

PRE01633: Policy and politics in teacher and nurse supply and demand projections

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Barbara Preston

21 Boobiulla Street

O'CONNOR ACT 2602

Phone: 02 6247 8919

Fax: 02 6247 8779

Email: barbara.preston@netspeed.com.au

(Note: this is a working paper, and a more complete version will be available from
the author in 2002)

This is a tale of policy failure. Responsible authorities, including the Commonwealth government, have been asleep on their watch.

There are explanations for the multiple shortcomings – many players' failures to act or their inappropriate actions/positions are minor and understandable on their own. But together they have led to consequences felt by students in schools and by patients and residents in hospitals and nursing homes.

There are many parallels between the teaching and the nursing workforces, and the politics and policies around workforce planning. In this paper I will consider teaching in more detail, drawing the parallels (or differences) with nursing.

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Current experiences of shortages in teaching and nursing

Over the past year or so there has been substantially more public and official recognition of shortages in nursing than in teaching. There are several possible explanations for this.

First, the magnitude of the nursing shortages may well be greater than the shortages of teachers. This is difficult to tell with any precision. The magnitudes of shortages of both teachers and nurses are inherently difficult to measure - even with well-resourced measurement, the criteria are controversial.

Second, the managing authorities that employ nurses (and the influential non-nursing professional colleagues of nurses such as medical practitioners) are less insulated from the effects of shortages than are school authorities.

Third, key responsible personnel, such as ministers and department heads, have taken different approaches to responding to concerns about teacher or nurse shortages. Regarding teaching, often there has been denial of any problem, or of any responsibility if there is one.

Experiences of teacher shortages have received wide publicity, especially in January 2001 after the release by the Australian Education Union (2001) of a report documenting shortages in samples of schools around the country, and, later in the year, after the release of preliminary findings of a survey of shortages in secondary schools by the Australian Secondary Principals Association (2001).

Why the policy failure

It may seem easy to say now, but shortages could, on the whole, be prevented or reduced by an **appropriate policy process**, involving good **quality, timely**, and **agreed** research to inform **evidence-based policy**. Action could still be taken.

ecutive Officer for the Australian Council of Deans of Education (as advertised in an early version of the agenda). It was as an independent researcher that the ACDE commissioned me to do the work reported in *Teacher supply and demand to 2005: projections and context*, and I also want to discuss matters not directly concerned with my work for the ACDE – I have done teacher supply and demand research and other labour market work for a range of other organisations.

I am assuming some familiarity with the report – many of you would have received it last year.

Matters to be covered:

- Context of the ACDE work
- Principles of the projections
- Summary of findings
- Some features of the methodology and findings
- Responses to some criticisms
- Implications for teacher professionalism and quality schooling.

There are a number of crucial players in the process, and there are many reasons why such a process has not occurred. There have been some attempts, and there is, in places, commitment and expertise. But all the elements have not come together effectively. There has been a failure to ensure appropriate quality research is done, and a failure to take up the indications from what research has been done and from on-the-ground experience (with some limited exceptions). Some of the reasons for policy failure include:

- A belief that dealing with teaching and nurse labour force is broadly up to the market, or to universities as autonomous institutions to take responsibility. This has been the

primary response of the former Commonwealth Minister, David Kemp, regarding teachers. The Commonwealth Department of Education, Training and Youth Affairs (DETYA, now Education, Science and Training, DEST) position was set out in a 1999 national nursing workforce forum (Karmel 2000), where Tom Karmel pointed out that, though the Commonwealth takes a particular interest in nursing and teaching student numbers (because the State governments take a particular interest in them), the Commonwealth 'respects the autonomy of the universities' (p. 53). Universities need to be 'convinced' where to allocate their funded places (in areas such as specialist nurse education) (p. 56). How such convincing can be done is then the question.

- There is a 'disrupted policy loop because of weak Commonwealth-State relations in the context of their respective responsibilities for schools and higher education, and for hospitals and higher education.
- There is a lack of serious collaboration among the States, and other key players.
- There is a lack of resources for appropriate research in departments of education and health (some exceptions).
- There are problems with data from official or assumed source (DETYADEST., school authorities, health departments, Australian Institute for Health and Welfare); and a reluctance to use more appropriate and higher quality external or 'non-official' data if internal or official data seems to be able to do the job.
- There is an inward focus that inhibits research that covers, or has implications for, other jurisdictions or systems (the 'silos' metaphor comes to mind here) – thus a reluctance of government school authorities to incorporate the nongovernment school sector, or to make clear policy recommendations involving the Commonwealth and/or universities. In State health authorities there is similarly an apparent reluctance at times to involve the Commonwealth or universities.
- There is a common misunderstanding of orders of magnitude of shortfalls (or surpluses) in relation to initial professional education graduate numbers compared with the total teaching (or nursing workforce) workforce – thus the same shortfall may be less than two per cent of the total workforce, but be more than a quarter of graduate numbers (see Table 1) This problem has been apparent when some school authorities or ministers respond to media reports of projected shortfalls in graduate numbers.
- There is often a misunderstanding of the way shortages affect schools or hospitals and nursing homes – a failure to appreciate that usually shortfalls are covered by existing staff taking on extra workloads and relief staff covering permanent vacancies, rather than classes without a teacher at all or bed closures.
- There is at times a greater political fear of the cries of disgruntled graduates who believe they have an entitlement to a teaching or nursing job on graduation than of the consequences of staffing shortages on school students or patients and existing staff.
- There can be a 'wage-case' mindset – for example, school authorities asserting that there are not (and will not be) teacher shortages because current or projected shortages have been referred to by teacher unions in their arguments for increases in teacher salaries. This appears to me to be a self-defeating position in the long run. It is all very well to argue that there are not (and will not be) shortages in the adversarial ritual of a wage case. However, to carry this argument over, without supporting evidence, into the context of policy decisions about initial teacher education intakes may lead to shortages actually occurring.
- A belief among some school authorities, education department heads and ministers that shortages are just talked up or exaggerated for the self interest of teacher unions, principals associations and deans of education [nursing reference]
- There tends to be a policy focus on specific and obvious problem areas without a recognition that these are a manifestation of underlying and macro-level shortage problems. The specific problem areas certainly should be addressed, and dealing

with them is a part of overcoming the macro problem. But the specific problems cannot be solved without also dealing with the macro problem in its own right. Different specific problems have been a focus in teaching and in nursing. In teaching it has been incentives and support for hard-to-staff schools and regions, and mechanisms to increase the numbers of people qualified to teach in the shortage specialisations. In nursing there has been a concern with retention of existing nurses and the recruitment back into nursing of those with nursing qualifications who are currently not working as nurses. This is apparent in the many 'recruitment and retention' projects and inquiries around the country over the past few years (see Johnson and Preston 2001) in which there is seldom any reference to increased initial recruitment into the profession via basic nurse education.

More generally, there is often still a pre-occupation with the aberrant and huge surpluses of the early 1990s that lingered on for some years – the Kennett effect still mesmerises in some quarters. These surpluses were a consequence of several factors coinciding, each differing in importance around the country and for teaching and nursing:

- The effect of the recession on State government revenues, and political choices, led to very large cuts in staffing levels (the political choice to cut teacher numbers reflecting some dominant thinking at the time about the cost-effectiveness of varying teacher-student ratios). In Victoria the reduction in teacher numbers was roughly equivalent to total graduate numbers from initial teacher education programs – thus it was not surprising that very few graduates were able to obtain teaching positions, and many added to the numbers seeking teaching jobs in subsequent years.
- The age profile of the teaching workforce was such that there were few teachers in the high separation retirement and beginning teacher age ranges, and a very high proportion in the very low net separation late 30s and early 40s age ranges (age ranges where net separation is generally negative as more return to work after some years out rearing children, than leave the profession– see later). In nursing there would have been a similar effect.
- The recession also meant that there were fewer alternative jobs for those with teaching or nursing qualifications – thus further reducing separation rates for those already working as teachers or nurses, and leaving graduates with few options except to keep trying for teaching and nursing jobs.
- There was some underlying oversupply of graduates, especially for teachers in Victoria, though the oversupply, in my estimate, was well below the numbers cut from teacher and nurse education the early and mid 1990s.

Features of policy-useful projections

I have prepared projections of teacher (graduate) supply and demand for the Australian Council of Deans of Education on a number of occasions over the past decade (see, for example, Preston 1997, 1998 and 2000). The methodology of the 2000 report, in particular, is referred to in the following discussion.

For nurse or teacher supply and demand projections to be useful for policy they need to be:

- **Comprehensive.** All relevant matters are taken into account (for example, for teachers, the nongovernment sector, and sources of supply other than recent graduates. 'Supply' and 'demand' are presented on a comparable basis so that conclusions about projected shortfalls or surpluses can legitimately be drawn. If the data is poor in a particular area the best possible estimates should be made because any 'missing' elements are not left out, but, implicitly assigned a value - usually zero or one.

- **Transparent.** The assumptions and methodology are explicit, and thus are open to analysis and critique. Alternative projections can be developed according to varying assumptions.
- Based on the **best available data** (within resource constraints). I use ABS data on teachers and students because of the paucity or lack of comparability of data available directly from school authorities. I do not use DEST teacher education statistics because of the misclassification of many courses and other problems (that may be overcome with current work on the data collection), and the need to develop projections (rather than assume a continuation of past trends). Instead, for the ACDE projections I surveyed all faculties of education to obtain graduate projections. Similar work is being done on nurse graduate projections.

Projections are not predictions. Actual outcomes may differ from the projections for many reasons, including the actions of stakeholders. In fact, the projections have served their purpose if projected shortfalls or surpluses do not occur because stakeholders have taken action to avoid them. As the projection methodology is transparent it is possible to investigate why outcomes have not been exactly as projected in earlier years. Possible reasons include recruitment campaigns, or **unanticipated** changes in the attractiveness of teaching or nursing staffing levels, in school enrolments or patient/resident numbers, in separation rates, or in initial professional education intakes.

There are detailed conceptual, methodological and policy discussions in the 2000 report for the ACDE (Preston 2000), which is available on the ACDE website: <http://acde.edu.au>.

Summary of teacher supply and demand projections

My 2000 projections were for shortfalls at both the primary and secondary levels throughout Australia in 2005 (see Table 1). There are variations between the States, and some major fluctuations over the period. The most substantial fluctuations are at the primary level in Western Australia, where a major surplus around 2002 is projected because of the change in school starting age resulting in a half size cohort entering school, and at the secondary level in Tasmania where a small cohort (resulting from a change in school starting age in the early 1990s) is passing through the secondary level, initially leading to a projected large surplus, then a shortfall at the end of the period as the small cohort begins to leave school.

Most of the data on which the projections were based was collected in 1999 and the first half of 2000. Thus, any evaluation or use of the projections should take this into account. Some more recent factors that may be relevant (I have not done full analysis) include:

- turnaround in the interstate migration out of Victoria, resulting in greater school student numbers, and other anticipated interstate migration changes not incorporated in the school age population projections used by DETYA in developing 2000 enrolment projections;
- increasing net movement of teachers out of Australia (discussed further below);
- changes in planned/expected graduate numbers – apparent increases in a number of States, but apparent decreases in South Australia; (NB: the recent increases have often involved over-enrolment, and many faculties of education have now decided not to over-enrol because of problems such as the unfunded cost of practicum supervision of each overenrolled student);
- changes in student-teacher ratios, including those consequent on the recent increases in funding to nongovernment schools;
- changes in teachers' general conditions and salaries (some improvements), and targeted incentives and support for hard-to-staff schools and shortage

- specialisations (but noting that shortage specialisations also tend to be those most in demand overseas);
- deteriorating conditions where shortages are severe, leading to increased separations – this appears to be a significant factor exacerbating nursing shortages (Johnson and Preston, 2001), and it was a factor in the teacher shortages of the 1970s, and it is well recognised in the literature (eg Fetler 1997, p.11, which focusses on the employment of poorly prepared and less than fully competent teachers – a common solution to teacher shortages, especially in jurisdictions where unqualified teachers can be employed - however because of strict registration requirements, the nursing shortages tend to lead to excessive formal workloads).

Table 1: Projected 2005 shortages of graduates as a percentage of all teachers, and 2005 projected supply as a percentage of projected demand

	2005 projected shortages as % of all teachers		2005 projected supply as % of demand	
	Primary	Secondary	Primary	Secondary
NSW & ACT	- 0.6%*	0.9%	111%	87%
Victoria	1.9%	3.0%	69%	59%
Queensland	1.8%	2.9%	77%	66%
WA	1.2%	1.6%	80%	77%
SA	1.4%	2.9%	75%	56%
Tasmania	0.7%	3.8%	85%	51%
Australia	0.7%	2.2%	89%	70%

Source: Preston 2000, Tables C , D, E and F, p. 33 * surplus

Teacher shortages are never evenly spread – they affect most severely those schools that are generally hard-to-staff, and they usually occur most severely in those subject specialisations that are tight at the best of times. Some schools will never feel the damaging effects of a shortage, however severe – in fact such schools may benefit in the competition for status, teachers and students if other schools are experiencing the disruption and inadequate teaching that results from shortages of competent, qualified teachers. Students in hard-to-staff schools are usually already disadvantaged – by the very factors that make the school unattractive to teachers and thus hard-to-staff. There are parallels in nurse shortages, where it is rural areas and the low status aged care sector that experience particularly severe shortages, and some specialisations are in chronic shortage. Increasing shortages in hard-to-staff situations and some particular specialisations are a **manifestation** of more general shortages.

Teacher shortages can often be coped with administratively, and might little effect school authorities' central offices – they may not even be aware of them. But shortages are felt at

the school level by: teachers taking extra classes; principals and administrative staff spending excessive time on finding staff at the expense of their other duties; non-teaching staff taking classes they would not otherwise take; post-compulsory students being sent home; classes being taken by temporary or permanent staff without appropriate specialist qualifications; permanent vacancies being filled by a series of short-term, part-time replacements; less than adequately competent or qualified staff being employed (including student teachers), and so on.

Shortages and standards are intimately, but paradoxically, linked: if there is a willingness to lower teaching standards initially shortages will disappear as any warm body is employed to cover classes, or class sizes and teacher workloads expand. But as teaching standards and working conditions deteriorate, being a teacher becomes less attractive, loss rates increase and fewer people want to enter or re-enter teaching. (See above.)

Why the projections of generally increasing shortfalls?

There are a number of reasons on both the demand side and the supply s for the projected shortfalls. The most important are:

First, **increasing net separation rates** are projected because of a higher proportion of teachers in the retirement and beginning teacher age ranges. Net separation rates (including reentrants and returnees from leave as well as those leaving teaching permanently or temporarily) that I have projected range from around 3.5 per cent currently to around 4.5 per cent in 2005. A difference of 1.0 per cent in separation rates is a difference in demand for replacement teachers across Australia of almost 2 500 teachers, and there are only around 10 000 initial teacher education graduates in Australia each year available and suitable for school teaching positions. The increasing proportion of teachers in the under thirty and over fifty age ranges indicates the inappropriateness of the measure of *average age* of teachers when assessing future demand – in fact the average will soon be in the five year age range with the smallest proportion of teachers! I will return to this later.

Because of its similar, if less pronounced, age profile, nursing should expect increased separation rates over the coming decade.

Second, there has been a **reduction in initial teacher education infrastructure** that occurred with amalgamations and the creation of the 'unified national system' and the ending of the colleges of advanced education – the 'Dawkins revolution'. The impact differed substantially around the country because of the different historical circumstances of universities and colleges, and the missions of the dominant parties in amalgamations. For example, in Victoria teacher education had been dominated by two institutions, Melbourne College of Advanced Education and Victoria College, that were amalgamated with universities (Melbourne and Deakin respectively) that did not want to have large faculties of education. Together, those institutions reduced their intakes in education courses between 1991 and 1998 by almost 70 per cent, and the reduction for Victoria as a whole was 50 per cent. In contrast, in New South Wales there was a wider spread of teacher education institutions, and universities amalgamating with major teacher education institutions did not demand such reductions in education intakes. Thus the overall reduction in New South Wales between 1991 and 1998 was only 22 per cent. The national reduction was 33 per cent (Preston 2000, Table 21, p. 60). Though there have been some increases in initial teacher education intakes, school authorities have generally provided little, if any, support for them – for reasons already alluded to. University administrations (and DEST) are themselves generally unwilling to allow increases in intakes in initial teacher education unless there is clear support for such increases from school authorities (often universities prefer expansion in other, more lucrative or prestigious, fields of study).

Nursing has experienced similar trends. Quality data is hard to come by on effective trends in intakes into the profession through the 1980s to early 1990s as nurse education moved from hospitals to universities. However, once established in universities, there appears to have been a reduction in intakes – according to DEST data, from 8831 commencing basis nurse education in 1994 to 8150 commencements in 2000. However, there currently appear to be planned increases in graduate numbers over the coming period as some courses expand and new courses become established, including a number based on RPL for enrolled nurses.

The third reason for possible shortfalls is not taken into account in my detailed projections, but may become very important. It is the burgeoning **recruitment of Australian graduates and experienced teachers to teach overseas**. This is a qualitative change from the professionally and personally enriching 'working holiday' experience that has been common for many years, and the general movement of teachers into and out of Australia. The numbers appear to have substantially increased; highly competent, experienced teachers are being increasingly sought; and the positions being filled are potentially on-going. The USA, the UK and elsewhere are experiencing quite severe shortfalls that are not likely to ease in the near future, the 'international schools' network around the world is rapidly expanding, and countries such as Japan are seeking native English-speaking teachers, and easing immigration requirements to facilitate their recruitment. The clients of the overseas recruitment agents operating in Australia are generally very committed to obtaining the qualified teachers they want, and are willing to make attractive offers to Australian graduates and teachers. There are parallels in nursing.

The Monash Centre for Population and Urban Research's *Skilled Labour: Gains and Losses*, published in July 2001 (Birrell 2001) provides quantitative evidence of this increasing overseas recruitment of both teachers and nurses.

There is more to the story than the general net 'brain gain' across professional occupations that received publicity when the report was released. Australia has always been an immigrant country, and 1996 policy changes to increase skilled migration have had the expected effect. It is the movement of *residents* reported in the study, rather than permanent settlers, that is particularly revealing.

Between 1994-1996 and 1999-2000 there have been substantial increases in net outflows of resident teachers and nurses (Birrell 2001, Table 1. p. 12).

For teachers the net resident outflow has increased from -36 and 53 in the first two years (1995-1996 and 1996-1997) to 2418 and 1863 in the most recent two years (1998-1999 and 1999-2000). That is, the net resident movement has changed from close to balance, to an annual net loss of around 2000 teachers. That number of teachers is equivalent to 20 per cent of the total number of new teachers employed in Australian schools each year.

Taking account of settlers and net movements of visitors as well as residents, the net gain of teachers fell from 1817 to 824 over the period, a reduction of more than 50 per cent.

For nurses the trend has been in the same direction, but not as dramatic. The net gain of nurses (settlers, residents and visitors) has fallen from 703 to 470, a reduction of a third. Like teachers, the big change has been in resident movements, with the net number leaving almost doubling from 482 in 1995-1996 to 911 in 1999-2000.

These trends are contrary to what would be expected from employment opportunities in Australia for both professions over the past decade, and point to important qualitative matters.

At the beginning of the period both professions were experiencing lingering oversupply after the very large reductions in State government expenditure in Victoria and elsewhere early in the 1990s. Thus, at the time, many graduates would have been unable to find the local jobs they wanted and would have been interested in overseas positions - a 'push' out of Australia. From around 1999 local jobs have been readily available, and this 'push' factor would have diminished. Overseas recruitment agencies have been increasingly active on campuses and in the general and professional media over the past three years. Thus the trend of increasing resident movement out of Australia is likely to be largely a consequence of effective, concerted recruitment to positions overseas – a 'pull' factor.

This has qualitative implications. Those who move because they cannot get the teaching or nursing job they want in Australia are less likely to have the particular specialist skills or other attributes in high demand here. On the other hand, those who move because of competitive recruitment to overseas positions are likely to be those with the specialisations (such as maths and science teaching) or general professional and personal attributes that are in high demand internationally (including in Australia).

Thus, not only is Australia losing a relatively greater numbers of teachers and nurses at a time when shortages are developing here, but the specialist skills and other attributes of those moving overseas are likely to be those most in need here.

Overseas experience can be personally and professionally enriching, and should not be discouraged. But the loss to overseas positions needs to be accounted for when assessing future demand for graduates, and thus intakes into initial and specialist teaching and nursing courses.

Age profiles and net separations

Separations are often one of the most controversial aspects of teacher and nurse demand projections. In my current methodology it is *net separations* that are estimated, incorporating re-entrants and returnees from leave, and netting out those who move from one teaching job to another – from one system to another. The most important aspect of the net separations methodology is the projection of the age profile of teachers through the period, and the 'cohort analysis' basis of determining separation rates. In their classic text on labour force projections, Bartholomew & Forbes (1979) note that 'of all the flows in a manpower system, wastage is the most fundamental for manpower planning' (p. 12), and 'propensity to leave depends on length of service and in practice this seems to be the most important factor of all' (p. 14). For teachers in Australia today (and nurses), age is, on balance, better than length of service in determining net separation rates. It is a reasonable proxy for length of service in the early years (high rates of leaving the profession generally occur during the first couple of years as people realise that they are not suited for the profession, or they are attracted into an alternative), age is more appropriate as women (and some men) take time out to rear children, then return some years later, and age is clearly the key factor in the later years when retirement is the reason for separation.

In Figure 1 you can see the peak of those initially employed around the 1970s – those currently in the 45 – 49 age range, which will reduce as retirements occur. The trough of those currently aged in their thirties reflects the very low rate of recruitment in the early 1990s (those under 30 in 1996 – see the table). This trough will move through the 40 – 49 age ranges over the next decade, while there will be increasing proportions of teachers under 40.

Figure 1: All Australian teachers, projected percentage in each five year age range, 2001, 2006 and 2011

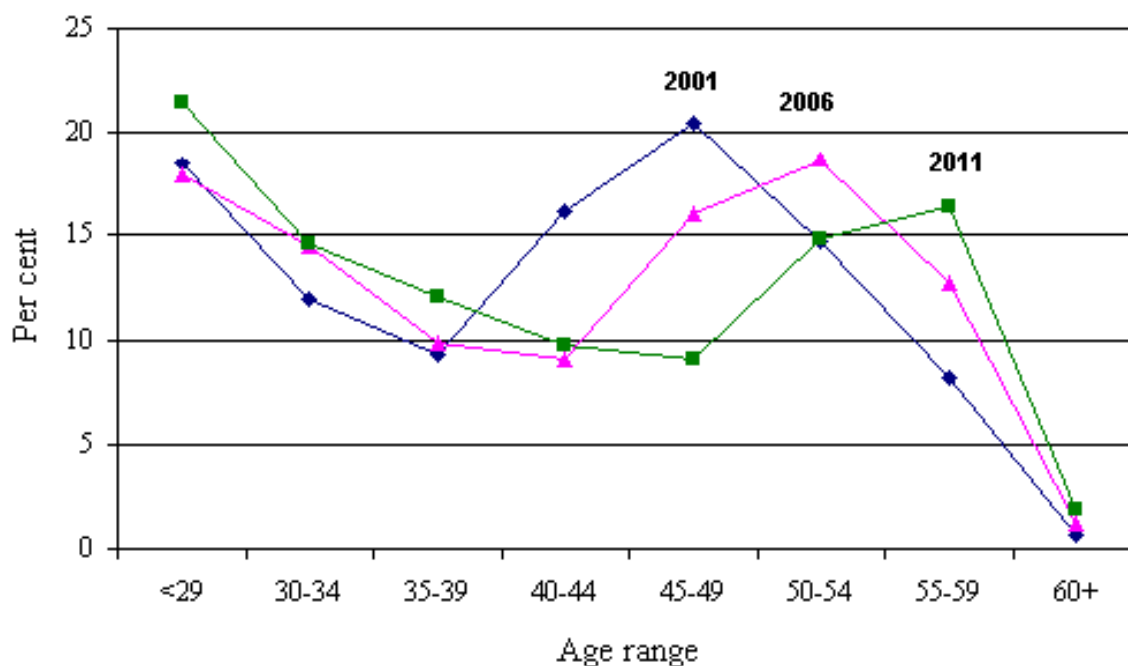


Table 2: Percentage of teachers in each age range, 1991 and 1996 actual, and projected for 2001, 2006 and 2011

	Under 30 (beginning teachers)	30 – 39 (middle level)	40 – 49 (senior)	50+ (towards retirement)
	%	%	%	%
1991	22	37	30	11
1996	13	31	40	16
2001	19	21	37	24
2006	19	24	25	33
2011	22	27	19	33

Source: 1996 data from ABS Census custom tables, projections prepared by the author. The projections assume constant student-teacher ratios from 1999; DETYA school enrolment projections; no substantial change in net separations (resignations, reentry and retirement)

for each five year age range from 1996, and that beginning teachers are mostly under 30.

The projections assume the continuation of the general pattern apparent from 1991 and 1996 census data that, though about 80 percent of graduates enter teaching, by their early thirties fewer than 55 per cent of those with teaching qualifications are teaching; there is then a slight return to teaching through the late thirties, with almost 60 per cent of those in their early forties teaching; there is then a continuing loss through to retirement age; overall, fewer than half of those of with teaching qualifications of working age are teaching – see Preston 2000, pp. 65-66.

If there is an overall improvement in PTRs (likely primarily because of continuing increases in Commonwealth per capita funding to nongovernment schools, and a continuing increase in the proportion of teachers in nongovernment schools), then there will be a higher proportion of teachers in 2006 and 2011 in the younger age ranges, and a smaller proportion in the older age ranges.

If retirement age generally increases, then there will be a higher proportion of teachers in the 50 plus age range, and a slightly smaller proportion in the other age ranges.

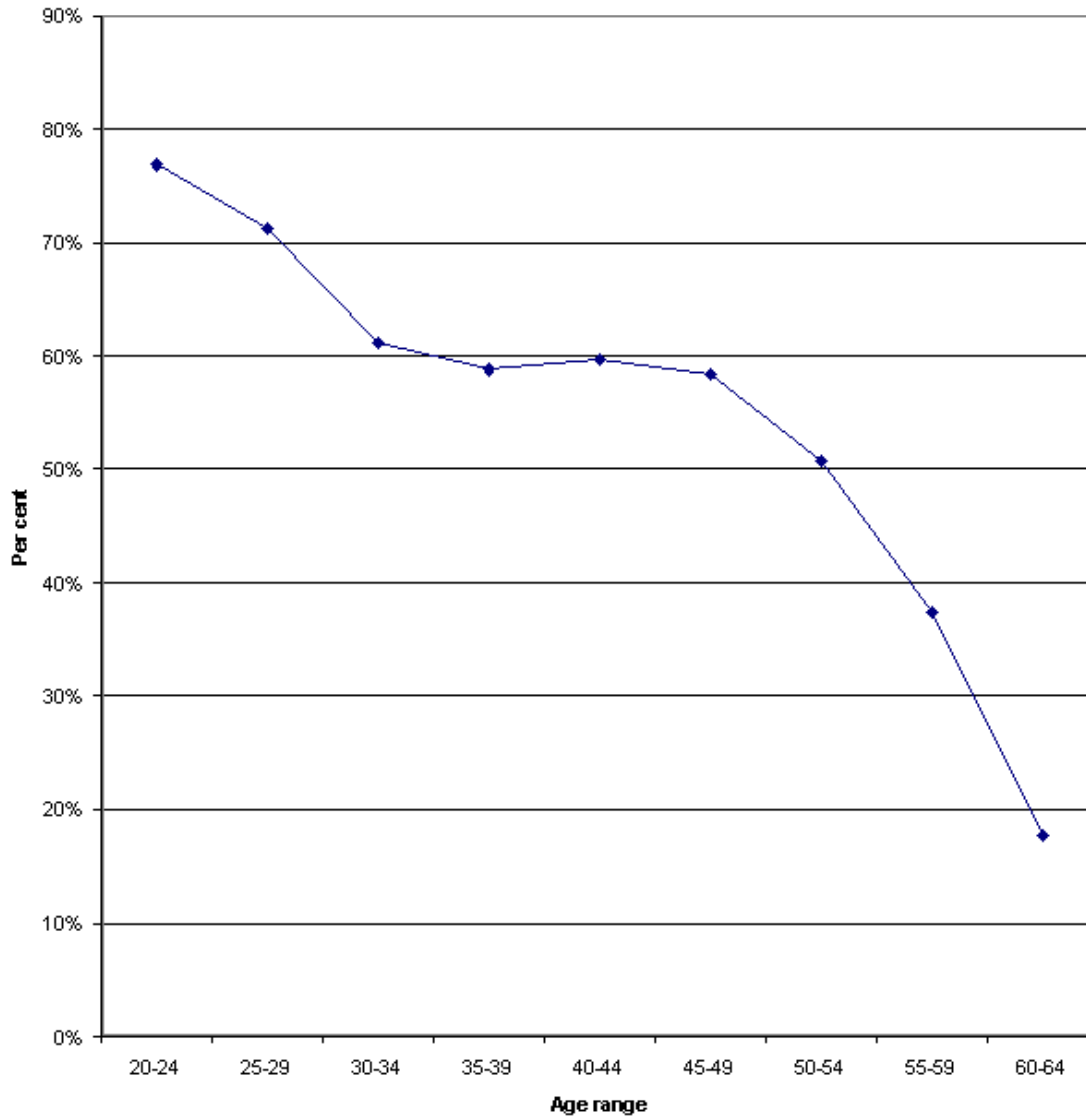
The age profile projections are important for projecting net separation rates, and to do that I prepared age profile projections to 2005 for primary and secondary teachers in each State. They form similar patterns to those shown here for 2001 and 2006 nationally, though there is some variation, as I will discuss later.

The estimated average annual net separation rates are derived from Census data on the populations of people with primary and secondary teaching qualifications, whether they are teaching or not (see the graph on p. 66, *Teacher supply and demand to 2005: projections and context*). The net separation rates for Australian teachers in 5 year age ranges that I have used in the projections prepared for the ACDE are as follows:

Average annual net separation rates – primary teachers								
< 30	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 +
6.32%	3.55%	-1.25%	0.04%	2.13%	2.63%	17.0%	19.0%	80.0%
Average annual net separation rates – secondary teachers								
< 30	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65 +
5.57%	3.07%	-0.02%	-0.39%	1.18%	2.25%	17.0%	19.0%	80.0%

The negative values in the 35 to 44 age range mean that a greater number of teachers return to teaching (from extended leave, or re-enter after earlier resigning) than leave teaching.

Figure 2: Practicing registered nurses as a percentage of all those with professional nursing qualifications, in each five year age range 20 to 64, 1996 (ABS Census)



(Nursing appears to have similar patterns, with a negative net separation rate apparent for the late thirties to early forties, as, probably, more nurses return after several years of full time domestic responsibilities, than leave nursing. See Figure 2 – the comparable graph for teachers has the same shape, with a flattening and slight reversal around the late 30s to early 40s.)

Applying the above teacher separation rates to each age range in the projected age profiles for primary and secondary teachers in each State, I have projected total net separation rates for each year to 2005. I have assumed that the state of the external economy and the relative attractiveness of teaching (etc) remain constant over the period, thus the age profile is the only factor affecting changes in net separation rates - alternative scenarios can be developed that incorporate variation in these other factors.

Some of the projected net separation rates for 2000 and 2005 are as follows:

	NSW prim	NSW sec	VIC prim	VIC sec	QLD prim	QLD sec	SA prim	SA sec
2000	3.6%	3.3%	3.7%	3.2%	3.9%	3.6%	3.5%	3.4%
2005	4.3%	4.3%	4.5%	4.5%	4.6%	4.1%	4.6%	4.8%

The differences in rates depend on the current age profile (especially the sharpness of the peak of 1970s recruited teachers, the deepness of the trough in the thirties age range reflecting low recruitment around the early 1990s, and the numbers in their twenties and early thirties, reflecting more recent higher recruitment rates), and the projected expansion in teacher numbers.

The two extremes of secondary teachers in South Australia and Queensland illustrate key differences. In South Australia recent recruitment levels have been low, and almost no change in total teacher numbers is projected over the period (and thus no increase in recruits to add new places to the teaching workforce). At the moment the peak of those recruited in the 1970s dominates, and as yet the peak has not moved into the common retirement age, but that will occur rapidly over the next few years (and retiring teachers will be replaced by beginning teachers who have a high propensity to leave). This change in net separation rates (alone) entails a change in demand for *new* teachers for the approximately 8,000-strong secondary teaching workforce in South Australia from 272 to 384 - an increase of 41 per cent. In Queensland there has been a steady and more substantial rate of recruitment over recent years, and thus the age profile is flatter, with a higher proportion of teachers in the higher separation younger age ranges, and a lesser trough in the low net separation age ranges through the thirties. Thus, the current net separation rate is higher than that in South Australia, and in 2005 it is projected to be substantially lower. The total Queensland secondary teacher workforce is projected to increase from about 19,500 to about 21,500 (largely because of projected school enrolment increases), but if total numbers are held constant (at 20,000, say), the change in separation rates (alone) entails a change in demand for new teachers from 720 to 920 – an increase of 28 per cent (compared with 41 per cent for South Australia).

Other methods for estimating separations

The details of this discussion is intended to indicate the complexities of estimating future net separation rates in occupations that have experienced major fluctuations in recruitment rates over many decades, and that have distinct peaks and troughs in their age profiles. Other common methods for estimating separation rates (that I consider inadequate or inappropriate) include:

- assuming the workforce is in equilibrium, and a separation rate is derived from information about average length of service (see, for example, some South Australian nurse workforce projections discussed in Johnson and Preston 2001, p. 29);
- accounting for anticipated retirements, but not for the higher separation rates of beginning professionals, and the lower net separation rates of those in their mid thirties to mid forties (currently appears common in some government school authority projections);
- assuming continuation of current separation rates;

- providing distinctly different 'high', 'low' and 'medium' assumptions, with little if any rationale provided, or guidance to those who might wish to plan on the basis of the projections (this was common in the past in teacher supply and demand projections, especially around the late 1970s and early 1980s, and is apparent in some of the recent nurse supply and demand projections reviewed in Johnson and Preston 2001).

Responses to some criticisms

There have been several criticisms of my teacher supply and demand projections that have been made publicly by ministers and/or senior departmental officers. Some of these have been understandable responses to straw figures set up in media reports (see *The Australian* 5/2/01, p. 15). While the following may seem overly defensive, it does illustrate some of the methodological, policy and strategic difficulties in developing useful projections, and having them put to good use.

The first criticism I want to examine is that the projections do not take account of sources of supply other than recent graduates - see for example, 26 August 2000 media release from the Queensland minister, Dean Wells, and South Australian Department of Education, Training and Employment (DETE) May 2000 *Final Submissions* to the Australian Industrial Relations Commission, par. 196 (b). It is simply untrue that I did not take account of sources of supply other than recent graduates. A quick perusal of the notes to the tables in each of the three published reports makes this quite clear. It is, of course, open to serious discussion whether my assumptions in this area are appropriate, and over the years there have been such discussions from time to time, especially about the availability of individuals who have been on 'lists' for some time. But there is a certain credibility gap where a school authority argues that there is no chance of a current or future shortage because of thousands of people on its waiting list, yet at the same time it is employing a substantial number of people without teaching qualifications because qualified teachers cannot be found to fill particular, real life vacancies, relief teachers are being used to fill permanent vacancies and on-going staff take extra loads because relief teachers are not available. Such lists should be carefully interrogated.

The second criticism is that I have 'predicted' shortages that did not occur, and that this, in itself, is self-evident proof that the earlier work was flawed and/or that the current work lacks credibility because earlier 'predictions' did not come about. This has been a criticism made on several occasions by the South Australian minister and department head (see, for example, *The Australian* 27-28/1/01, *The Adelaide Advertiser* 19/1/01 and 7/2/01, and, more recently on ABC radio). First, as noted above, projections are not predictions. The reasons for projected shortfalls not occurring need to be examined before judgement can be passed on the quality of the projections.

There may have been shortcomings in the assumptions or methodology of the earlier work (and that includes DETYA student enrolment projections which are one of the most significant inputs to the projections model – but even they could not anticipate, for example, the reduction in retention rates in South Australia). I accept some problems with the earlier work - which I have sought to rectify in the 2000 report. The 2000 report should be treated on its merits.

Projected shortfalls may not occur, as noted above, because of action by stakeholders – whether or not intentionally directed towards avoiding shortfalls. There have been increased teacher education intakes, improvements in salaries and conditions, incentives and support for hard-to-staff schools, aggressive recruitment directed interstate and to teachers on leave or not in the workforce. Any or all could have made a substantial difference.

Or external events such as reduced alternative opportunities for teachers may occur, or more attractive alternatives for post-compulsory students may make a difference to retention rates.

Or, it may be that shortfalls have occurred, but that central school authorities have not been aware of them, having misunderstood the nature of the projections, or being insulated from the effects of shortfalls that are being coped with at the school level (to the detriment of student learning and the quality of teachers' working lives).

The third type of criticism was apparent in the Senate in February 2001. Schools Division of DEST (then DETYA) reported to the Senate that it had compared my three sets of projections (1997, 1998 and 2000 reports) for Australia as a whole for the years 1999 to 2004 (see *Hansard* for 23 February 2001, EWRSBE 258), noting a general reduction in the magnitude of the shortfalls projected, and indicating that this was evidence for the lack of credibility of the projections. Yet there was no analysis of the reasons for the differences.

It should be noted that the differences from one set of projections to the next are, on average, equivalent to less than 1.4% of the total teaching workforce at the primary level (less than 1,500), and less than 0.8% of the total teaching workforce at the secondary level (a little over 1,100).

In general the most important reason for the differences is the increase in graduate supply – universities increasing initial teacher education numbers, in part, I assume, to avoid damaging shortfalls (for 2003 the difference in projected national supply between the 1997 and 2000 reports is 1436 at the primary level and 578 at the secondary level – increases of 26% and 10% respectively - see Preston 1997, p. 52, and 2000, p. 59).

Another major reason is a reduction in projected net separation rates, and I believe that my current methodology (outlined earlier) is an improvement on the 1997 and 1998 methodology (but it's possible that it might be leading to projected net separation rates that are too low).

A third reason affects the period from 2002 at the primary level where the current projections are for substantially reduced shortfalls compared with the earlier projections, and a surplus in 2003. This reason is the planned change in school starting age in Western Australia, involving the entry into primary schools of a half size cohort. This will have a very dramatic effect on demand in Western Australia (see Table 7 on page 48 of *Teacher supply and demand to 2005*), creating a projected surplus of supply over demand of more than 500%, and this has a substantial impact on the national demand. This policy initiative of the WA school authorities was not finalised before the 1997 and 1998 reports were prepared. The 2000 enrolment projections prepared by DEST (Schools Division) that I use (and find of generally good quality) did not take account of this initiative, so I used WA-prepared projections rather than DEST projections, for the WA primary projections model.

There have also been some **particular criticisms**. For example, the Queensland Department prepared a detailed written critique in 2000 which included some of the above points, but also raised a matter of methodology. Their argument was that my definition of a 'teacher' was not appropriate, and that they preferred to include only classroom teachers (and not principals, etc). Their application of this definition to my projections tables increased the PTRs, and thus the projected shortages diminish or are turned into surpluses. However, they did not use the same definition (implicitly) when considering separation rates, but retained my original separation rate values (which were based on my broader definition of 'teacher'). If their definition of a teacher is applied to net separations, then there is no change in my projections (assuming principals and deputies are generally recruited from

existing classroom teachers). Obviously, consistent definitions need to be used within a model. I have no in principle difficulty with their definition of a teacher. However, it would be hard to gather the data for the nongovernment sector, and I prefer to use the ABS definition, and to use ABS data, which is collected on a consistent basis for nongovernment as well as government schools around Australia.

Another particular criticism has been regarding separation rates. When the Western Australian Department raised this with me following the release of the 1998 report, I prepared alternative projections for them based on their preferred assumptions. Separation rates are notoriously and historically controversial and difficult to get right, but I believe that my current method for projecting net separations is a major improvement. But, as with all inputs to the model, alternative projections can be prepared with varying assumptions.

Finally, there is one input to the model that I consider open to criticism, but as yet there has been none that I am aware of. This is my assumption of constant PTRs through the period (on a FTE teacher basis). Over the past decade there has been a 2.6 per cent improvement in PTRs (from 15.3 in 1990 to 14.9 in 2000). However, in the early 1990s there was a significant deterioration because of the severe cutbacks in the government sector in Victoria (and several other States) – because of the recession and political circumstances. Throughout the decade the nongovernment sector improved – by more than 8% over the decade. In my view, continuing improvements in PTRs overall are more likely than constant PTRs. If the average annual rate of change through the 1990s is assumed to continue that is approximately an extra 500 teachers a year, and if the average annual rate of change 1995-2000 is assumed to continue that is approximately an extra 1,400 teachers a year. That translates to *increased demand* each year of about 3.8% and 10.8% respectively. Overall improvement in PTRs are quite likely (though not certain) given the increases in nongovernment school funding from the Commonwealth, and the pressure on the government sector in many States to improve staffing levels.

Table 3: Student - teacher ratios					
	1990	1995	2000	Difference 1990-95 (%)	Difference 1995-00 (%)
Government Schools	15.0	15.4	14.9	2.7%	-3.2%
Nongovt schools	16.1	15.4	14.8	-4.3%	-3.9%
All schools	15.3	15.4	14.9	0.7%	-3.2%
Source: Australian Bureau of Statistics Schools Australia Cat. No. 4220.0					

Quality, agreed projections?

There has been some influential and authoritative voices calling for quality projections and lamenting the paucity, poor quality and inappropriateness of so much that has recently been done.

In December 2000, the report of the Review of Teacher Education in NSW, *Quality Matters*, (Ramsey 2000) recommended that a new MCEETYA 'working group, acting for governments, employers and universities, establish an agreed basis for the development of medium and long-term projections of national supply and demand', drawing from the methodology in the 2000 ACDE report (p. 201).

In June 2001, the *Victorian Nurse recruitment and Retention Committee: Final Report* (Bennett, 2001) noted that:

The Committee has been hampered by the lack of available nursing workforce data. A review of local and international literature has shown that many state and federal governments have identified lack of workforce data and lack of integrated nurse labourforce planning as major impediments to addressing nursing workforce shortfalls. (p. 1)

and:

The first, and probably most important [concern in the literature on the nursing workforce], is the lack of a coherent workforce planning model which enables prospective adjustment of nursing supply to fit demand. (p. 30-31)

In November 2001 the Victorian Auditor-General released a report, *Teacher work force planning*, and concluded: 'the development of a long-term teacher supply plan involving key stakeholders such as the universities is needed in order to support the achievement of the Government's policy objectives'.

The Commonwealth's position (and any common 'national' position) on future teacher supply and demand has generally been based on the work of the National Teacher Supply and Demand Working Party of the Conference of Education System Chief Executive Officers, whose first report was completed in July 1998 and released and widely distributed by the Ministerial Council for Education, Employment and Youth Affairs (MCEETYA) almost a year later in May 1999 (it is still available on the MCEETYA Web site). That report has some interesting and useful information, but it cannot provide adequate information for evidence-based policy in the area, for reasons I will outline shortly. I understand that the working party has been working on a new report, that was initially due for release in mid 2001 (see *The Australian*, 29 January 2001, p. 18). I understand that the methodology is essentially the same as the previous one, though I expect (and hope) there are some improvements. Following are some comments on the published report - excerpts from an address I gave in September 1999 (Preston 1999). In this section I was discussing the 'CESCEO paper' in the context of the principles of comprehensiveness, accuracy of data, etc.

The CESCEO paper makes no serious attempt to match supply and demand. Projections of demand are only for the government sector (and are very anomalous - they clearly do not fit the 'accuracy' criteria). And there are no projections of supply. It is clear that no careful analysis on a state-by-state basis was made of the initial teacher education commencements data that are provided - if this was done some serious problems would have become apparent (I will consider this further later). In fact, what appear to be State and Territory summary conclusions about the future are not based on the sometimes detailed data and projections that make up the bulk of the paper, but arise from surveys of (mostly government) school authorities regarding any current (that is, early 1998) apparent shortfalls or surpluses, and their expectations for the next few years. Of course, if the school authorities had not done their own work on projections they would have little basis for responding beyond the current period.

. . . It is common (but not universal) for projections by government agencies to use Commonwealth Department of Education, Training and Youth Affairs (DETYA) statistics on 'initial' teacher education enrolments (usually

commencements and completions). There are two serious problems with using this data.

The first problem with the DETYA data is that many courses have been misclassified [in the returns from universities]. For example, graduate diplomas in education are frequently classified as 'post-initial', and inservice one-year bachelor of education courses are often classified as 'initial'. The pattern of such misclassification varies from State to State, and between primary and secondary.

The CESCEO paper provided DETYA statistics on 'initial teacher education' commencements and completions from 1989 to 1996. In the data provided for 'secondary' initial teacher education there is clear evidence of the majority of South Australian initial secondary teacher education courses, for example, being classified as other than 'initial'. For 1996 the CESCEO paper reports that there were 100 secondary initial teacher education completions (and no 'general' or other category distinct from 'primary' or 'early childhood') (p. 64). Yet, according to information provided by each universities' faculty of education to the ACDE, there were approximately 250 secondary initial teacher education graduates, and about 60 combined primary/secondary graduates. The CESCEO paper reported fewer than half the actual number of graduates. Yet, as there was no attempt to quantitatively match supply and demand (see above) such an otherwise obvious flaw apparently remained undetected.

[there followed discussion of the importance of data on the nongovernment sectors, and comment that such data is generally missing from the CESCEO paper]

In the CESCEO paper there are numerous other examples where the data are inappropriate or clearly problematic. For example, under the main heading, 'Job Mobility' there is a section on ABS labour mobility survey data:

An estimated 4 per cent of those employed in the education industry changed industry of employment in the year to February 1996: 89 per cent remained in the education industry, 2 per cent were looking for work, and 5 per cent were not in the labour force. (CESCEO 1998, p. 24)

That is, an annual rate of separation from the education industry of 11 per cent. School teachers are the major category of workers in the education industry, and there is no reference here to other workers in the education industry having very high levels of industry separation, or any other explanation for the ABS findings. Yet in following section begins with the statement:

Wastage rates from government school teaching appear to be generally of the order of 1 - 5 per cent, with primary school teachers having a slightly lower wastage rate than secondary school teachers. (CESCEO 1998, p. 24)

The nongovernment sector would have to have extraordinarily high rates of separation for these sets of data, together, to make sense. Yet we can be

fairly confident that, on the whole, rates of leaving teaching all together are not much higher, and probably lower, in the nongovernment sector.

There is no explanation for, or discussion of, this anomaly between the ABS data and the information from school authorities.

Another anomaly in the CESCEO paper: There is a table of projected recruitment numbers for government school systems in each State and Territory (p. 36). In a paper such as the CESCEO paper you would expect this table to be crucial. Yet the number of new teachers expected to be recruited to Victorian government schools in 2001 is well under half the number expected to be recruited in NSW or Queensland, and well below the number recruited around 1998. Was the Victorian government planning another round of major cuts in staffing levels, repeating the exercise of the early 1990s? or was it expecting another major exodus from the State? I find the figures bewildering.

In fact, I find the whole situation bewildering - that among the members of CESCEO and MCEETYA and all the officers advising them, over a period of almost a year, there was no effective voice raised in critique of what is so obviously a flawed paper. The paper is now the official national authority. To repudiate it means a loss of face.

I continue to be bewildered. But I also hope that the impetus from Ramsey in NSW and the Auditor General in Victoria and bear fruit for teacher workforce planning. The National Review of Nurse Education is due to release a discussion paper in December 2001. There have been workshops, submissions and other activities related to the review looking at workforce planning issues. Since the apparently blind faith in simple projections in the 1970s there has been an official (and academic) scepticism about the value of supply and demand projections. Yet, thorough, well-researched and methodologically defensible projections must be better than a glance out the window at the present. Perhaps 2002 is the year that such projections might be developed **and** put to use.

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References

- Auditor General Victoria (J.W.Cameron) (2001), *Teacher work force planning*. Victorian Government, Melbourne. http://home.vicnet.net.au/~vicaud1/par73_twfp/aggp73brf.htm
- Australian Education Union (2001), *Teacher Supply and Demand in the States and Territories* Prepared by AEU Branches/Associated Bodies Research Officers, January. Melbourne: AEU
- Australian Secondary Principals Association (2001) Report of Representative Task Force on *Teacher Supply*, and Policy Paper, *Teachers: Supply and Demand in Australian Public Schools*. <http://www.aspa.asn.au/>
- Bartholomew, D. J, & Forbes, A. F. (1979) *Statistical Techniques for Manpower Planning*. Chichester, UK: John Wiley & Sons
- Bennett, Margaret (Chair) (2001) *Victorian Nurse recruitment and Retention Committee: Final Report*. Victorian Department of Human Services, Melbourne. <http://nursing.health.vic.gov.au/recruit.pdf>
- Birrell, Bob, et al (2001) 'Skilled Labour: Gains and Losses'. A paper prepared by the Monash Centre for Population and Urban Research recent report for the Department of Immigration and Multicultural Affairs (DIMA). (<http://www.dima.gov.au/research/publications/skilledlab/index.htm>).
- Conference of Education System Chief Executive Officers, National Teacher Supply and Demand Working Party (CESCEO) (1998) 'Draft School Teacher Demand and Supply: Primary and Secondary', July 1998, publicly released and distributed by the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA), Melbourne, in May 1999. <http://www.curriculum.edu.au/mceetya/public/pub342.htm>
- Johnson, Dick & Preston, Barbara (2001) *An overview of issues in nurse education*. Report 01/12, Evaluations and Investigations Programme, Higher Education Division, DETYA. Canberra, DETYA. http://www.detya.gov.au/highered/eippubs/eip01_12/fullreport.htm
- Karmel, Tom (2000) Address to *Rethinking Nursing: National Workforce Forum*, held in Canberra in September 1999. <http://www.health.gov.au/workforce/nursing/pdfcover/nnwfcov.htm>
- Preston, B. (1996) 'Professional practice in school teaching', in *Australian Journal of Education*, vol. 40, no. 3, pp. 248 – 264.
- Preston, B. (1997) *Teacher supply and demand to 2003: Projections implications and issues*. Canberra: Australian Council of Deans of Education
- Preston, B. (1998) *Teacher supply and demand to 2004: 1998 updated projections*. Canberra: Australian Council of Deans of Education

Preston, B. (1999) 'Seeking reality, equity and quality in the future teaching labour market'. Notes for an address to the Australian Council of Deans Annual Conference, Canberra, 20 September 1999

Preston, B. (2000) *Teacher supply and demand to 2005: Projections and context*. Canberra: Australian Council of Deans of Education

Preston, B. (2001) 'Workforce needs to 2010', in Kerry J. Kennedy (ed.), *Beyond the Rhetoric: Building a teaching profession to support quality teaching*. Australian College of Education Year Book 2001. Canberra, ACE

Ramsey, G (2000) *Quality Matters. Revitalising teaching: Critical times, critical choices*. Report of the Review of Teacher Education, New South Wales. NSW Department of Education and Training, Sydney.