and ICT teachers from Post Graduate Diplomas of Education**

Students in Bachelor of Education courses study subject as well as curriculum matter. In contrast students in Post Graduate Diplomas of Education have specialised in discipline areas in their initial degree which enable them to teach in those subject areas. However they are required to study subject related curriculum matters in the Diploma course to facilitate teaching in those subjects where they already hold specialist qualifications.

**Trends in participation in Mathematics subjects in Post Graduate Diploma of Education courses**

Chart 15 presents the number of persons enrolled in Mathematics subjects while studying a Post Graduate Diplomas of Education between 1991 and 2000.
The data indicate that supply from this source has been declining in the past decade. An average of 170 students per year were enrolled in Mathematics subjects between 1991 and 2000. An average of 228 students were enrolled between 1991 and 1995, compared to an average of 113 students per year between 1996 and 2000. Average annual enrolments in the second half of the decade were therefore 50 per cent lower than in the first part of the decade.

### Trends in participation in Science subjects in Post Graduate Diploma of Education courses

Participation in Science subjects in Post Graduate Diploma of Education courses also fell between 1991 and 2000. An average of 197 students per year were enrolled in Science subjects between 1991 and 2000. However, while between 1991 and 1995 an average of 297 students were enrolled in Sciences subjects, an average of 97 students per year participated between 1996 and 2000. Average annual enrolments in the second half of the decade were therefore 67.5 per cent lower than in the first part of the decade. Chart 16 highlights the fall in enrolments in Science subjects in Post Graduate Diplomas of Education.
**Chart 16**

*Number of persons enrolled in Post Graduate Diploma in Education courses studying Science*

*Australia, 1991 to 2000*

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**Trends in participation in ICT subjects in Post Graduate Diploma of Education courses**

Trends in enrolments in ICT subjects are shown in Chart 17. Enrolments in ICT subjects in Post Graduate Diploma of Education courses follow a similar pattern to enrolments in Bachelor of Education courses, falling in the second part of the decade to 2000.

**Chart 17**

*Number of persons enrolled in Post Graduate Diploma in Education courses studying ICT, Australia, 1991 to 2000*
An average of 562 students per year were enrolled in ICT subjects between 1991 and 2000. Between 1991 and 1995 an average of 840 persons were enrolled in ICT subjects compared to an average per year of 284 persons between 1996 and 2000. Average annual enrolments in the second half of the decade were therefore 66.2 per cent lower than in the period from 1991 to 1995.

**Preliminary data from the 2001 Graduate Careers Council of Australia (GCCA) Graduate Destination Survey (GDS)**

Table 2 indicates the numbers of engineering, science and mathematics graduates who enter teaching soon after graduation. The GDS survey data suggest males are more likely than females to study in these areas (with the exception of general and life sciences). However as females are more likely than males to take up teaching, the numbers working full time in schools or at teacher training shortly after graduation are roughly the same for both genders. General/life sciences is an exception. Larger numbers of females graduated from courses such as biology, human movement, and general life sciences than males and a number of these are now working in schools or doing teacher training.

Table 2  
Numbers of Engineering, Science and Mathematics graduates working full-time in schools or in teacher training

<table>
<thead>
<tr>
<th></th>
<th>Education</th>
<th>Engineering/ Surveying</th>
<th>Computer Science</th>
<th>Maths</th>
<th>Gen/Life Sciences</th>
<th>Phys Science</th>
<th>Vet Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female graduates in schools or teacher training</td>
<td>2,997</td>
<td>0</td>
<td>6</td>
<td>14</td>
<td>200</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total female graduates</strong></td>
<td><strong>5,228</strong></td>
<td><strong>530</strong></td>
<td><strong>720</strong></td>
<td><strong>181</strong></td>
<td><strong>3,326</strong></td>
<td><strong>590</strong></td>
<td><strong>108</strong></td>
</tr>
<tr>
<td>Male graduates in schools or teacher training</td>
<td>754</td>
<td>4</td>
<td>9</td>
<td>14</td>
<td>105</td>
<td>18</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total male graduates</strong></td>
<td><strong>1,269</strong></td>
<td><strong>2,828</strong></td>
<td><strong>2,332</strong></td>
<td><strong>275</strong></td>
<td><strong>2,085</strong></td>
<td><strong>735</strong></td>
<td><strong>51</strong></td>
</tr>
</tbody>
</table>

Note:
1) Data refers to bachelor degree graduates in first full-time employment.
2) Data was obtained through a survey of graduates, not a census and may not be fully representative of graduation destinations, especially considered by discipline
3) The education industry is only a proxy for teaching.

Tables 3 and 4 show the relative destination of engineering, science and mathematics graduates. Only a small proportion of survey respondents appear to have entered teaching or teacher studies. However, a large proportion of mathematic and science graduates are doing other studies and some of these graduates may later go onto teaching or teacher training. Engineering and surveying, computer science and vet science graduates are concentrated in the private sector.
Table 3

Female Engineering, Science, Mathematics and Education Graduates by destination (%)

<table>
<thead>
<tr>
<th>Destination</th>
<th>Education</th>
<th>Engineering Surveying</th>
<th>Computer Science</th>
<th>Maths</th>
<th>Gen/Life Sciences</th>
<th>Phys Science</th>
<th>Vet Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Govt employed</td>
<td>1</td>
<td>13</td>
<td>6</td>
<td>12</td>
<td>7</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Private sector employed</td>
<td>3</td>
<td>55</td>
<td>46</td>
<td>27</td>
<td>15</td>
<td>19</td>
<td>78</td>
</tr>
<tr>
<td>Health</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>Schools</strong></td>
<td><strong>54</strong></td>
<td><strong>0</strong></td>
<td><strong>1</strong></td>
<td><strong>4</strong></td>
<td><strong>2</strong></td>
<td><strong>1</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td>Higher education</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Other education</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total education</td>
<td>58</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Non-profit</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Other employment</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Seeking FT employment</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Not seeking FT employment</td>
<td>12</td>
<td>10</td>
<td>16</td>
<td>9</td>
<td>13</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td><strong>Teacher Training</strong></td>
<td><strong>3</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>4</strong></td>
<td><strong>4</strong></td>
<td><strong>2</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td>Total studying</td>
<td>9</td>
<td>15</td>
<td>19</td>
<td>34</td>
<td>46</td>
<td>51</td>
<td>5</td>
</tr>
<tr>
<td>Not available</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total percentage</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total number</td>
<td>5,228</td>
<td>530</td>
<td>720</td>
<td>181</td>
<td>3,326</td>
<td>590</td>
<td>108</td>
</tr>
</tbody>
</table>

Note:
1) Not working and seeking full-time work or part-time employed and seeking full-time work
2) Not working and seeking part-time work, or working part-time and not seeking full-time work

Table 4

Male Engineering, Science, Maths and Education graduates by destination (%)

<table>
<thead>
<tr>
<th>Destination</th>
<th>Education</th>
<th>Engineering Surveying</th>
<th>Computer Science</th>
<th>Maths</th>
<th>Gen/Life Sciences</th>
<th>Phys Science</th>
<th>Vet Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Govt employed</td>
<td>4</td>
<td>14</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Private sector employed</td>
<td>4</td>
<td>54</td>
<td>47</td>
<td>24</td>
<td>15</td>
<td>24</td>
<td>84</td>
</tr>
<tr>
<td>Health</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>Schools</strong></td>
<td><strong>57</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>1</strong></td>
<td><strong>1</strong></td>
<td><strong>1</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td>Higher education</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Other education</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total education</td>
<td>62</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Non-profit</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other employment</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Seeking FT employment</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not seeking FT employment</td>
<td>12</td>
<td>11</td>
<td>14</td>
<td>11</td>
<td>14</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td><strong>Teacher Training</strong></td>
<td><strong>3</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
<td><strong>4</strong></td>
<td><strong>4</strong></td>
<td><strong>2</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td>Total studying</td>
<td>8</td>
<td>15</td>
<td>20</td>
<td>47</td>
<td>48</td>
<td>54</td>
<td>0</td>
</tr>
<tr>
<td>Not available</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Total percentage</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total number</td>
<td>1,269</td>
<td>2,828</td>
<td>2,332</td>
<td>275</td>
<td>2,085</td>
<td>735</td>
<td>51</td>
</tr>
</tbody>
</table>

Note:
1) Not working and seeking full-time work or part-time employed and seeking full-time work
2) Not working and seeking part-time work, or working part-time and not seeking full-time work

Summary and Conclusions

The data presented above indicate that:

- School level data point to declining enrolments in Year 12 Mathematics and Science subjects, although ICT enrolments appear to be strengthening. As noted earlier this data should be treated with considerable caution. Nonetheless, recent trends in enrolments in
Year 12 Mathematics and Science subjects raise concerns about the extent of future supply of teachers in these specialisations.

- Enrolments in Mathematics, Science and ICT subjects in both Bachelor of Education and Graduate Diploma of Education courses have fallen over the period between 1991 and 2000.

Graduate destination survey data suggest that the supply of teachers in these areas is not strong.
5. Teacher Salaries

Introduction

This chapter draws together data concerning teachers salaries from Australian and international sources. The chapter commences by providing comparisons between Australian teaching salaries and teaching salaries in other Organisation for Economic Cooperation and Development (OECD) countries. We then compare teachers’ salaries in Australia with salaries in other professions. Finally, we compare commencing salaries in Australia for graduates from teacher preparation courses to starting salaries for graduates in other disciplines.

The main data sources for issues discussed in this chapter include data from the OECD, Australian Bureau of Statistics (ABS) data on wages and salaries, and data drawn from student destination surveys, conducted by the Graduate Careers Council of Australia.

Broadly speaking, the data suggest that:

• Australian teachers salaries compare well with their OECD colleagues, in terms of commencing salaries and after 15 years of experience, although there is limited growth in Australian teachers earnings after 15 years experience;
• Australian teachers salaries compare reasonably well with earnings from other professions in Australia;
• Graduate commencing salaries for teaching graduates compare well with initial salaries from other disciplines.

International Comparison of Teacher Salaries

It is difficult to collect comparable information on teacher salaries across the globe because of difficulties in compiling comparable data from national systems based on diverse classification systems, and in converting earnings data to a common currency unit. However, the OECD has recently attempted to collect comparable information on this issue. Set out below are a comparison of Australia and the OECD countries teaching salaries, in both primary and secondary education. The data is divided into starting salaries and expected salaries after 15 years.

The data below were based on salaries from OECD countries in the year 2000. The data indicate that:

• Australia’s teaching salaries were higher than the OECD mean in primary, lower secondary and upper secondary education.
• Australian teachers had the highest salary, in primary education, after 15 years experience (compared to lower secondary and upper secondary Australian salaries). Australia had the fifth highest salary in the OECD in this category and was significantly higher (30 per cent) than the OECD mean;
• While primary education teaching salaries compared quite well with other OECD countries, upper secondary salaries, while slightly above the OECD mean, did not rate as highly.
The charts provided below are based on salaries in US Dollars converted using (Purchasing Power Parities) PPPs. The OECD defined the method of converting US dollars using PPPs as equalising the purchasing power of different currencies by eliminating the differences in price levels between countries. In their simplest form, PPPs are simply price relatives which show the ratio of the prices in national currencies of the same good or service in different countries.

**Primary Education**

Chart 1 compares starting salaries for teachers across OECD countries. Australia had the sixth highest starting salary in primary education in the OECD, behind Switzerland, Germany, Denmark, the United States and the Netherlands. Australia’s salaries were approximately 25 per cent higher than the OECD mean.

Australia had the sixth highest starting salary in primary education in the OECD behind Switzerland, Germany, Denmark, the United States and the Netherlands. Australia’s salaries are approximately 25 per cent higher than the OECD mean.

**Chart 1 Primary Education: Teachers’ starting salary/minimum training – OECD Countries, 2000**

Source: OECD 2002

(Converted using PPPs)
As shown in Chart 2 below, after 15 years of work experience Australian primary teachers’ salaries were the fifth highest in the OECD. Australia’s teacher salaries were 30 per cent higher than the OECD mean. While Germany, Denmark and the Netherlands had higher starting salaries in primary education than Australia, these salaries fell to sixth, eleventh and twelfth highest salaries respectively, after 15 years.

Chart 2  Primary Education: Teachers salaries after 15 years experience/minimum training, OECD Countries, 2000

Source: OECD 2002

$US
(Converted using PPPs)
Secondary Education

Lower Secondary Education

Australia had the seventh highest starting teaching salary, in the OECD, in lower secondary education. Australia’s starting salary in lower secondary education was approximately 19 per cent higher than the OECD mean.

Chart 3  Lower Secondary Education: Teachers’ starting salary/minimum training – OECD Countries, 2000

Data not available on lower secondary education for Turkey
After 15 years of experience, Australian lower secondary teaching salaries were the sixth highest in the OECD, as shown in chart 4 below. Australia’s teaching salaries after 15 years experience in lower secondary education were 22 per cent above than the OECD mean.

Chart 4  Lower Secondary Education: Teachers salaries after 15 years experience/minimum training, OECD Countries, 2000

Source: OECD 2002

(Converted using PPPs)
Upper Secondary Education

Australia’s teaching starting salaries in upper secondary education were the ninth highest in the OECD. These starting salaries are closer to the OECD mean, being only 11 per cent higher.

Chart 5  Upper Secondary Education: Teachers’ starting salary/minimum training – OECD Countries, 2000

Upper secondary teacher salaries after 15 years experience were also the ninth highest in the OECD. Australia’s upper secondary teaching salaries were 14 per cent higher than the OECD mean.

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22 Data not available on upper secondary education for Mexico
Australia and some other OECD countries do not categorise secondary education into lower and upper secondary education. Therefore, Australia’s lower and upper secondary teaching salaries (US$26,946 for the starting salary and US$38,312 for the salary after 15 years experience/minimum training) remain unchanged. The teaching salaries in the majority of OECD countries increase from lower to upper secondary education, particularly after 15 years experience/minimum training.

In terms of salary after 15 years experience/minimum training, Australia for the reasons explained above, moves from the sixth highest salary in lower secondary education (see chart 4) to ninth highest in upper secondary education (see chart 5), compared to other OECD countries (despite the actual fixed $US remaining the same).

Australian Teacher Salaries in Comparison with Earnings in other Occupations.

Data from the ABS provides a comparison of school teachers salaries with salaries from other occupations.
As can be seen from chart 7, Full-time Average Weekly Ordinary Time Earnings (AWOTE) for all occupations was $799.30 in May 2000. For professionals it was $1293.92, although this figure was bolstered significantly by medical practitioners ($1765.00).

The full-time AWOTE for education professionals was $976.33. Of this, the full-time AWOTE for school teachers, encompassing pre-primary school teachers, primary school teachers, secondary school teachers and special education teachers, was $897.00.

Chart 7  Full-time Average Weekly Ordinary Time Earnings by selected occupations

Graduate starting salaries

This section draws heavily on data from the Graduate Careers Council of Australia’ graduate destination survey, in terms of data on initial salaries received by employed graduates who responded to the survey.

Survey responses suggest that education graduates fare relatively well by comparison with graduates from other fields of study in terms of commencing salaries. The relative standing of education graduates has remained stable over time, and has improved somewhat compared to graduates from other fields of study in recent years.

Over the long run, between 1977 and 2001, commencing salaries for education graduates were the 8th highest among the 20 fields of study for which the Graduate Careers Council collects survey data. More recently, between 1996 and 2001 Education graduates commencing salaries rated in the top 6-8 fields of study and improved from 8th ranking in 1996 to 6th ranking in 2001.

The next chart provides data on graduate commencing salaries in 2001.
Commencing salaries for all fields of study averaged $35,150 per year. The average commencing salary of education graduates was exceeded by only a few fields of study, including dentistry, law and optometry.

Over the period from 1991 to 2001 education graduates commencing salaries have consistently been above the average for all graduates. At the same time, education graduates commencing salaries have also improved relative to national Average Weekly Earnings over the period from 1990 to 2001.

The following chart compares average commencing salaries by gender and field of study. The data indicate that male graduates commencing salaries commonly exceed those of female graduates.
Both male and female Education graduates average commencing commencing salaries are above the average for all fields of study. Average male commencing salaries for all fields of study were $35,930, compared to $36,900 for male education graduates. Male commencing salaries in Education were exceeded in only a few disciplines including law, dentistry and medicine.

Average female graduates commencing salaries for all fields of study were $34,895 compared to $36,000 for female education graduates. As was the case for males, female commencing salaries in education were again exceeded in only a few disciplines including law, dentistry and medicine.
References


Access Economics (2001), *Population Ageing and the Economy*

Australian Bureau of Statistics

- (2001), *Census of Population and Housing*, Canberra
- (2002) *Labour Force Participation Rate, Australia*, Canberra (Cat No 6291.0.40.001, June)
- (2002) *Average Weekly Earnings, Australia*, Canberra (Cat No 6302.0, February)
- (2001) *Schools Australia*, Canberra (Cat No 4221.0)
- (2000) *Employee Earnings and Hours*, Canberra (Cat No 6306.0, May)
- (2001) *Transition from Education to Work*


Centre of Policy Studies (CoPS) (2001), Monash Economic Forecasts


Dempster, N; Sim, C; Beere, D; Logan, L. (2000) *Teachers in Australian Schools: A report from the 1999 National Survey*, Griffith University, Queensland


