

Submission No 25

DEPARTMENT OF EDUCATION, TRAINING AND YOUTH AFFAIRS

SUBMISSION TO

**THE JOINT STANDING COMMITTEE
ON FOREIGN AFFAIRS, DEFENCE AND TRADE
INQUIRY ON**

Enterprising Australia – planning, preparing and profiting from trade and investment

July 2001

Introduction

The inquiry into *Enterprising Australia – planning, preparing and profiting from trade and investment* by the Trade Sub-Committee of the Joint Standing Committee on Foreign Affairs, Defence and Trade is examining the role of a number of factors on trade and investment and how to maximise opportunities for increased investment and export sales. Two of the matters it is examining are of direct relevance to the portfolio responsibilities of the Department of Education, Training and Youth Affairs (DETYA). They are:

- Term of Reference 5 – “the adequacy of a skilled workforce in Australia particularly in new growth areas, such as, though not limited to financial services, information technology, E-business, education, pharmaceuticals and health care, and the competitiveness of that workforce”; and
- Term of Reference 6 – “opportunities for encouraging inward investment and promoting export sales”. The latter is relevant to DETYA’s interests in the export of Australia’s education services.

The supply of skills and the quality of Australia’s skill base relies to a considerable degree on the output and performance of the Australian education and training system. A key objective of Commonwealth education and training policy is to ensure that the education and training system is efficient and responsive to industry as well to the needs of individuals and of the community. DETYA also assists the education and training sector to become more export oriented.

The submission comprises 6 sections. Section 1 discusses the role and relative importance of skills in supporting international competitiveness, concluding that a highly skilled workforce and a flexible and responsive education and training system are central to achieving and maintaining competitiveness. Sections 2 and 3 then examine the extent to which these two conditions are satisfied in Australia, and initiatives that the Government has taken to ensure that they are. As an example of the Government’s strategy for ensuring that industry’s skill needs are met, section 4 discusses in detail the strategy adopted to address the requirements for Information Technology and Telecommunications (IT&T) skills. Section 5 provides an analysis of the competitiveness of one particular industry, education services, focusing particularly on the opportunities and impediments to what has already been a fast growing industry. Section 6 provides a summary and conclusions.

1 The importance of skills in supporting international competitiveness

What determines a country's comparative advantage and competitiveness has been the subject of many studies. One of the most useful expositions is to be found in the report *Investing for Growth* released in 1997. This report set out the Government's plan for strengthening economic and investment growth in Australia, and for making the economic environment in which business operates more conducive to growth. In doing so, it identified the key policy determinants of business success, domestically and internationally:

- sustaining low inflation and low interest rates, through sound monetary and fiscal policies. Appropriate macroeconomic settings are crucial, as high inflation and interest rates force up wages and other costs, causing industry to become less competitive;
- implementing a range of complementary microeconomic reforms and policies designed to reduce the costs to industry of inputs and services. Areas which were identified as requiring attention because of their importance to business competitiveness included taxation and industrial relations, transportation and communication infrastructure, and education and training; and
- encouraging innovation as a major source of competitive advantage, boosting industry investment through incentives, and improving Australia's access to overseas markets through multilateral, regional and bilateral arrangements in order to reduce tariff and other barriers to Australian products in international markets and services.

The report acknowledged that maintaining and improving industry competitiveness required integrated action on each of these fronts to ensure that Australia has the best possible environment and conditions for business to trade in. In this framework, education and training and workforce skills are recognised as very important contributors to competitiveness though they are not capable of guaranteeing industry competitiveness on their own.

This is consistent with studies from the OECD, which confirm that knowledge and skills are central to economic growth at the national and industry level (OECD 1994). Other studies, especially from the UK, have also highlighted the importance of an adequate supply of skilled workers in enhancing productivity (Mason et al 1997) and maintaining good export performance (e.g. Oulten 1997).

The processes through which skills play such a critical role are many. First, skills are required to develop, implement, maintain, adapt and use new technology and without appropriate skills, the full potential of the new technologies are not attained. Second, more highly skilled workers may be more flexible and may adapt to changes in technology, products and materials more quickly than less skilled staff. Third, skilled staff are a source of innovation. Arguably, these benefits of higher levels of skill are becoming more evident in the so-called knowledge economy.

Against this background, the remainder of this submission examines the extent to which the education and training system has been successful in ensuring that Australia has a skilled workforce which can assist industry to compete effectively in international markets. In particular, it demonstrates that the Australian workforce is already quite highly skilled and is

becoming more skilled over time, and that the education and training system is both flexible and responsive to changes in the demand for skills. This helps to ensure that, in general, any skill shortages that develop are addressed and industry skill needs are met.

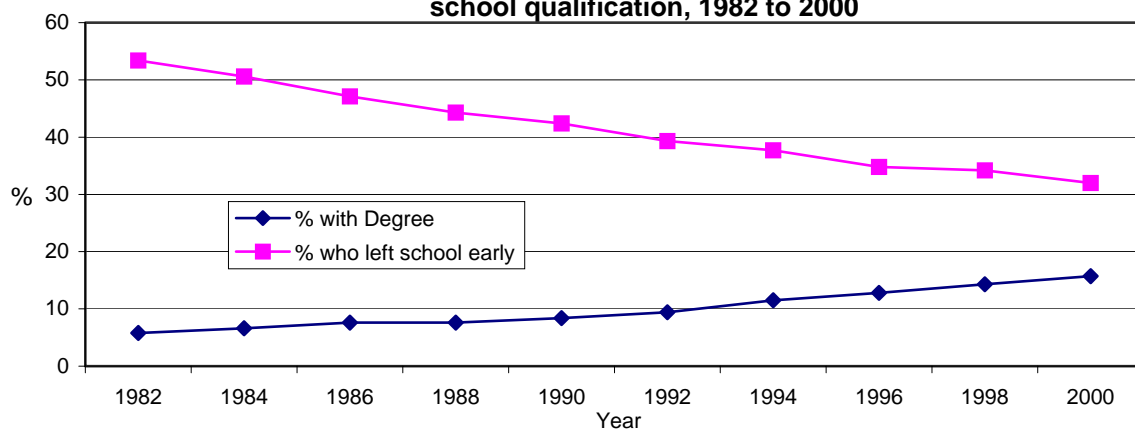
2 The skill level of the Australian workforce

Educational attainment, skills and productivity of the Australian workforce

The Australian workforce is now better educated than ever before. As Chart 1 indicates, during the last twenty years there has been a significant increase in the proportion of the population with university degrees (from 5.8 per cent in 1982 to 15.7 per cent in 2000) and a considerable decrease in the proportion of those who did not complete Year 12 and did not attain any subsequent post-school qualification (from 53.4 per cent in 1982 to 32.0 per cent in 2000)¹.

The educational attainment of the younger cohorts is higher than the average. For instance, among 25-34 year olds, 18.6 per cent hold a degree or higher qualification and 26.5 per cent have not completed Year 12 or a post-school qualification. The higher educational attainment of younger workers combined with retirement of older workers with lesser educational attainment is gradually raising the educational attainment of the working age population².

Chart 1: Percentage of the Australian population aged 15-64 with degrees and percentage who did not complete Year 12 and did not gain a post-school qualification, 1982 to 2000



Source: DETYA analysis of ABS data, especially Cat. No. 6235.0 and 6227.0

¹ DETYA analysis of ABS data, especially *Labour Force Status and Educational Attainment* (Cat No 6235.0) and *Transition from Education to Work* (Cat No 6227.0) .

² Not all education and training is reflected in higher educational attainment, however. In the VET area in particular, large numbers of persons intentionally complete modules of courses but not the full course, which means that they do not get the recognition for their studies in surveys of educational attainment (which is based on qualifications achieved). In addition, education attainment does not aim to capture the extent of skill development that occurs after completion of a qualification through short courses and other forms of skill acquisition, generally within the workplace. In 1997 (latest available data), for instance, around 62 per cent of training courses completed in the previous 12 months were in-house courses and 34 per cent of employees had participated in structured training. This type of training is important in terms of deepening, upgrading and renewing the skills of the workforce, including of those who already have qualifications.

The growth in skill level of the population (as measured by educational attainment) has supported the shift in the distribution of jobs in the economy towards the higher skilled end. In the past decade professional jobs increased their share of all jobs. This outweighed the decline in the share held by trades and advanced clerical occupations, so that overall there was a small increase in the proportion of jobs at the skilled end (see Chart 2). In line with the long term decline in jobs in the lowest occupational categories (such as labourers and production workers), their share declined during the 1990s. These trends are broadly in line with projections made in DEETYA (1995), which concluded that more than a third of new jobs in the future would be in the professional and skilled trade areas.



Source: Centre for Policy Studies, Monash University

Not only has the Australian workforce become more educated and skilled in the past decade, it has also become more productive. Australia's labour productivity rose by an average of 2.4 per cent a year during the 1990s economic expansion. As noted by the Reserve Bank, this productivity growth was higher than in earlier expansions.³

Participation in education and training

The increase in the educational attainment of the Australian workforce reflects the dramatic rise in participation in education and training of the last twenty years. The key features have been the strong rise in completion of Year 12 and an equally impressive increase in post-school participation.

School retention rates to the end of Year 12 increased from 34.5 per cent in 1980 to 72.3 per cent in 1999, after reaching a high point of 77.1 per cent at the height of the 1992 recession. Retention rates have been higher for females than for males for most of the 1980s and 1990s. This reflects in part the fact that many males leave school to undertake an apprenticeship or TAFE qualification.

Some 60 per cent of all school leavers now proceed immediately to further education and training⁴. In fact, the expansion of educational opportunities as a result of Government policy

³ Australian National Training Authority, *Annual National Report, 1999, Volume 3 – National Vocational Education and Training Performance*, p.59, quoting from the *Reserve Bank Bulletin*, November 1999

⁴ ABS *Transition from Education to Work, Australia* (Cat No 6227.0) May 2000.

has been such that access to some form of post-school education and training is now almost universal⁵. This has particularly benefited young people preparing for the labour market. DETYA has estimated that a young person today has almost a 90 per cent chance of undertaking post-secondary education at some point in their lifetime (DETYA 2000 a).

A number of indicators reflect this development:

- the proportion of 15-19 year olds attending full-time education increased from 56.3 per cent in 1990 to 67.5 per cent in 2000. Similarly, the proportion of 20-24 year olds in full-time education increased from 11.7 per cent to 19.8 per cent over the same period;
- in the 10 years to 1999, commencements by Australian students in bachelor level courses increased by 49 per cent and in post-graduate courses by 66 per cent. This reflects the evolution of the higher education system as a mass form of education in Australia. DETYA estimates that around half of all current school students will commence a higher education course sometime in their life, generally before the age of 25 (DETYA 2000);
- growth in education participation through schools and at university has been complemented by a significant increase in participation in vocational education and training (VET). In 2000 VET providers in receipt of public funds delivered programmes to almost 1.7 million students, or 13.2 per cent of Australia's 15-64 year old population. This is up from almost 8 per cent in 1991. The vast majority of VET students (91 per cent) in 2000 were part-time and around 40 per cent undertook a Certificate III or higher level qualification.

Apprenticeships and traineeships are a major part of the VET system. Following the decline in apprenticeship and traineeship numbers during the recession of the early 1990s, since 1995 there has been a very strong recovery. Between 1995 and 1999 apprentices and trainees in training expanded by 31 per cent a year. Total New Apprentices at the end of 2000 were of the order of 300,000⁶, which is the highest level ever. Growth has been especially strong since the introduction of New Apprenticeships in 1998 and the associated with a broadening of the occupational base apprentice style training beyond the traditional skilled trades. Australia's apprenticeship and traineeship system, when compared to the size of the working age population, now ranks fourth in the world, behind Switzerland, Germany and Austria. In particular, Australia is a world leader in terms of its coverage of adult apprentices (NCVER 2001).

The increase in education participation in the last decade has not been restricted only to young people. An important feature of education and training in Australia is the strong presence of adult and mature workers in the VET and higher education system. In higher education, for example, those over the age of 25 comprised just under 25 per cent of all students commencing degree level courses and over 80 per cent of those commencing post-graduate qualifications. In fact, 60 per cent of all post-graduate students start their course at the age of 30 or older.

In the VET sector, those aged 25 and over represent the majority of students. In 2000 young people (15 to 24 year olds) comprised 37.7 per cent of the students; those aged 25 to 39 year olds made up 31.6 per cent of all students; and those aged 40 to 64 years 28.2 per cent⁷. New Apprenticeships too are increasingly providing training opportunities for mature workers. In

⁵ DETYA Annual Report 1999-2000, p 15.

⁶ NCVER *Australian Apprenticeships – research at a glance* 2001.

⁷ NCVER *1.7 million Australians participate in training* Media release, 3 July 2001.

1995, 7 per cent of all apprentices and trainees in training were aged 25 and over but by 2000 this proportion had risen to almost a third. NCVER (2001)⁸ notes that the opening up of the apprenticeship system to older workers has been an important contribution to lifelong learning in Australia and to the improvement in the educational attainment of the workforce.

The growth in New Apprenticeships for older workers has not been at the expense of opportunities for young people. In 2000, 7.5 per cent of all 15-19 year olds participated in New Apprenticeships, up from 5.7 per cent in 1995. Participation of 20-24 year olds increased from 3.7 per cent in 1995 to 6.3 per cent in 2000. Currently, 43 per cent of all teenagers in full-time work are in a new apprenticeship, compared to 31 per cent in 1995.

Australia's workforce in an international perspective

While Australia's workforce skills have improved and continue to improve, the key question is how they compare with those in other countries. While this is a complex issue, there are a number of indicators against which a useful comparison can be made.

Keeping in mind the limitations of educational attainment as a measure of skill of the workforce and the difficulty of constructing comparable measures of attainment given the differences between national education and training systems, OECD data nonetheless provide a basis for international comparisons against this indicator. These data indicate that Australia compares very favourably in terms of the proportion of the population with university-level qualifications. In 1999, for example, around 18 per cent of Australians aged 25-64 held a university degree, well above the OECD average and the 6th highest in the OECD⁹.

However, Australia compares less well in terms of the proportion of the population with lower level (below degree) qualifications. As a result, the percentage of Australians aged 25-64 with at least upper secondary qualifications is below the OECD average. This reflects in part the lower level of attainment among older people. Given the rapid growth in educational participation among Australians at the younger ages, the overall level of educational attainment of the population will increase steadily over time.

In this context it is worth noting that in terms of the expected time that an individual can expect to spend in education over his or her lifetime on average, Australia ranks second to Sweden among OECD countries.¹⁰

Overall, Australia's education and training system is recognised as a source of competitive advantage. For example, every year the influential World Competitiveness Yearbook publishes country rankings of overall competitiveness and of individual factors, such as the skill base of the workforce, which contribute to competitiveness. The latest report shows that in 1999 Australia ranked particularly highly on measures of skill and the quality of our education system. For instance, Australia was ranked 1st amongst countries surveyed on availability of finance skills, 2nd on skilled labour, 3rd on availability of IT skills, 3rd on higher education enrolments, 5th on university education, 5th on pupil teacher ratios and 6th on the education system¹¹.

⁸ NCVER *Australian Apprenticeships – research at a glance* 2001.

⁹ OECD (2001 a) Table A2.2b page 46.

¹⁰ OECD (2001 a) Table C1.1 page 133.

¹¹ IMD International, *The World Competitiveness Yearbook*, 1999, p. 73

3 The responsiveness of the education and training system to the changing demand for skills

Skill requirements within the economy change over time because of fluctuations in economic activity (cyclical impacts) and because of structural factors, such as developments in technology, changed patterns of demand, emergence of new industries, and international economic conditions (such as globalisation). The education and training system needs to be flexible enough to adapt to these changing needs and respond quickly and effectively to meet them. Without this flexibility, there can be skill mismatches and skill shortages which, if they are long lasting, can have a detrimental impact on the capacity of industry to grow and compete internationally.

How does the Australian education and training system stack up in terms of flexibility and responsiveness? One way to address this question is to examine how effective the education and training system has been in ensuring that the supply of skills meets demand, in ensuring that workers can upgrade and renew skills, in averting skill shortages and in responding to skill shortages when they emerge in the labour market.

In broad terms, the demand and supply of skills in Australia in the last decade have been in balance. This was the conclusion of a recent paper from the Reserve Bank of Australia (Vickery 1999). The paper found that, at an aggregate level, while there had been a marked increase in the demand for skilled labour in Australia in the period since the downturn of the early 1990s, the supply of labour had kept pace with this shift in demand. This has helped to avert shortages in the economy or to ensure that they did not last long when they did arise.

In addition, the system has been able to ensure the ongoing skilling of the workforce through structured and informal work related training. DETYA (2000 b)¹², for instance, found that participation in both formal and informal work related training increased significantly (from 30 to 35 per cent of employees) between 1989 (when data on training started to be collected) and 1997 (the latest year for which comparable information is available). Importantly, the increase in participation was greater for formal training than for informal training, suggesting a potential improvement in the quality as well as quantity of training. Furthermore, participation seems to have become more equitable with the incidence of formal training increasing the most for workers in the lower skill occupations, such as labourers and plant and machine operators, and for those in casual and part-time jobs (DETYA 2000 b).

Reforms to Australia's education and training system over the last decade have contributed significantly to increasing its flexibility and its ability to respond to industry and student needs. These have included measures to make providers more responsive to student and industry demands (such as User Choice) and enhancements to the incentives to train through more flexible wage structures. Reforms were particularly profound in the VET system, with the objective of making middle skill level training competency-based and flexible in delivery. Currently, VET qualifications can be obtained through a variety of pathways, combining both institutional and workplace learning, through a wider range of providers. Major reform has also occurred in the school and higher education sectors.

¹² DETYA *Factors influencing participation in post-secondary education and training in Australia: 1989 to 1997* Research and Evaluation Branch, REB Report 7/2000, July 2000 (and unpublished data from the authors).

Other mechanisms for ensuring that Australia's training system remains relevant to industry needs include the National Industry Skills Initiative and the Industry Training Advisory Board (ITAB) network, funded by the Australian National Training Authority (ANTA), and the Action Agenda, administered by the Department of Industry, Science and Resources (DISR).

The National Industry Skills Initiative was established by the Minister for Education, Training and Youth Affairs, Dr David Kemp, in late 1999. The Initiative is an industry led, Government supported partnership, designed to strengthen the competitive and economic base of industry by addressing current and emerging industry skill needs. This Initiative seeks to encourage selected industries and peak bodies to examine and address the impacts of changes on industry skills, employment and training needs; assist industry to develop responses to key training related issues and challenges; and improve understanding of industry skill needs and issues through cross portfolio and industry consultation and support. To date, the engineering, electro-technology, retail motor, building and construction, rural and food trades industries have participated in this Initiative.

ITABs provide governments at State and Federal level with advice from industry about training needs and develop industry training plans. ITABs also aim to initiate, stimulate and co-ordinate VET which will assist their industry to become and remain internationally competitive. Currently national ITABs recognised and funded by ANTA provide almost full coverage of industry sectors in Australia. In recent times the ITABs have made considerable effort to develop and maintain the currency of Training Packages to meet the skill needs of industry. To date, over 60 Training Packages have been endorsed.

In 1997 the Government announced the Action Agenda program in the industry statement *Investing for Growth*. The Action Agenda process, administered by the Department of Industry, Science and Resources, enables industry and government to work together to strengthen the capacity of industries to compete globally. Some of the Action Agendas are identifying training and skill development issues which require attention, including those relating to the development of Training Packages. Such recommendations are then referred to the ITABs for consideration and/or action.

While the supply of and demand for skills and qualifications have been broadly in equilibrium at the aggregate level over the last decade, a small number of shortages have persisted for lengthy periods. In February 2001, for example, the DEWRSB National Skill Shortage list contained the following occupations: child care co-ordinators and workers, accountants, lawyers (some specialisations), registered nurses (various specialisations), several health professionals, Information and Communication Technology (ICT) professionals (in several specialisations), secondary school teachers (some specialisations), several trades (including metal fitters and machinists, chefs and cooks, cabinet makers, hairdressers and furniture upholsterers).

There are a number of reasons why shortages in these areas have persisted, and these vary by occupation. They include the speed and size of the increase in skill demand, the lack of good information on future demand for skills to guide education and training providers, the long training period for the professional and trade occupations (3 years or so) and inadequate numbers of people willing to train, for a variety of reasons (such as uncompetitive wages and conditions). Because of factors like these, even a flexible and responsive education and training system would be unable to reduce skill shortages quickly. In these circumstances, the Government has intervened in a variety of ways to tackle the skill shortages and ensure an adequate supply of skills to support the continuing growth of the Australian economy.

The Government's intervention has been on the basis that ownership and leadership of the process of finding appropriate solutions need to reside with industry, as industry is best placed to devise solutions which best suit its circumstances. The Government sees its own role as an active partner, supporting industry to identify skill problems and solutions, and assisting it to make effective use of the education and training system and of existing Government programmes. The Government has applied this principle in its interventions in the trades, through the National Industry Skills Initiative, as discussed earlier. It is following much the same approach in the case of shortages for nursing and IT&T skills.

A National Review of Nursing Education was announced by Government in April 2001 following continuing concerns within the community about shortages of nurses. The review will examine a broad range of issues, and particularly the effectiveness of current arrangements for the education and training of nurses encompassing enrolled, registered and specialist nurses; factors in the labour market that affect the employment of nurses and the choice of nursing as an occupation; and the key factors governing the demand for, and supply of nursing education and training. The review is due to report early in 2002.

The Government's strategy for addressing the IT&T skill shortage has evolved over time. It is discussed in detail in the next section. This discussion also serves to illustrate the Government's general approach in dealing with persistent skill shortages.

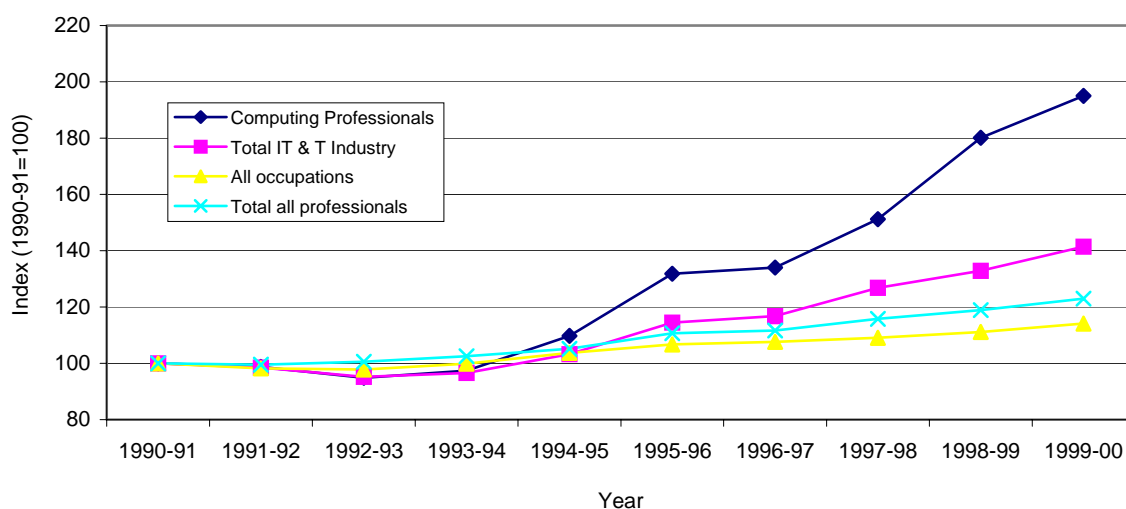
4 A case study in responding to skill shortages - Information Technology and Telecommunications (IT&T) skills

A recent report from the Economist Intelligence Unit-Pyramid Research puts Australia second only to the US in terms of “e-readiness”, where e-readiness is shorthand for the extent to which a country’s business environment is conducive to Internet-based commercial opportunities. It is a concept that spans a wide range of factors, from the sophistication of the telecoms infrastructure to the security of credit-card transactions and the literacy of the population (EIU 2001). Australia’s high ranking in this area can be attributed in large part to the way the education and training system has responded and the other initiatives taken by Government to maximise the availability of IT&T skills to industry, as discussed in this sub-section.

IT&T employment trends and shortages

The last decade has seen very strong growth in employment in major IT&T occupations¹³, as shown in Chart 3. Between 1990-91 and 1999-00, employment in the occupations identified above rose by 4.1 per cent a year (compared to 2.1 per cent for all professional occupations), to over 300,000 people. Engineering technologists (9.1 per cent a year) and computing professionals (7.6 per cent a year) have been the fastest growing. Although there are difficulties in international comparisons of data on occupations, especially in this area, growth rates during the last decade in the employment of IT&T skills in Australia have been of a similar magnitude to those in countries like the USA, Canada and the UK.

Chart 3: Employment growth for Computing Professionals, Total IT&T Industry, All Occupations and All Professionals, Australia, 1990-91 to 1999-00



Source: Centre of Policy Studies, Monash University

¹³ An Inter-Departmental Committee on IT&T Skill Shortages (which included DETYA) decided that the main occupations in the Australian Standard Classification of Occupations (ASCO) which pertained to IT&T were:- Information Technology Managers (6 per cent of August 2000 IT&T occupations employment); Electrical & Electronics Engineers (8 per cent); Engineering Technologists (0.4 per cent); Technical Sales Representatives (11 per cent); Computing Professionals (45 per cent); Electrical Engineering Associate Professionals (4 per cent); Computing Support Technicians (5 per cent); Electronic/Office Equipment Tradespersons (11 per cent); Communications Tradespersons (9 per cent).

Rapid growth in IT&T employment is expected to continue, perhaps at around 8 per cent during 2002 which is similar to growth rates in recent years.

Shortages of IT&T skills

The IT Skills Hub survey confirmed that there are a number of job specialisations for which employers have had difficulty recruiting staff. The most hard-to-fill jobs have been educators and trainers, followed by marketing specialists and project and other types of managers. Hard-to-fill vacancies in December 2000 represented around 5 per cent of all core IT&T positions or around 9,000 positions.

The strongest demand growth in the next two years is expected to be for hardware developers and project managers, system administrators, IT&T managers, technical advisers and consultants. Most of these new jobs will require a university degree and some work experience.

The IT Skills Hub survey also estimated that 18,400 additional university qualified staff would be needed in 2001 and 2002, and around 2,600 VET qualified people to satisfy the requirements for IT&T skills. A further 6,500 will require only private provider or in-house qualifications. Using these data, and taking into account a range of sources of supply, the IT&T Skills Hub estimated a shortfall or skills gap in 2002 of 7,000-8,000 university qualified personnel. The report found no gap for VET qualifications.

DETYA has some reservations about the conclusions on the size and nature of the skills gap. These are based on the fact that employers in the survey are likely to have overstated their preference for university trained personnel (and correspondingly understated their need for VET qualifications) and the likelihood of a higher supply response from the education and training system and immigration. This notwithstanding, it does appear that the skills gap is concentrated mainly at the university-trained end of the skill spectrum, and at the upper end of the VET scale.

The Government's strategy for overcoming the IT&T skills shortage and skills gap

The solution to the skills gap is to increase the supply of IT&T professionals from both domestic and overseas sources; and update and upgrade IT&T skills of existing workers so that they can move into areas which are in higher demand.

In line with this principle, the Government's strategy to address the skills shortages includes:

- enabling higher education and the VET system to continue to create more places;
- facilitating the entry into Australia of suitably qualified migrants, especially those who have completed their qualifications in this country;
- ensuring that New Apprentices contribute effectively to the supply of middle level skills in IT&T; and
- improving information about demand and supply of skills, encouraging upgrading and re-training, ensuring the availability of training programmes to meet the needs of employers (especially small business) and individuals, and promoting IT&T training and careers among potential employees.

The strategy has been developed over time by DETYA, the National Office of the Information Economy (NOIE), the Department of Immigration and Multicultural Affairs (DIMA) and the Department of Employment, Workplace Relations and Small Business (DEWRSB) in close consultation with industry. Discussion on the various elements of the strategy follow.

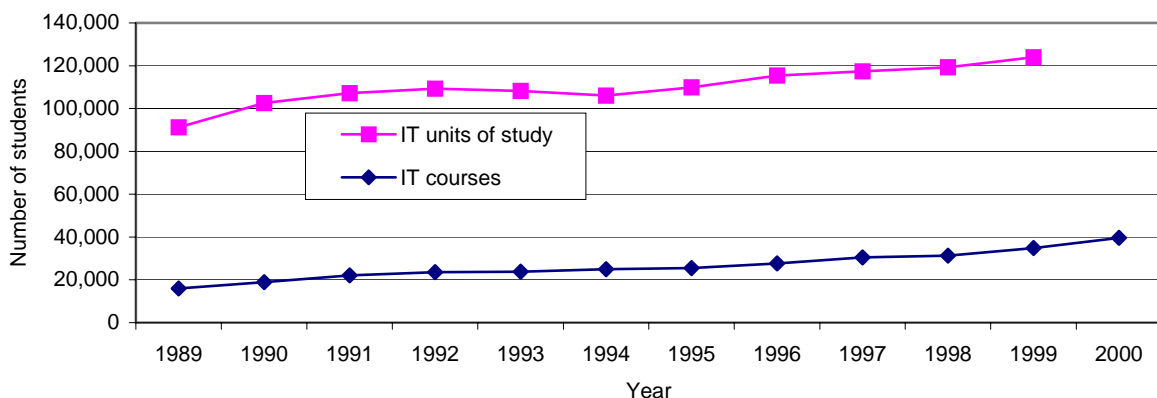
Increasing supply from the education and training system

Universities

In the last ten years, non-overseas commencements in university IT&T courses increased by 92%, with a 27% increase in the last two years. In 2000 close to 40,000 domestic students were enrolled in IT&T courses, of which over 16,000 were new commencements¹⁴ (Chart 4).

This strong response from the university sector will be enhanced by the announcement in the Innovation Statement that an additional 2,000 places would be provided from the 2002 academic year in priority areas like IT&T, mathematics and science. This provision should go a long way towards meeting unmet demand of around 2,200 for university IT&T courses as reported in DETYA (2001).

Chart 4: Domestic enrolments in IT&T courses and units of study, Australia, 1989 to 1999



Source: DETYA Higher Education Division, University Statistics, January 2000

Some graduates from other fields, who have studied some units of IT&T as part of their courses, can move into IT&T professions. The number of students enrolled in one or more units of IT&T has been roughly 4 times as large as the number studying full IT&T courses¹⁵ (see Chart 4). In 1999, these students came mainly from the business, administration and economics fields of study (34 per cent), science (31 per cent) and engineering and surveying (15 per cent). DETYA estimates that in recent times some 1,200 non-IT&T graduates a year shift into IT&T, but the potential for this to increase could be substantial.

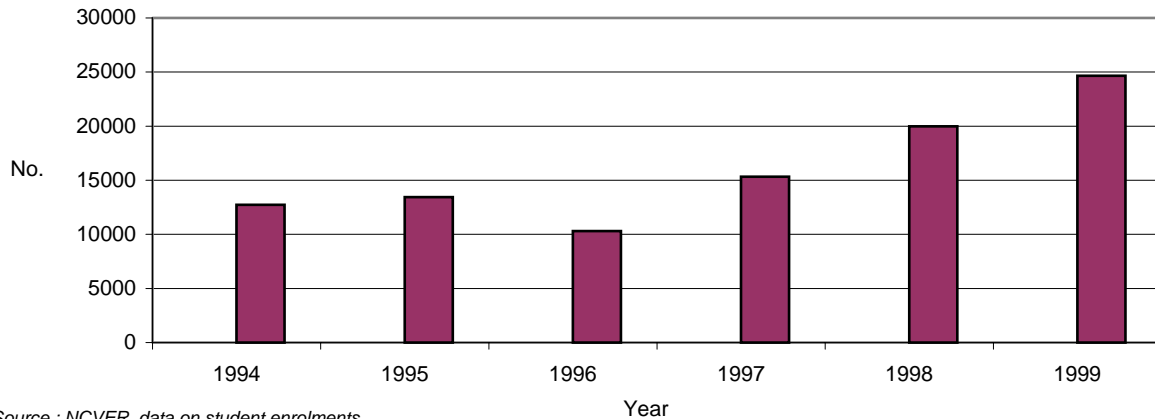
¹⁴ The following fields of study were used to identify whether a student was enrolled in an IT&T course: electronic engineering, computer engineering; computer science, information systems – general; computer science, information systems – other; computer science; and information systems.

¹⁵ The following discipline codes were used to identify students who were enrolled in some IT&T units: computer based information sciences; computer science; other mathematics, computing; electrical, electronic, computer, communications engineering.

Vocational education and training

Chart 5 indicates that from 1994, the earliest date from which consistent data are available, to 1999, VET enrolments in semi-professional IT&T¹⁶ courses rose from 12,728 to 24,667, an increase of 93.8 per cent.

**Chart 5: Number of persons enrolled - VET Certificate IV and above
(semi professional courses), Australia, 1994 - 1999**



Source : NCVET data on student enrolments, unpublished (2001)

The Commonwealth is also providing the States and Territories growth funding of \$230m over 3 years under the *Australian National Training Authority (ANTA) Agreement for 2001 to 2003*. States and Territories will be required to provide additional VET places, including New Apprenticeships, and produce annual Innovation Strategies. The development of the IT&T Training Packages will help to ensure that training programmes for New Apprenticeships and other VET qualifications are aligned to industry needs.

Enhancing supply from immigration

The Government has changed the immigration rules to enable overseas students studying in Australia to work here immediately after completing their qualifications. Under these arrangements, overseas students graduating from an Australian university who apply for migration within 6 months of completing their qualification are exempt from the three-year work experience requirement, which is a threshold requirement for all other applicants. As from July 2001 overseas students will be able to apply on-shore. In addition, applicants who have qualifications in an occupation that is in demand, such as IT&T, which is on the Migration Occupations in Demand List (MODL), gain extra points.

These arrangements would be expected to greatly facilitate the retention of overseas students with IT&T qualifications in Australia. The number of overseas students has grown strongly from a low base 10 years ago, so that currently they represent around 32 per cent of all IT&T course commencements. This is a potentially significant boost to local supply of IT&T skills.

¹⁶ These courses are at the Australian Qualifications Framework (AQF) Certificate IV and above.

As a result of these changes, in 1999-00 there were 2,300 more people classifying themselves as computer professionals entering Australia than leaving. This was up from around 1,400 in the previous year¹⁷. Australia's success in retaining and attracting a growing number of migrant IT&T professionals comes despite the strong competition from other advanced economies, all of whom have used immigration as an important feature of their IT&T strategy.

The IT Skills Hub

The Commonwealth has provided \$5m seed funding (which is being matched by industry) to assist in the setting up of the industry-driven IT Skills Hub. The Hub's principal objectives are to improve information about demand and supply of IT&T skills; assist small business to access appropriate training and, where necessary, to develop appropriate training programmes, including for upgrading and retraining; and promoting IT&T training to firms and individuals, especially those currently under-represented in IT&T (such as young women), and those seeking a shift into IT&T.

In pursuit of its objectives, the Hub is assisted by an Advisory Council with representation from all the stakeholders, including industry, education and training providers, small business and regional Australia. The Hub will have offices or agents in each capital city and a physical presence in key regions.

Key tasks completed by the Hub so far have been the conduct of the survey of employers to assess future requirements for IT&T skills, and the establishment of its web site. The web site will operate, among other things, as a source of information for employers, training providers and individuals.

An important role of the IT Skills Hub is to ensure that attention is given by industry and training providers to ensuring that the type of skills available, as well as their quantity, meet industry needs. This should be facilitated with the information contained in the survey report from the Hub. Achieving this will require closer collaboration between education providers, industry and the IT&T Skills Hub to ensure that training programmes are relevant to industry requirements, and that there is good take-up of these courses to ensure currency of worker skills.

Summary

The Government's strategy for dealing with IT&T skill shortages has, by a range of measures, been successful thus far. The supply of skills through the education and training system and immigration has grown particularly strongly over the last couple of years. Currently the rate of growth of supply of IT&T skills is exceeding that of demand, so that the skills gap should continue to narrow over time. However, it could take some time for the skills gap to disappear if demand for IT&T skills continues to grow at a strong pace.

¹⁷ Other sources of supply include: persons moving into the computing profession occupation from other occupations; graduates of longer courses in the private provider sector; employees upgrading through industry, on-the-job or in-house training. There is little information currently on these other sources of supply, although all indications point to them having been significant. This is due to the fact that historically a significant proportion of persons working as computing professionals have not had university training.

5 Export of Education Services and the scope for growth

Overview - Australia's education export industry

International education is Australia's third largest service export industry. Overseas students contributed \$3.1 billion to the Australian economy in 1999, and approximately \$3.7 billion in 2000. More than 188,000 overseas students studied in Australian education institutions in 2000, continuing the growth experienced in the industry since 1993, when approximately 102,000 overseas students were enrolled in our education institutions.

New South Wales was the top destination for overseas students in 2000, with 38 per cent of all onshore overseas students in Australia, followed by Victoria (28 per cent), Queensland (16 per cent), Western Australia (11 per cent) and South Australia (4 per cent), the ACT (2 per cent), Tasmania (1 per cent) and the Northern Territory (0.3 per cent) and Multi-state institutions (0.1 per cent).

Overseas student numbers from Australia's top ten source countries for the period 1998-2000 are shown in Table 1. In 2000, there was very strong growth in overseas student numbers from China, and strong growth in Thailand and Malaysia. South Korea has rebounded following the Asian economic downturn. However, Indonesia, our largest provider of students in 1999, contracted by approximately 5 per cent in 2000.

Growth is being driven largely by the higher education sector which increased 19 per cent (for both offshore and onshore delivery) in 2000. The English Language Intensive Course for Overseas Students (ELICOS) sector is estimated to have grown by 26 per cent in 2000, while international students in the vocational education and schools sectors are stable (up 4 per cent and down 4 per cent respectively).

Table 1: Student Numbers, from Top 10 Source Countries, 1998 to 2000

Country	1998 Actual	1999 Actual	2000 Prelim	% Change 1998 to 1999	% Change 1999 to 2000
China	5,168	8,717	13,697	69	57
Hong Kong	17,135	17,727	19,604	3	11
India	7,951	9,362	11,280	18	20
Indonesia	17,462	18,748	17,890	7	-5
Japan	10,762	9,825	9,824	-9	0
Korea (South)	11,153	9,547	11,556	-14	21
Malaysia	15,664	15,887	18,550	1	17
Singapore	15,596	17,972	19,682	15	10
Taiwan	6,411	5,885	5,797	-8	-1
Thailand	6,194	6,569	7,741	6	18
Vietnam	3,830	3,782	3,916	-1	4

Source: Overseas Student Statistics, 1999 and 2000 (preliminary)

Note: Data in the table above relates only to students who were studying on a student visa or studying at an Australian institution offshore. It does not include overseas visitors who undertook a short course of study while travelling on visitor visas.

Overseas students in Australia study mainly in the field of *Business, Administration and Economics*, (comprising 52 per cent of higher education enrolments and 58 per cent of vocational education and training enrolments in 2000) and *Computer Science*, (11 per cent of higher education enrolments and 21 per cent of vocational education and training enrolments in 2000).

Growth in demand for Australia's education exports is expected to continue for the foreseeable future due to demographic pressures within our region, student demand for courses in the English speaking world, and the desire of regional governments to develop a skilled workforce quickly, despite constraints on their own provision of education services. Strong growth is expected to continue in China, and significant growth is expected for many other countries in our region. Growth is also expected in emerging markets in Europe, the Middle East and South America.

Strengthening Australia's education export industry is underpinned by three recent government initiatives. The *Education Services for Overseas Students (ESOS) Act 2000*, which focuses on the regulation of the education and training export industry, provides quality assurance and tuition and financial assurance for overseas students. The Australian Universities Quality Agency (AUQA) will audit the quality of teaching, learning, research and administration in all Australian universities, both in Australia and offshore, as part of the quality assurance framework for Australian universities. In addition, the Commonwealth has worked with the States and Territories to develop, through ANTA, the Australian Quality Training Framework, which provides national standards for the registration and quality assurance of VET providers. Australia's Student Visa Program is being refined to better target those markets which attract genuine overseas students to Australia.

The Commonwealth Government provides ongoing support for developing the international education market through Australian Education International (AEI) in DETYA. AEI provides reliable, impartial information on studying in Australia and promotes Australian education and training services overseas and Australia's attractiveness as a study destination. AEI has an extensive network of Education and Training Counsellors, education advisers and Australian Education Centres (AEC) around the world. AECs provide impartial information about living and studying in Australia and are bases for a wide range of promotional and support activities which enhance the image of Australia as study destination.

Opportunities for growth

There is considerable value to Australia in broadening the delivery of Australian education beyond the domestic population. Benefits include not only significant export income derived from education services provision but also long term value to Australia from building friendships and developing understanding between Australian and overseas students. As overseas students who study in Australia will frequently become business, intellectual and political leaders in their own country, the goodwill, international understanding, and networks developed while students are in Australia have long term positive implications for Australia's future trade in many export sectors.

Australia has a unique system of national qualifications – the Australian Qualifications Framework (AQF) - which is endorsed by all Australian Governments and recognised by other countries. The AQF is a national system of learning pathways which links all education sectors

(schools, vocational education and training and universities) in a single comprehensive system of twelve qualifications.

It assists students to move from one level of study to the next (for example from a vocational education and training diploma to a bachelor degree) and receive credit for previous study. Overseas students are attracted to Australia by having the choice and flexibility to combine courses and qualifications that best suit their career aspirations and personal circumstances.

Nationally coordinated efforts to promote Australian education services internationally contribute to improving perceptions of the quality of our education services, and its strengths in a broad range of fields, thereby enhancing our competitiveness. Scholarships for international students demonstrate Australia's broader commitment to education, and serve to enhance our reputation as a provider of excellence in education.

Significant developments and associated opportunities for Australia are occurring in methods of service delivery to overseas students. These include expansion of offshore services by Australian institutions, particularly the establishment of offshore campuses and twinning programs, and major ongoing developments in online education and distance education provision associated with advances in information and communication technology.

AEI is developing an Internet-based virtual Australia Education Centre (vAEC) which will be accessed through any Internet terminal, including kiosks. The vAEC will provide the same services online as are available from office-based AECs, including impartial information about living and studying in Australia, and courses and institutions that will meet students' needs. It will enable AEI to promote our education services to overseas students outside major cities, who have previously found it difficult to access impartial information about Australian education.

Each of Australia's education sectors has potential for growth in overseas student numbers. Australian higher education institutions have traditionally have been very successful in attracting overseas students in the fields of Business, Administration and Economics, and Computer Science, both in Australia and offshore. Considerable scope exists for growth in other areas where Australia has strengths, such as science and technology, particularly as Australian universities have an international reputation for scientific excellence in many disciplines.

The higher education sector has a vital role to play in the Government's recently announced Innovation Action Plan *Backing Australia's Ability*. Strengthening Australia's ability to undertake research through a substantial funding boost for research and research infrastructure, and the priority accorded in the Plan to school studies in information technology, mathematics and science, will have a positive effect on the image of Australian higher education overseas and help attract the best minds to our country.

Australia has the potential to become the first port of call for countries looking for expertise in the provision of vocational education and training. Australia has a unique system of career-oriented, competency-based training which forms part of the AQF.

Research is being undertaken in the VET sector to identify and respond to international market demand for online training, products and services. Returns could be reaped on the extensive public investment in this system by enhancing an international profile for our vocational education and training capabilities, thereby increasing the sector's export potential.

In the English Language Intensive Courses for Overseas Students (ELICOS) sector, while significant numbers of students study at ELICOS Colleges on tourist visas, further opportunities exist to promote study tours, particularly as international English is taught in Australian institutions. ELICOS courses which prepare overseas students for academic study are also expected to expand as the number of available places in the other education sectors increases.

Schools offer a Western-style, English language-based education and a pathway to further education in Australia for overseas students. Our schools are particularly successful in using information and communication technology (ICT) based learning and in teaching independent, creative thinking skills - skills which are much sought after in Asian countries.

Funding under the Innovation Action Plan for developing online curriculum content and providing experience of ICT as a learning tool, and to foster scientific, mathematical and technological skills, will enhance the appeal of the sector to overseas students. Opportunities also exist for the schools sector to contribute to education reform in the region, for example through consultancies on curriculum development and teaching methodology.

Strategic Issues

A number of strategic issues and developments which will affect the Australian education export industry in the near future. These include:

- quality assurance for Australian education provision. The ESOS reforms, the establishment of AUQA and the implementation of the Australian Quality Training Framework will assist in emphasising the importance the Government places on the provision of quality educational services;
- recognition of Australian professional qualifications in some markets. The successful conclusion of a project undertaken on behalf of the APEC Human Resources Development Working Group to facilitate mutual recognition of engineering qualifications in the region is an example of governments working together on qualifications issues. A similar project covering architects has been endorsed by the Working Group;
- challenges arising from competitors seeking a greater market share in Singapore, Malaysia and Thailand. Among other in-country activities, the *Study in Australia* campaign is assisting in raising Australia's international education profile;
- meeting overseas students' expectations of a deeper educational and living experience during their studies in Australia. Many institutions are endeavouring to integrate overseas students more fully into campus life; and
- potential inhibitions on the provision of Australian education services offshore because of regulatory requirements in the host country such as limits on the extent of foreign ownership of education providers, and on overseas students undertaking education within Australia. Australia and New Zealand considered these issues as part of a project conducted under the APEC umbrella to identify policy measures affecting trade and investment in education services in the Asia- Pacific region.

World Trade Organisation (WTO) services negotiations which will include education services. These negotiations could increase Australia's access to education markets in WTO member countries. The formal services negotiations commenced in early 2000, although the request-offer stage of negotiations is not expected to commence until late 2001/early 2002.

6. Summary and Conclusions

Knowledge and skills are now universally accepted as being central to economic growth, competitiveness and improved living standards. This has underpinned the commitment by Government to ensuring that Australia possesses a highly skilled and innovative workforce, and a flexible and responsive education and training system to deliver these skills.

The Australian workforce has over the last twenty years undergone a complete transformation, from a situation where more than half the working age population had not even completed school to one in 2000 where more than 15 per cent holds a degree and less than one third has not completed school or a post-school qualification. These proportions will continue to improve over time as older, less well qualified workers are replaced by younger more educated workers.

New Apprenticeships and the literacy and numeracy initiatives in schools and for people in the labour market are designed to address the needs of the high proportion of workers, generally older, without some form of post-school qualification and the relatively poor literacy and numeracy levels of some of these workers, which are long standing features of the Australian workforce. New Apprenticeships are extending structured training leading to qualifications into new industries and occupations, so that a greater number of school leavers and mature workers will acquire qualifications over time. The literacy and numeracy initiatives in schools aim to ensure that school students achieve a required level of competency in these key skills. These measures should ensure that the quality of the Australian workforce continues to rise.

Australia has in place an education and training system that is flexible and responsive to industry needs. Research has shown that in the last several years the supply of skills has matched demand in the aggregate. While shortages have occurred from time to time, especially following strong economic growth, in most cases increased output from the education and training system and increased immigration have ensured that these shortages did not last for long periods. There are, however, some occupations where the shortages have persisted for extended periods of time. The reasons for these are complex and addressing them requires not only a responsive education and training system but some form of Government intervention. As an example of the kind of intervention that has occurred, the submission discusses in detail the strategy put in place to overcome the shortages in IT&T. Similar initiatives are in place for other occupations, such as key trade areas.

The quality of the Australian workforce and of its education and training system has been recognised in international fora. The World Competitiveness Yearbook in 1999 ranked Australia 1st amongst countries surveyed on availability of finance skills, 2nd on skilled labour, 3rd on availability of IT skills, 3rd on higher education enrolments, and 6th on the education system.

The submission also comments on trends in exports of education services and the scope for growth. Australia's education services offer strong, continuing export opportunities. The higher education sector has principally driven ongoing export growth, with a strong focus on ELICOS provision. Overseas demand has been in the fields of *Business, Administration and Economics* and *Computer Science*. However, opportunities exist for expansion in other areas, especially science and technology based on our international reputation for scientific innovation. In addition, new opportunities now exist for capitalising on the development of Australia's competency-based training system for provision of vocational education and training.

Our proximity to Asian economies means that we are well placed. Ongoing infrastructure development and related demand for increased workforce skill levels of these countries offers expanding markets. New opportunities for expansion are offered by emerging markets in Europe, the Middle East and South America. These markets may be more fully exploited by nationally coordinated promotion of Australian education services internationally. This would improve perceptions of the quality of our education services, and its strengths in a broad range of fields.

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