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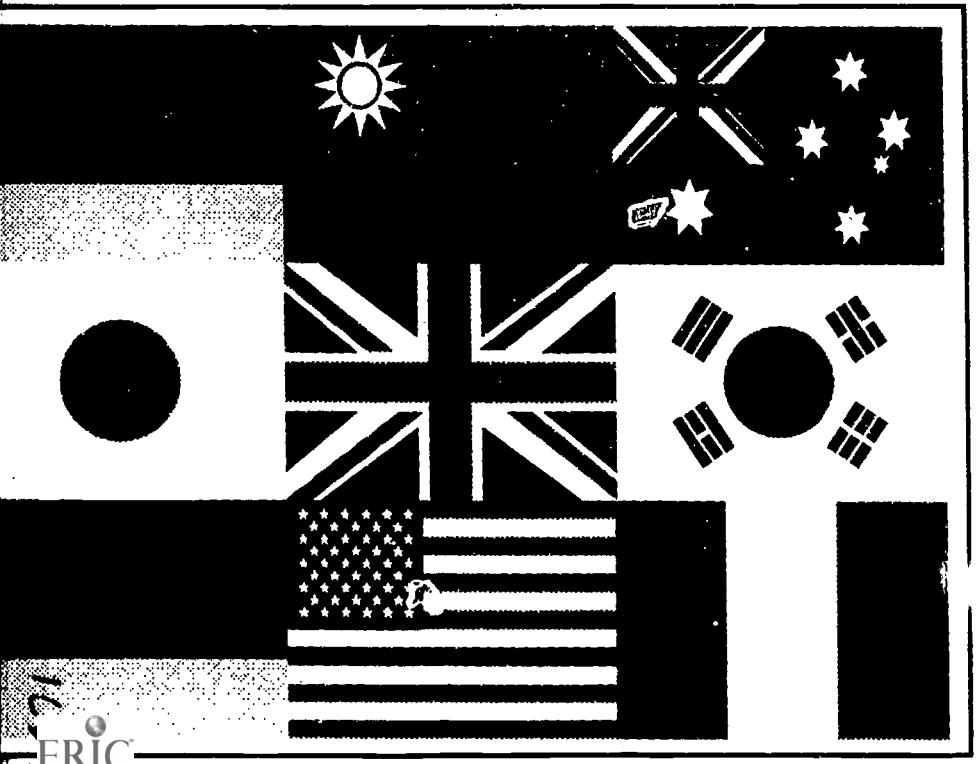
ABSTRACT

A study placed the numbers of workers who have attained National Vocational Qualifications (NVQs) at level 4 or above in the United Kingdom (UK) in an international context by comparing this attainment with the numbers of workers reaching similar attainment in a sample of other countries: Australia, France, Germany, Korea, Japan, Taiwan, and the United States. The study, based on available literature and data, found that 23.4 percent of workers in the UK had attained NVQ level 4 or above in Spring 1995, whereas the other countries' workers who had reached that skill level ranged from 18.1 percent in Australia to 30 percent in the United States. The study also showed that the UK has shown recent improvement in its attainment rate and is likely to reach 30 percent in the early years of the 21st century (a few years past its goal of reaching that level by the year 2000). In addition, the UK and France have the highest graduation rates at NVQ level 4 and above, just ahead of the United States. Significant growth in professional, technical, administrative and managerial occupations, all of which require higher skill levels, is expected in the five countries for which forecasts are available, along with a significant decrease in the number of 20- to 24-year-olds. For the UK to meet its target, there will have to be further improvements in the profile of the existing work force and in the supply of those qualifying in the education and training system and entering employment. (An appendix provides further information about modeling future attainment rates at NVQ level 4 and above of those in employment. Contains 170 references.) (KC)

THE TARGET FOR HIGHER LEVEL SKILLS IN AN INTERNATIONAL CONTEXT

N Jagger, S Morris, R Pearson



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Contents

Executive Summary

1. Background and objectives

The key role of human resources in economic development is widely accepted. It is also recognised that they are only one ingredient of economic success. For more than a decade there has been concern that the UK has been disadvantaged due to the apparently low skill levels of its workforce and weaknesses in its education and vocational training system. To raise standards to world class levels, and thereby improve the UK's international competitiveness, various initiatives are taking place, including the setting of national targets for education and training.

In 1995 the National Advisory Council for Education and Training Targets (NACETT) set a Lifetime Learning Target for the year 2000 covering attainment of higher level skills, namely:

> *30 per cent of the workforce to have a vocational, professional, management or academic qualification at NVQ level 4 or above.*

The objective of this report, commissioned by NACETT, is to place the UK's workforce attainment at NVQ level 4 and above in a broad international context, covering a sample of competitor countries: Australia, France, Germany, Korea, Japan, Taiwan and the USA. It also comments on the appropriateness of the UK Target and suggests the priorities for future monitoring.

It is well known that making international comparisons of this nature is extremely difficult. This was to be a limited study based on the available literature and data. There was not scope in the study to visit the countries concerned to explore their data in more detail (Chapter 1).

2. The UK in context

The UK population of 57m is middle ranking: the largest are the USA (255m) and Japan (124m), with Korea following (43m); Australia (17m) and Taiwan (20m) are both much smaller.

The UK labour force represents about 48 per cent of the population — similar to most of the comparator countries, with lower figures for Taiwan (42 per cent) and Korea (44 per cent).

Little change is expected in the size of the UK workforce over the next decade. The other countries, however, expect significant workforce expansion.

The USA has the highest GDP per capita followed by Germany, Japan and France, then the UK and Australia; Korea and Taiwan lag well behind. The economic growth rates show an opposite ranking, with Korea and Taiwan leading and the UK lagging (Chapter 2).

3. Workforce attainment at NVQ level 4 and above

When making international comparisons it is important to focus on broad orders of magnitude, not the detail, as there is not always precise correspondence between qualifications. Data coverage can also vary, *eg* the data for Japan, Korea and Taiwan focus on the level of education completed, not qualifications received, and overestimate their attainment rates.

The UK's attainment at 23.4 per cent (in Spring 1995) is above the average of the comparator countries. There were highs of 30 per cent in the USA and 28 per cent in Japan, and a low of under 18 per cent in Korea although for some countries the data are several years in arrears (Table 1).

In Australia and France women's attainment rates are higher than those for men; in the other countries the rates for men are equal to or higher than those of women.

Table 1: Education and training attainment at NVQ level 4 and above

Country year)	% of the employed workforce qualified to NVQ level 4 and above	Comments
Australia (1994)	18.1	Those with undergraduate diplomas and above – employed aged 15 to 69
France (1994)	19.2*	University diplomas, plus BTS and DUT – all economically active excluding those still studying
Germany (1993)	20.9	Employed males 15 to 65 and employed females 15 to 60 (excluding apprenticeships)
Japan (1994)	28.1*	Employed who have **completed** junior college and university (including graduate school)
Korea (1994)	17.8*	Employed who have **completed** junior college or university
Taiwan (1994)	19.6*	Employed who have **completed** junior college or university
USA (1992)	30.0 (est.)	**IES estimate;** includes Associate degrees
UK (1995)	23.4	Labour Force Survey, employed males aged 16 to 64 and employed females aged 16 to 60

* *Slight overestimate of employed attainment rate (see Chapter 3).*

Source: IES and national sources (see main report, Table 3.1)

In Australia, France, Germany and the UK, the highest levels of attainment are among those in their 30s, not, as might be expected in the younger age bands. In part this is probably because many students receive their final qualification at NVQ level 4 and above in their late 20s.

The UK's recent improvement in its attainment rate exceeds that of five comparator countries; data for Germany and the USA were not available (Chapter 3).

The UK and France have the highest graduation rates at NVQ level 4 and above, normalised as a percentage of the population of 20-24 year olds; they are just ahead of the USA with the other countries trailing, although the UK figure is for a more recent year (1994) than the others (1990-92) (Section 4.2.2).

4. Future change

Significant growth in professional, technical, administrative and managerial occupations, all of which require higher skill levels, is expected in the five countries for which forecasts are available (Section 5.2).

Significant falls in the number of 20 to 24 year olds, a key influence on future attainment rates, are expected in Germany, France and the UK; Taiwan is the only country expecting an increase (Section 2.2).

Our estimate, based on key assumptions, suggests the UK attainment rate could rise from 23.4 per cent in spring 1995 to over 27 per cent by the year 2000. On current trends the Target is likely to be met in the early years of the next century.

The actual figure will depend on the rate of economic growth and consequent industrial, employment and occupational change plus, importantly, the supply of those newly acquiring qualifications and entering employment (Section 5.4).

5. International targets

The UK is alone in having comprehensive national education and training targets; Australia adopts targets at qualification levels below NVQ 4, while France has a target for young people studying to Baccalaureate level (approximately NVQ 3). Several other countries have more qualitative targets, *eg*: 'improve . . . ', 'reform . . . ', and 'increase . . . ' (Korea); and 'demonstrate competence . . . in English, maths and . . . other subjects' (USA) (Section 5.2).

6. The Appropriateness of the UK Target

The current 30 per cent Target is challenging. On current trends it is unlikely to be met by the year 2000 and is only likely to be reached several years into the next century.

Looking internationally, while the UK target compares well with most of the comparator countries, if it is to be benchmarked to the best, Japan and the USA, a figure several percentage points higher would be appropriate.

In drawing a final conclusion it is important to recognise that the attainment figures focus on those in employment:

- it does not take account of the extent to which their skills and competences are utilised
- a highly qualified workforce is not a guarantee of economic competitiveness
- the setting of a target in itself does not bring about change.

Meeting the existing target will be challenging: there will need to be significant further improvements in the qualifications profile of the existing workforce, in the supply of those qualifying in the education and training system, and entering employment. This will need to be addressed by all the actors involved including the government, agencies, employing organisations and individuals (Chapter 5).

7. Monitoring

The study has shown that comparative data can usefully be collected to place the UK in a wider context. A secondary objective was to advise on the additional work needed to inform the Council on progress towards the target for higher level skills. Consideration should be given to co-ordinating and building on the expertise and interests of the many policy makers and researchers active in this area through, for example, a seminar or conference to share experiences and approaches.

To meet NACETT's specific monitoring needs, consideration should be given to:

- confirming an agreed group of comparator countries; setting up regular contact points in these countries; collecting missing data and setting up an agreed process for updating the data.
- monitoring international trends at NVQ 5 and above as an initial proxy indicator, given the difficulties in collecting comparable data at NVQ level 4.

- raising with OECD the possibility of their collecting data embracing all levels from NVQ level 4 and above (at present OECD omit more than a third of the qualifications of interest to this target).
- investigating how other countries monitor their performance in education and training, and their apparent lack of interest in targets. It is not clear whether this is something which the UK is leading or whether other countries have considered but chosen not to adopt targets, and if so why they came to that conclusion.
- investigating the potential for modelling the dynamics of change; this will require further investigation and improved UK and international data.

In developing its monitoring of progress towards the target, consideration should also be given to embracing all the levels of qualifications of interest to NACETT, from NVQ 1 upwards, given the overlapping data sources and definitions (Chapter 6).

1. Introduction

1.1 Background

The key role of human resources in economic development is widely accepted throughout the world. At the same it is recognised that human resources in general (and education and training in particular) while important, are only one ingredient of economic success.

For more than a decade there has been concern that the UK has competed at an economic disadvantage due to low skill levels among its workforce, and a need to improve the effectiveness of its education and vocational training system (see for example *Competence and Competition, IMS/MSC/NEDO, 1984).* To improve the UK's position, various activities and initiatives are taking place to improve the education and training system. These include most recently the development of the national curriculum, Training and Enterprise Councils, Investors in People, NVQs and new funding regimes for education and training providers. The debate has been given focus by the establishment and widespread acceptance of National Targets for Education and Training. Such targets were first mooted in the late 1980s by the CBI in *Towards a Skills Revolution (CBI, 1989).* Formal Targets were set by the CBI and endorsed by the government in 1991. In supporting national targets for education and training, the Government's objective is to raise standards to world class levels and thereby improve the UK's international competitiveness.

In 1995 NACETT published a *Review of the National Targets for Education and Training.* Following extensive consultation it updated the targets and included, for the first time, a Lifetime Learning Target for the year 2000, covering attainment of higher level skills, namely that:

> *Thirty per cent of the workforce to have a vocational, professional, management or academic qualification at NVQ level 4 or above.*

At the time the Council considered that such an achievement may not be sufficient to meet the needs of a modern economy at the end of the century. It also said that there had been insufficient information on which to base a firm decision. It therefore commissioned IES to analyse the available data and published

research on higher level skills, in a selection of competitor countries, to help benchmark UK attainments and form an assessment of future needs. This would inform the Council's monitoring and reporting on progress towards the target.

It is well known that making international comparisons of this nature is extremely difficult; and this was to be a limited desk based study of the available literature and data. There was not scope in the study to visit the countries concerned, to collect and investigate the data and explore in detail the definitions and methodologies used in its collection and presentation.

1.2 The report's objective

The objective of this report is to place the UK's workforce attainment at NVQ level 4 in a broad international context. More specifically, the report provides, for selected countries, an analysis of the available data on the proportions of their employed workforce qualified at the equivalent of NVQ level 4[1] and above, and the changing supply of such people qualifying in the education and training system. Such data are placed in the context of each country's broad demographic and economic characteristics and available assessments of future trends, including their use of national education and training targets.

It also draws conclusions on whether the new National Target for higher level skills is set at an appropriate level. It suggests what additional work might be needed to inform the Council on an ongoing basis as to progress against the new target for higher level skills.

1.3 The data set

It was agreed that the research review should concentrate on the following data sets.

- The broad economic and demographic parameters to help place the Targets in an economic and population context.
- Qualifications at NVQ level 4 level and above within the employed workforce.
- Available assessments of future trends in demand and supply. Such data, while not definitive, can be helpful in giving an indication of expected trends and help place the

[1] The qualifications considered to be of NVQ level 4 and above include: Higher degrees; First degrees; Diplomas in Higher Education; HND/HNC (SCOTBEC/TEC/BEC); BTEC Higher Certificate/Diploma; SCOTVEC Higher Certificate/Diploma; Teaching Qualifications (Schools); Nursing Qualifications (SRN); RSA Higher Diploma/Advanced Certificate; LCCI Advanced Level; and other degree level qualifications.

UK's aspirations in a broader context of a changing world. For example, many of the developing countries of the Pacific Rim have lower proportions of high level employment at present, but the rate of expansion in higher education means that this picture is changing fast (*EC, 1994*).

- The existence of national targets and their circumstances.

1.4 The countries

A primary consideration when choosing the countries for comparative purposes was that they should have relevant economic and educational characteristics that make them a useful basis for comparisons, and that they were believed to have reliable and up-to-date sources of information. The final choice of countries agreed with NACETT was:

Australia: the UK used to be Australia's largest trading partner, although increasingly they are part of the rapidly growing SE Asian economy. With a comparable further and higher education system in terms of institutions and qualifications this makes for easy benchmarking.

France, although it has a complex further and higher education system, has a similar sized population and economy within the EU. This makes it a useful candidate for comparative studies.

Germany has been used as the basis of educational attainment comparisons since the 19th century. As a major trading partner with a similar population and larger economy, the reasons for this tradition are apparent. As Germany's education system, especially the vocational education system, has been extensively used as a bilateral comparison with the UK, further comparisons will be building on a large body of literature.

Japan, as the world's second largest and, until recently, one of the fastest growing economies, provides a important comparison despite important cultural differences.

Korea has invested heavily in vocational and higher education as part of its development strategy and achieved rapid rates of economic growth.

Taiwan has had a conscious strategy of rapidly improving the country's levels of educational attainment as a foundation for their rapid economic development. Its rapid economic growth makes Taiwan another useful comparison.

The **USA** is a mature economy and one which has the world's most productive large economy and highly qualified workforce. As such it provides a valuable, and traditional, benchmark for the UK.

1.5 Research approach

It is well known that making comparisons of educational and training attainment levels between countries is hazardous for several reasons. One of the problems that has dogged the debate over international comparisons in the past, has been the tendency to draw on different and often conflicting data sets. The policy debate then becomes obscured by debate over definitional issues. For instance there is:

- a variety of definitions used across and within countries. The main issue here is the different education and qualification systems, occupational and sectoral definitions, and their equivalencies or otherwise. Language problems can lead to additional difficulties in interpreting and comparing definitions and data. It was these problems that led the OECD to commission the *Canberra Manual* (*OECD, 1995*) which sets out a framework for collecting and assessing data on human resources in an international context.
- variability in the availability and reliability of the data. There are many cultural, social and economic differences which lead to different priorities within countries in data collection about human resources, and different levels of consistency applied to data collection. National sources contain a range of different, and often incompatible data sources. Such sources can also be slow to access. The incompleteness of international sources, including those of OECD, Eurostat and UNESCO, means that data in these sources are sometimes missing for some countries, or are often several years out of date.

To focus on a common standard it was agreed initially that the research would benchmark NVQ level 4 and above and the international equivalencies through the ISCED definitions. Where possible, it would draw on data at ISCED level 5 for the purposes of comparison.

The research was a desk based study of the available data and literature. It involved the following phases:

- Agreement as to the main parameters for the review. This took account of the issues relating to availability and quality of data discussed above, as well as the priorities of NACETT.
- Collation of the available data from the international sources (OECD, UNESCO, ILO and Eurostat), national sources, and internal IES and other databases as appropriate. Major gaps and deficiencies were identified and, where possible, filled from alternative national sources. In the event, not all the expected data and information were available for each country on each topic. There were also some difficulties in obtaining all the data within the time span, and with the resources allocated for the project it was not possible to visit the countries concerned to explore the data sources in more depth.

- Analysis of the data, its reliability and compatibility, and review of the literature, and placing both within an analytical framework for presentation.

1.6 The report

This is in six further sections plus appendix as follows:

- The Demographic and Economic Context
- Workforce Education and Training Attainment at NVQ level 4 and Above
- The Supply Side
- The Appropriateness of the UK Target
- Monitoring Change and the Need for Further Research
- Appendix

2. The Demographic and Economic Context

2.1 Broad demographic characteristics

The UK, with a population of 57 million, holds a middle rank within this group of countries. The largest are the USA (255m) and Japan (124m), followed by Germany (80m). France has a similar population to the UK, with Korea following at 43m and Australia and Taiwan both being much smaller at 17m and 20m respectively (Table 2.1).

The UK labour force represents approximately 48 per cent of the total population. This proportion has changed little in the 1990s and is broadly comparable with that in most of the other countries. Korea and Taiwan have the lowest proportions, their workforces being 44 per cent and 42 per cent of their populations respectively. The proportion of women in the labour force ranges from a high of 46 per cent in the UK to a low of 38 per cent in Taiwan, with Germany and Japan in the middle of the range at 41 per cent.

Australia, Korea, and Taiwan have had the fastest growing workforces, up by 20 per cent, with the other countries showing eight to 14 per cent growth over the decade to 1992.

Table 2.1: Key demographic features

	1992 population (1,000s)	1992 labour force as a % of the population	% change in labour force 1982-92	Proportion of the labour force female 1995
Australia	17,483	46.7	16.8	43
France	57,372	44.7	6.9	45
Germany	80,569	48.0	na	41
Japan	124,452	50.6	8.2	41
Korea	43,268	44.5	24.9	40 *
Taiwan	20,652	42.4	26.0	38 *
USA	255,414	48.5	10.0	44
UK	57,848	48.1	2.9	46

** For Taiwan and Korea national sources relating to 1994 have been used*

Source: IES/World Bank/OECD and national sources

Table 2.2: Key demographic trends

	Trend in the labour force to 2000 (1990 = 100)	% of the population aged 0 to 15 years old in 1990	% change in numbers of 20 to 24 year olds 1990 to 2000
Australia	120	22.1	−7.0
France	111	20.1	−13.4
Germany	108	16.2	−36.3
Japan	108	18.4	−5.1
Korea	112 *	25.7	−11.6
Taiwan	115 *	28.2	2.5
USA	114	21.6	−7.4
UK	99	18.9	−25.3

* *IES estimate*

Source: IES/OECD/World Bank

The youngest age profiles are in Korea and Taiwan, where 25.7 per cent and 28.2 per cent were aged under 15 in 1990, compared to 18.9 in the UK and similar figures in the other countries. In terms of the age group which normally acquires qualifications of NVQ level 4 and above (20 to 24), Germany is expected to show the greatest decline, with 36.3 per cent fewer 20 to 24 year olds in the year 2000 than in 1990. UK numbers are expected to decline by 25 per cent. Of all the countries involved, Taiwan is the only country expecting to show an increase in the numbers of 20 to 24 year olds between 1990 and 2000.

Overall, the UK expects little change in the size of its labour force. Those in Australia, Korea, Taiwan and the USA are expected to show the most significant growth, over ten per cent over the next decade due to population growth and rising participation by women, while growth in Germany and Japan is expected to be just under ten per cent (Table 2.2).

2.2 The economic context

There are many measures of economic performance, and care needs to be taken when making country comparisons. Here we have used World Bank GDP figures and OECD Purchasing Power Parity (PPP) figures to take account of differences in the local costs of living, to help make the comparisons; the latest available data are for the period to 1992.

These data show the USA to have the highest GDP per capita when due account has been taken of PPP, followed by Germany, Japan and France, with the UK and Australia next and Korea and Taiwan lagging well behind.

Other figures may show a slightly different comparative picture, and due account has to be taken of the economic cycles within

Table 2.3: Summary economic data

	Average GDP Growth 1977 to 1992 (constant 1987 market prices)	Capital investment as a % of GDP (average 1977 to 1992)	1992 GDP per capita (US$)	1992 GDP per capita (PPP)
Australia	3.0	23.8	16,860	16,800
France	2.2	21.5	23,006	18,540
Germany	2.5	20.8	22,208	20,482
Japan	4.4	30.4	29,497	19,604
Korea	8.1	31.3	6,782	na
Taiwan *	11.4	na	10,677	na
USA	2.3	19.2	23,179	23,291
UK	1.9	17.8	18,027	16,227

** Note Taiwanese data based on national sources and are not directly comparable*

Source: IES/World Bank/OECD

each country when comparing performance over a given time period. But in terms of growth rates over the last 15 years, Korea and Taiwan lead, having started from a much lower base, followed by Japan and Australia. The UK's overall growth has been one of the slowest over this time frame.

Finally, it can be seen that the UK has one of the lowest capital investment ratios at under 18 per cent of GDP, while Korea and Japan, the fastest growing, have the highest. Data for Taiwan were not available (Table 2.3).

3. Workforce Education and Training Attainment

3.1 Overview

Using a range of published national sources, the nearest available information to the UK's Lifetime Learning Target is summarised below. The actual data definitions and sources are dealt with in more detail in each of the country sections which follow.

It is important not to read too much into the detail of the figures but to focus on broad orders of magnitude. Not only are there not always precise correspondence between qualifications groupings but other points of detail vary, *eg* differing age ranges are used. Also, the data for Japan, Korea and Taiwan focus on the level of education completed, not qualifications received, and as such are probably slight overestimates. Again, these differences are spelt out in detail in the country sections that follow.

The attainment figures span a relatively limited range, from an estimated high of 30 per cent in the USA to a low of under 18 per cent in Korea, with the UK being placed above the average at 23.4 per cent (Table 3.1).

Table 3.1: Summary education and training attainment levels

	% of employed workforce qualified to NVQ level 4 and above	Year	Comments
Australia	18.1	1994	Those with undergraduate diplomas and above — employed aged 15 to 69
France	19.2*	1994	Diplomas of 1st, 2nd and 3rd cycles of university, plus BTS and DU — all economically active excluding those still studying
Germany	20.9	1993	Employed males 15 to 65 and employed females 15 to 60 (excluding apprenticeships)
Japan	28.1*	1994	Employed who have **completed** junior college and university (including graduate school)
Korea	17.8*	1994	Employed who have **completed** junior college or university
Taiwan	19.6*	1994	Employed who have **completed** junior college or university
USA	30.0 (est.)	1992	IES estimate based on CPS data with associate degree and above, 25 years and over, those with earnings (see section 3.8)
UK	23.4	1995	Labour Force Survey, employed males aged 16 to 64 and employed females aged 16 to 60

** Slight overestimate of employed attainment rate*

Source: IES and national sources (see below)

Table 3.2: Attainment by gender 1994 and growth in attainment 1990 to 1994

	% of employed males with NVQ level 4 and above, 1994	% of employed females with NVQ level 4 and above, 1994	Age band with the highest attainment levels	Growth (% points) of employed with NVQ level 4 and above, 1990 to 1994
Australia	15.8	21.3	35-44	na
France	18.1	20.7	25-39	4.0
Germany*	24.0	16.4	30-39	0.3 *
Japan	30.4	24.6	na	1.5
Korea	21.8	11.9	na	4.1
Taiwan	19.6	19.5	na	3.3
USA	34.9	33.7	na	na
UK	23.8	22.8	25-29	6.6 **

** Germany 1993 data and growth from 1991 to 1993*
*** The UK figure for 1990 was probably underestimated, exaggerating the actual rate of growth (see section 3.9).*

Source: IES and national sources

Of particular interest is how these figures have changed over the last few years. Unfortunately, data were only available between 1991 and 1993 for Germany as a result of the reunification, and are not available for the USA, as a result of changes in surveys carried out. The UK has experienced a rapid improvement in its attainment level in the 1990s, up by over six percentage points, although these figures may exaggerate the actual rate of improvement as the figures before 1992 were calculated on a slightly different basis. In Korea (measured as those completing junior college or university, see section 3.6.1), it has risen from 13.7 per cent to 17.8 per cent over the same period and in France the figures rose by 4.0 percentage points. By comparison, in Japan they rose by 1.5 percentage points (Table 3.2).

In terms of gender, the national data show that, while in Taiwan, the USA and the UK the attainment rates for employed men and women are similar, the attainment rates of men exceed those of women in Germany, Japan and Korea. In Australia and France, employed women's attainment is higher than that for men (Table 3.2).

Data are also available as to how attainment levels vary with age for Australia, France, Germany and the UK (Tables 3.4, 3.7, 3.11, 3.20). These show that somewhat contrary to expectations, the age bands with the highest levels of attainment amongst the employed are not in the youngest age bands but in the early 30s. A partial explanation of this may be that many of the qualifications at NVQ level 4 and above are gained by people in their late 20s; another is that qualified women are more likely to remain longer and later in the labour force than non-qualified women of child rearing age. This hypotheses is supported by the higher attainment rates for women in these age bands. More detailed country specific data follow.

3.2 Australia

3.2.1 Data sources and definitions

The main data source for Australia has been the Labour Statistics series produced by the Australian Bureau of Statistics (ABS) based on their Labour Force Survey. The ABS have recently changed their system of classification of educational qualifications to the ABS Classification of Qualifications (ABSCQ). This system was first used for coding the 1991 Census and has been progressively applied to other ABS Surveys. Given the greater disaggregation of the data using ABSCQ, a close comparison with the UK system is possible. Unfortunately, the main data source we are using only used this classification system in the last year for which data are available (1994) this means that the most accurate comparison is only possible for 1994.

Using UK qualifications which appear in the coding manual for the ABSCQ we can link the Australian classification to the UK NVQ system. The main marker qualifications are City and Guilds qualifications; these are considered either level 5 or level 6 in the Australian system and NVQ level 3 in the UK system. An example is that a State Registered Nurse is considered level 4 in Australia and NVQ level 4 in the UK, while a State Enrolled Nurse is considered level 7 in Australia and NVQ level 3 in the UK (*note: the higher levels of qualifications in Australia have the lower numbers — ie 1 and 2; this is the opposite of the UK).* From such comparisons a concordance can be developed. Although the ABSCQ uses a conceptually different classificatory approach from this description, qualifications considered levels one to four in the Australian system correspond to NVQ levels 4 and above.

A problem with the published Australian data is that it covers all employed people from the age of 15 to 69; this is a slightly

Table 3.3: Employed Australians aged 15 to 69 with post-secondary qualifications, 1994

ABSCQ Levels	Total number (1,000s)	Males as % of employed	Females as % of employed	Total as % of employed
1 — Higher Degree	139	2.2	1.2	1.8
2 — Postgraduate Diploma	172	1.8	2.8	2.2
3 — Bachelor Degree	802	9.8	11.3	10.5
4 — Undergraduate Diploma	279	2.0	5.9	3.6
NVQ level 4 and above	*1,311*	*15.8*	*21.3*	*18.1*
5 — Associate Diploma	542	7.6	6.3	7.1
6 — Skilled Vocational Qualification	1,311	25.3	5.9	17.1
7 — Basic Vocational Qualification	520	3.0	11.9	6.8
All aged 15 to 69*	7,673	100.0	100.0	100.0

* *Includes those still at school*

Source: IES/ABS

different age range than that used for the UK training target (males aged 16 to 64 and females aged 16 to 59). Since the Australian data contain more of the elderly who are less likely to be qualified, the Australian data are likely to slightly understate the percentage of the workforce with qualifications at NVQ level 4 and above.

3.2.2 Educational attainment

The latest available Australian data cover 1994 and include all those employed between the ages of 15 and 69. The data also include those who are still in secondary education who also work part time and have yet to obtain their secondary qualifications.

The data show a 1994 attainment rate of 18.1 per cent of the employed having a qualification of NVQ level 4 and above, with, interestingly, women having a higher attainment rate (21.3 per cent) than men (15.8 per cent) (Table 3.3). The examination of the data by age band (Table 3.4) suggests an explanation for the higher attainment levels amongst women, as the attainment levels are highest in the 35 to 44 age band, when proportionately more non-qualified women may have left the labour market to look after children.

Viewed by time series, it is only possible to distinguish between degrees and other post-secondary qualifications, due to changes in the classification system. The available time series data (Table 3.5) indicates that over the last ten years the bulk of the increase in those with post-secondary qualifications has occurred at the sub-degree level.

Table 3.4: Educational attainment of employed Australians by age band

Age	% of employed with a higher degree	% of employed with a graduate diploma	% of employed with a bachelor degree	% of employed with an under-graduate diploma	% of employed with NVQ level 4 and above	Total number employed (1,000s)
15-24	0	0.4	6.9	1.4	8.7	1543
25-34	1.5	2.2	13.3	3.6	20.7	1983
35-44	2.5	3.5	12.1	4.5	22.6	1985
45-54	2.8	2.9	9.7	4.8	20.3	1506
55-69	2.4	1.6	6.7	3.7	14.3	655
Total	1.8	2.2	10.5	3.6	18.1	7673

Source: IES/ABS

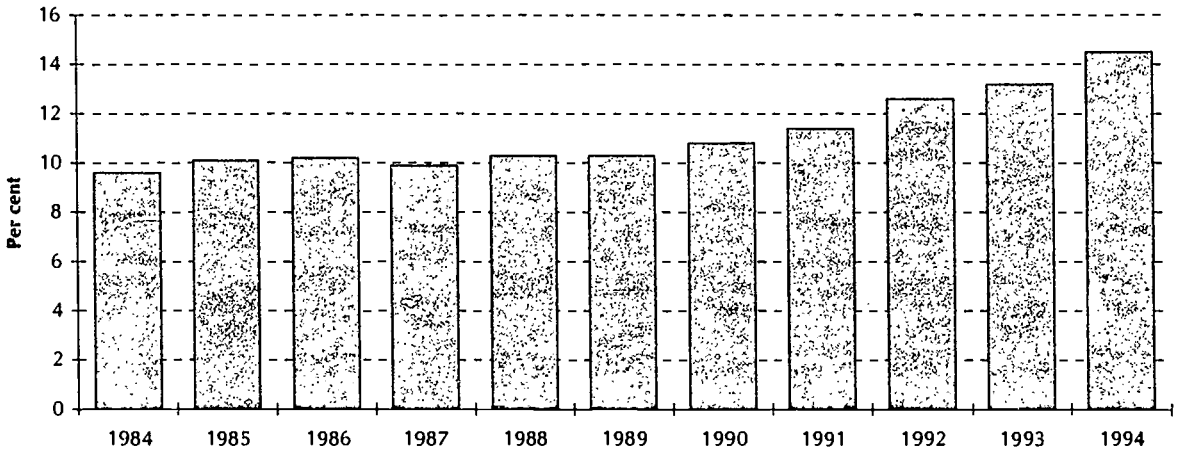
Table 3.5: Employed Australian's with post school qualifications, 1984 to 1994

Year	Employed with degrees (1,000s)	Employed with other post school qualifications (1,000s)	Employed with degrees as % of total employed	Employed with other post school qualifications as % of total employed
1984	609	2,190.6	9.6	34.4
1985	658	2,239.5	10.1	34.2
1986	687	2,348.5	10.2	34.8
1987	684	2,533.9	9.9	36.5
1988	734	2,615.0	10.3	36.5
1989	770	2,755.6	10.3	36.8
1990	834	2,834.5	10.8	36.7
1991	875	2,877.3	11.4	37.6
1992	950	2,879.7	12.6	38.0
1993	992	2,946.6	13.2	39.1
1994 *	1,112	2,651.7 *	14.5	34.6 *

** Note new ABSCQ classification system introduced, which accounts for the fall in attainment*

Source: IES/ABS

Figure 3.1: Employed Australians with degrees, as a percentage of total employed



Source: IES/ABS

3.3 France

3.3.1 Data sources and definitions

The main data source for France is their Labour Force Survey (*Enquête sur l'emploi*). The annual reports give the level of educational attainment of the economically active population. Based on previous work we are taking Degrees of the 1st, 2nd and 3rd cycles of university education plus the BTS and DUT qualifications, to be equivalent to NVQ level 4 and above (*Steedman, Mason and Wagner, 1991*).

Table 3.6: Educational attainment of employed French, by gender, 1994

	Male (1,000s)	% of males (excluding those still studying)	Female (1,000s)	% of female (excluding those still studying)	Both (1,000s)	% of total (excluding those still studying)
Diplomas from 2nd and 3rd cycle of university	1,392	7.9	904	8.2	2,296	9.3
Diplomas from 1st cycle of university and Technician qualification	1,072	7.9	1,364	12.4	2,436	9.9
NVQ level 4 and above	*2,464*	*18.1*	*2,268*	*20.7*	*4,732*	*19.2*
Baccalaureate, but no other qualifications	1,433	10.5	1,459	13.3	2,893	11.8
Vocational qualifications at Bac. level	4,618	33.9	2,848	25.9	7,466	30.4
No qualification except school leaving certificate	4,183	30.7	3,383	30.8	7,565	30.8
No qualification except vocational leaving certificate	909	6.7	1,017	9.3	1,926	7.8
Not answered	2	—	3	—	5	—
Still at school	288	na	260	na	548	na
Total	13,898	100.0	11,238	100.0	25,136	100.0

Source: IES/Enquête sur l'emploi de 1994

3.3.2 Educational attainment

Data from the Annual French Labour Force survey (*Enquête sur l'emploi)* is only reported for the whole economically active population. This is believed to under report the attainment of the employed population by about one per cent (*Steedman, Mason and Wagner, 1991*).

Just under 20 per cent have attainments at NVQ level 4 and above with the rate for women (20.7 per cent) being higher than that for men (18.1 per cent) (Table 3.6).

Table 3.7: Employed French with NVQ level 4 and above, by age band, 1994

Age Band	Economically active males with NVQ level 4 and above (1,000s)	% of economically active males with NVQ level 4 and above	Economically active females with NVQ level 4 and above (1,000s)	% of economically active females with NVQ level 4 and above	Economically active with NVQ level 4 and above (1,000s)	% of economically active with NVQ level 4 and above
15-24	97	8.3	121	12.6	219	10.2
25-39	1,223	20.5	1,269	26.0	2,492	23.0
40-49	726	18.4	628	19.5	1,354	18.9
50-59	339	15.6	219	13.6	559	14.7
60+	78	22.6	30	10.2	109	16.9
Total	2,464	18.1	2,268	20.7	4,732	19.2

Source: IES/Enquête sur l'emploi de 1994

Table 3.8: Educational attainment of employed French, 1988 to 1994

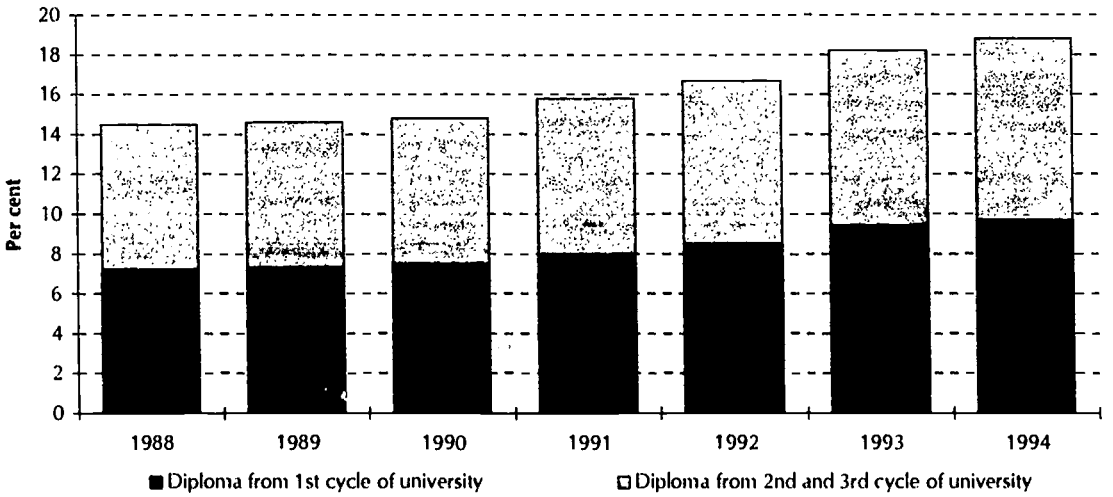
Year	Diplomas for 1st cycle of university and Technician qualifications (1,000s)	Diplomas from 2nd and 3rd cycle of university (1,000s)	% of economically active with Diploma from 1st cycle of university or a higher Technician qualification	% of economically active with Diploma from 2nd or 3rd cycle of university	% of economically active with NVQ level 4 and above
1988	1,730	1,744	7.2	7.3	14.5
1989	1,766	1,757	7.3	7.3	14.6
1990	1,846	1,798	7.5	7.3	14.8
1991	1,976	1,911	8.0	7.8	15.8
1992	2,116	2,032	8.5	8.2	16.7
1993	2,345	2,207	9.4	8.8	18.2
1994	2,436	2,296	9.7	9.1	18.8

Source: IES/Enquête sur l'emploi de 1994

In terms of age range, as expected the highest attainment levels are among those aged 25 to 39. Interestingly, the attainment rate is higher among those aged 60 plus than those age 50 to 59 (Table 3.7). Since the data is based on those economically active, this higher attainment level amongst the elderly may be explained by labour market exit (*eg* early retirement) of those without qualifications.

When the levels of attainment are examined over time, there appears to have been a relatively static period in terms of attainment in the late 1980s, however the levels started to rise relatively rapidly in the early 1990s (Table 3.8).

Figure 3.2: French attainment of economically active at NVQ level 4 and above



Source: IES/Enquête sur l'emploi de 1994

3.4 Germany

3.4.1 Data sources and definitions

The data on the level of educational attainment in Germany are from reports based on the Mikrozensus or microcensus (*Statistisches Bundesamt, 1993 and 1995*). These reports cover the whole of Germany including the former East Germany.

Following other researchers (*Steedman, 1992*) we are taking NVQ level 4 and above to include, in the German context, University graduates, Polytechnic/Engineering School graduates, and Technical College graduates[1] (including *Meisters*). Since the data are presented in five year age bands, it is possible to generate data which is virtually comparable with the full Lifetime Learning Target. The data presented below are based on employed men aged 15 to 64 and employed women aged 15 to 59. (The UK Lifetime Learning Target is defined in terms of 16 to 64 year old men and 16 to 59 year old females.)

3.4.2 Educational attainment

The attainment rate in Germany rose from 16.1 per cent in 1991 to 16.4 per cent in 1993; earlier data are not available for the unified Germany. The attainment rates are much higher for men (24 per cent in 1993) than for women (16.4 per cent) (Table 3.10).

The highest attainment rates are among those aged 30 to 49 (*it should be noted that in Germany the typical graduation age is in the late 20s)* with a particularly high rate among men aged 60 to 64

Table 3.9: Educational attainment of the employed, Germany 1991 and 1993

	1991			1993		
(1,000s)	Male 15 to 65	Female 15 to 59	Both	Male 15 to 65	Female 15 to 59	Both
University Graduates	1,712	890	2,602	1,813	1,005	2,818
Polytechnic/Engineering School Graduate	964	313	1,277	1,029	358	1,387
Technical College Graduates GDR	347	626	973	200	441	641
Technical College Graduates FRG	2,118	615	2,733	2,028	614	2,642
NVQ level 4 and above	*5,142*	*2,443*	*7,585*	*5,069*	*2,418*	*7,487*
Apprenticeships	11,757	8,435	20,192	11,261	8,119	19,380
Employees + Self Employed + Unpaid Family Workers	21,689	15,200	36,889	21,110	14,749	35,859

Source: IES/Mikrozensus

[1] Universität, Fachhochschule, Fachshulabschluß einer Meister-/Technikerausbildung, und Fachshullabschluß in der ehemaligen DDR.

Table 3.10: Educational attainment of employed Germans by gender, 1991 and 1993 (per cent of employed)

	1991			1993		
	Male 15-64	Female 15-59	Both	Male 15-64	Female 15-59	Both
University Graduates	7.9	5.9	7.1	8.6	6.8	7.9
Polytechnic/Engineering School Graduates	4.4	2.1	3.5	4.9	2.4	3.9
Technical College Graduates GDR	1.6	4.1	2.6	0.9	3.0	1.8
Technical College Graduates FRG	9.8	4.0	7.4	9.6	4.2	7.4
NVQ level 4 and above	*23.7*	*16.1*	*20.6*	*24.0*	*16.4*	*20.9*
Apprenticeships	54.2	55.5	54.7	53.3	55.0	54.0
Employees + Self Employed + Unpaid Family Workers	100.0	100.0	100.0	100.0	100.0	100.0

Source: IES/Mikrozensus

Table 3.11: Employed Germans qualified to NVQ level 4 and above by age 1993

Age band	Working population (1,000s)	Qualified to NVQ level 4 and above (1,000s)	% of working population qualified to NVQ level 4 and above
15-19	1,427	–	–
20-24	3,670	177	4.8
25-29	4,976	878	17.7
30-39	9,579	2,483	25.9
40-49	8,285	2,139	25.8
50-59	7,334	1,622	22.1
60-65	588	189	32.1
Total	35,859	7,487	20.9

Source: IES/Mikrozensus

(32.1 per cent). Partially this reflects the higher attainment levels of males, but it also probably reflects the early labour market exit of the unqualified (Table 3.11).

3.5 Japan

3.5.1 Data sources and definitions

The source for Japanese educational attainment data is the annual *Report on the Special Survey of the Labour Force Survey* published by the Statistics Bureau of the Management and Co-ordination Agency. They collect data on the basis of the highest level of education completed, not qualifications awarded. The categories are: completed senior high school, completed junior college, and completed college or university (including graduate school).

The issue for concordance is whether completion of the junior college level of education is equivalent or not to NVQ level 4.

Junior colleges offer two or three year courses to senior high school graduates and the credits so achieved may be counted towards later bachelor degree courses.

We have discovered no previous studies which have examined either the curricula or the examination papers used in the Junior Colleges. However, a USA study compared the Japanese junior colleges to their own, which suggests that the Japanese and US Associate Degrees are at least broadly comparable *(Medrich et al., 1994)*. The course is two years full time, which is equivalent to a UK HND. The Japanese consider the Associate Degrees to be ISCED level 5 courses, that is post-secondary and sub-degree level, or in UK terms HNCs or HNDs (*OECD, 1995*). On this basis we have assigned those who have completed junior college to NVQ level 4 and above.

3.5.2 Educational attainment

The *Special Survey of the Labour Force* reveals that 28.1 per cent of the employed labour force have completed either Junior College or University. There are striking differences by gender in educational attainment in the Japanese labour force. Of the employed males, 30.4 per cent have completed an NVQ level 4 and above, compared with 24.6 per cent of women. Men were almost four times as likely to have completed university level education; by contrast women were almost three times more likely to have only completed Junior College level education (Table 3.12).
Data by age were not available.

The growth rate in attainment levels over the last decade has been from 20.7 per cent (in 1986) to 28.1 per cent (in 1994) (Table 3.13).

Table 3.12: Employed Japanese by educational attainment and gender, 1994

	Total number (1,000s)	Male as % of employed	Female as % of employed	Total as % of employed
College or University incl. graduate school	10,800	24.2	6.6	17.2
Junior College	6,860	6.2	18.0	10.9
NVQ level 4 and above	*17,660*	*30.4*	*24.6*	*28.1*
Senior high school	30,070	45.9	50.7	47.8
Total	62,900	100.0	100.0	100.0

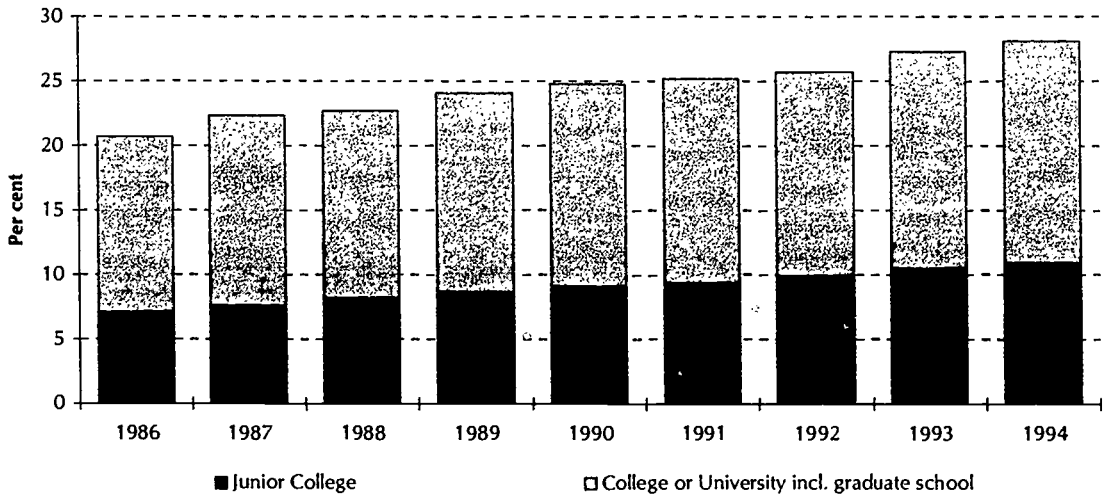
Source: IES/ Report of the Special Survey of the Labour Force, 1994

Table 3.13: Japanese attainment levels 1986 to 1994

Year	Total employed (1,000s)	Senior high school % of employed	NVQ level 4 and above as % of employed	Junior College % of employed	College or University incl. graduate school % of employed
1986	56,770	47.9	*20.7*	7.1	13.6
1987	56,910	47.3	*22.3*	7.6	14.7
1988	57,910	48.1	*22.7*	8.2	14.5
1989	59,040	47.8	*24.1*	8.7	15.4
1990	60,380	47.8	*24.8*	9.1	15.7
1991	61,590	47.8	*25.2*	9.4	15.8
1992	62,970	48.5	*25.7*	9.9	15.8
1993	62,730	48.1	*27.3*	10.5	16.8
1994	62,900	47.8	*28.1*	10.9	17.2

Source: IES/ Report of the Special Survey of the Labour Force, 1994

Figure 3.3: Japanese attainment levels at NVQ level 4 and above, as percentage of employed



Source: IES/Report of the Special Survey of the Labour Force, 1994

3.6 Korea

3.6.1 Data sources and definitions

The Main source for Korean data is the *Annual Report on the Economically Active Population Survey*. The data are classified in terms of completing senior high school, vocational school or junior college and university. In line with the USA, Japanese and Taiwanese educational systems, we are taking completion of junior college, which leads to an associate degree, to be equivalent to NVQ level 4.

Table 3.14: Attainment levels of employed Koreans who completed college or university, 1985 to 1994

	Males		Females		Total	
Year	Completed college or university (1,000s)	As % of employed	Completed college or university (1,000s)	As % of employed	Completed college or university (1,000s)	As % of employed
1985	1,248	13.7	287	4.9	1,535	10.3
1986	1,330	14.2	332	5.4	1,662	10.7
1987	1,450	14.9	384	5.8	1,834	11.2
1988	1,621	16.1	442	6.5	2,063	12.2
1989	1,758	16.9	535	7.5	2,293	13.1
1990	1,869	17.5	606	8.2	2,475	13.7
1991	2,005	18.1	681	9.0	2,686	14.4
1992	2,265	20.0	778	10.2	3,043	16.0
1993	2,471	21.5	863	11.2	3,334	17.3
1994	2,581	21.8	949	11.9	3,530	17.8

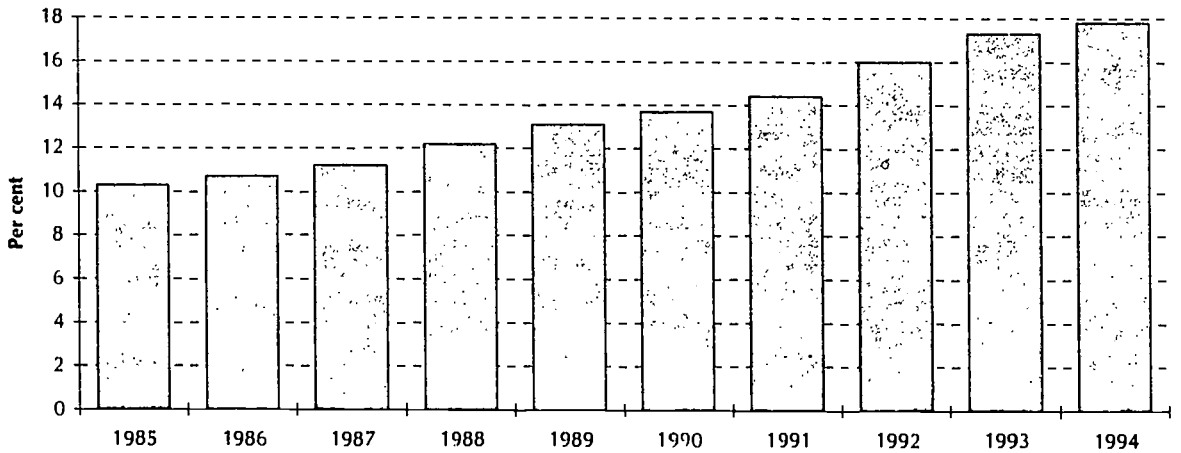
Source: IES/ Annual Report on The Economically Active Population Survey, 1994

3.6.2 Attainment levels

There has been a rapid increase in the attainment levels of the Korean employed population, from 10.3 per cent in 1985 to 17.8 per cent in 1994. Another feature of the pattern of attainment in Korea is the significant difference between the attainment of males and females. In 1994, 11.9 per cent of employed females were qualified to NVQ level 4 and above, far fewer than the 21.8 per cent of males (Table 3.14).

Data by age were not available.

Figure 3.4: Attainment levels of employed Koreans who completed college or university, as percentage of employed 1985 to 1994



Source: IES/Annual Report on the Economically Active Population Survey, 1994

3.7 Taiwan

3.7.1 Data sources and definitions

As with the Korean educational system, the Taiwanese system is derived from the system of its former occupying power, Japan and the system in the USA.

The main data source for educational attainment in Taiwan is the Manpower Survey (*Directorate General of Budget, Accounting and Statistics, 1995*). This reports data in terms of the highest level of education completed. The reported categories are:

- completed senior high
- completed vocational
- completed junior college
- completed college and graduate school.

These questions about educational attainment were first asked in 1978. It is intended in the future to ask questions about the highest level of qualification obtained in addition to the highest level of education completed (Personal Communication Directorate General of Budget, Accounting and Statistics). In line with the approach used in the Japan and Korea we are taking the Associate degree that is awarded on completion of junior college to be equivalent to NVQ level 4.

3.7.2 Educational attainment

The attainment rates amongst employed men and women were similar, in contrast to Japan and Korea (Table 3.15).

Table 3.15: Taiwan, highest level of education completed 1978 and 1994

	Thousands			% of total employed		
1978	Male	Female	Total	Male	Female	Total
College & graduate school	199	66	265	4.8	3.2	4.3
Junior College	176	89	265	4.2	4.3	4.3
NVQ level 4 and above	*375*	*155*	*530*	*9.0*	*7.6*	*8.5*
Total employed	4,183	2,048	6,231	100.0	100.0	100.0
1994						
College & graduate school	465	268	732	8.4	7.8	8.2
Junior College	609	409	1,019	11.1	11.9	11.4
NVQ level 4 and above	*1,074*	*677*	*1,751*	*19.5*	*19.7*	*19.6*
Total employed	5,511	3,428	8,939	100.0	100.0	100.0

Source: IES/Yearbook of Manpower Survey Statistics, Taiwan Area, Republic of China, 1994

Table 3.16: Highest level of education completed as a percentage of employed population (per cent of employed)

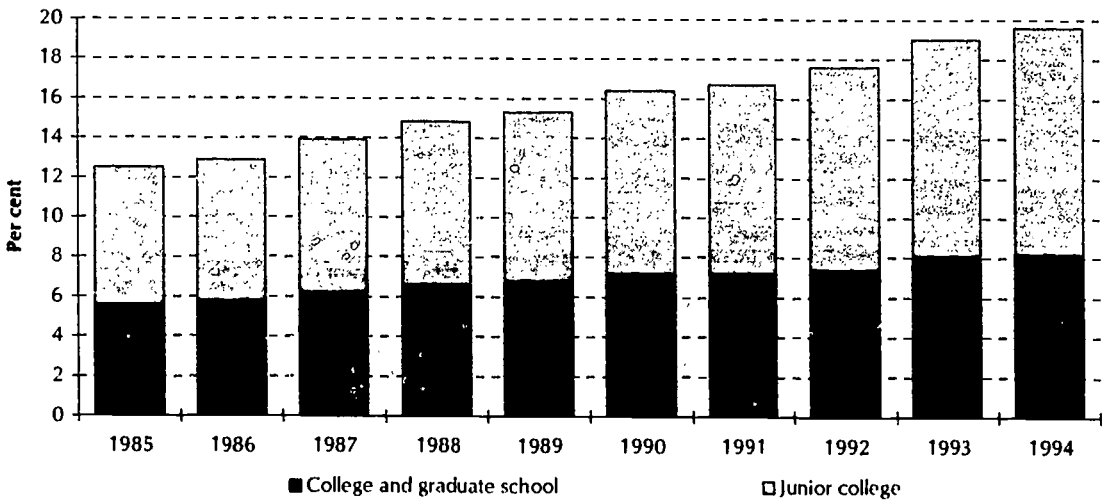
Year	College and graduate school	Junior college	NVQ level 4 and above
1985	5.6	6.9	12.5
1986	5.8	7.1	12.9
1987	6.2	7.7	13.8
1988	6.6	8.2	14.7
1989	6.8	8.5	15.3
1990	7.2	9.2	16.3
1991	7.2	9.5	16.7
1992	7.4	10.2	17.7
1993	8.1	10.9	19.0
1994	8.2	11.4	19.6

Source: IES/Yearbook of Manpower Survey Statistics, Taiwan Area, Republic of China, 1994

Between 1978 and 1994 the proportion completing education to NVQ level 4 and above more than doubled from 7.6 per cent to 19.7 per cent while, because of demographic change, the numbers increased more than four-fold.

The bulk of the recent growth in attainment at NVQ level 4 and above has been due to the increase in the number of students completing junior college (Table 3.16, Figure 3.5).

Figure 3.5: Highest level of education completed, as a percentage of employed population



Source: IES/Yearbook of Manpower Survey Statistics, Taiwan Area, Republic of China, 1994

3.8 USA

3.8.1 Data sources and definitions

The USA post-secondary education system is remarkably diverse, especially at the sub-degree level, with the pattern and nature of provision varying by State. Various studies have attempted to draw parallels with the UK system, the most notable being by Her Majesty's Inspectorate (*HMI/DES, 1989* and *HMI/DES, 1990*). The debate focuses for our purposes around the status of the Associate Degree, and whether these qualifications should be considered NVQ level 3 or NVQ level 4. The HMI study suggested that the standards of Associate Degrees varied and were in a range between the UK ONC/OND and the UK HNC/HND standards. Other work suggests that, at least in the area of Mechanical Engineering, an Associate Degree was of a HND level (*Mason and Finegold, 1995*).

The Associate Degree is defined in the USA Integrated Postsecondary Education Data System (IPEDS) as 'an award that normally requires at least two but less than four years of full-time equivalent college work' (*Broyles and Vanderhorst, 1992*). The IPEDS also distinguishes other post-secondary qualifications which, at least in terms of the study time required to obtain them, are more clearly NVQ level 3 standard. These, perhaps confusingly, are called Certificates or Diplomas and require either less than 900 contact hours or between 900 and 1,800 contact hours.

The data sources we are using to generate educational attainment information distinguish Associate Degrees and Bachelors degrees and separately record other vocational qualifications of a lower standard. Therefore we are making a qualified judgement that Associate Degrees are of NVQ level 4 and above.

In the past the only USA data source which provided data on the level of qualifications obtained, rather than the highest level of education completed, was the Survey on Income and Programme Participation (SIPP). The Current Population Survey (CPS) used to only ask questions about the highest levels of education completed, however the latest survey now includes questions about the highest level of qualifications obtained. The CPS survey, which reports much more recent data, has now superseded the SIPP survey.

3.8.2 Educational attainment

The one problem with the CPS survey based data is that it only reports data on those over 25 years old. This means that although the data is based on those with earnings (which we are taking as a proxy for employed) and for those who have

Table 3.17: USA employed, educational attainment 1984 and 1987

All Persons 18 Years and over	1984 (1,000s)	1984 % of total	1987 (1,000s)	1987 % of total
Doctorate	768	0.5	977	0.6
Professional degree such as Dentistry, Medicine, Law, or Theology	1,744	1.0	1,723	1.0
Masters degree	5,795	3.4	6,192	3.5
Bachelors degree	18,069	10.6	21,018	11.9
Associate degree	5,768	3.4	7,393	4.2
NVQ level 4 and above	*32,144*	*18.9*	*37,303*	*21.1*
Vocational certificate or diploma	3,105	1.8	3,743	2.1
Total	170,232	100.0	176,405	100.0

Source: IES/US Bureau of the Census, Current Population Reports, Series P-70, No. 11, What's it Worth? Educational Background and Economic Status 1984 and 1987

obtained qualifications at NVQ level 4 and above, the figure will be an overestimate. However, with those provisos, the CPS data suggest that 34.4 per cent of the earning population over 25 years old has a qualification at NVQ level 4 or above. For all the other countries the employed under 25 year olds are likely to be less qualified than the average. Making an appropriate adjustment, to include the younger American employed, an IES estimate suggests that the comparable USA figure to the UK target is nearer 30 per cent. (Table 3.18).

The SIPP offers the only data over time but these are not recent. It shows an improvement in attainment levels from 18.9 per cent in 1984 to 21.1 per cent in 1987 (Table 3.17).

The attainment rates for men and women are broadly similar (Table 3.18).

Data on attainment by age bands for those employed were not available.

Table 3.18: USA Educational attainment of those aged 25 plus with earnings, by gender, 1992

	Males with earnings (1,000s)	Females with earnings (1,000s)	Both with earnings (1,000s)	Males with earnings as % of total	Females with earnings as % of total	Both with earnings as % of total
Doctoral degree	916	329	1,245	1.5	0.6	1.1
Professional degree	1,505	498	2,003	2.5	1.0	1.8
Masters Degree	3,887	3,247	7,134	6.4	6.3	6.4
Bachelors degree	10,667	8,824	19,491	17.7	17.2	17.5
Associate degree	4,072	4,391	8,463	6.7	8.6	7.6
NVQ level 4 and above	*21,047*	*17,289*	*38,336*	*34.9*	*33.7*	*34.4*
Total	60,356	51,246	111,602	100.0	100.0	100.0

Source: IES/Current Population Reports, Series P-60, Money Income of Households, Families, and Persons in the US: 1992

3.9 UK

3.9.1 Data sources and definitions

The data source for the UK is the quarterly Labour Force Survey. Since the survey is only carried out annually in Northern Ireland we are reporting the data for the March to May quarter only. This is the same source that is proposed for monitoring the Higher Level Skills Lifetime Learning Target. We have used exactly the same detailed criteria as given in the full definition of the Target (*NACETT, 1995*).

3.9.2 Educational attainment

The UK attainment rate was 23.4 per cent in 1995, up from 22.8 per cent in 1994 — the only year for which the data are strictly comparable. (*Enhanced data from the Autumn 1995 LFS shows that the attainment rate has risen to 24 per cent.*) Data for 1990 show a figure of 16.5 per cent although there have been classification changes since then which will account for some of the apparent growth in the early 1990s. The attainment rate for employed women (22.8 per cent), in 1995, was slightly below that for men (23.8 per cent) (Table 3.19).

When the data are examined by age band, the highest attainment levels amongst men are found in the 30 to 49 age band at 27.9 per cent of those employed. This compares with the earlier, but higher, peak for women at 28.1 per cent in the 25 to 29 age range (Table 3.20). Various possible explanations could be advanced for these different patterns by gender, particularly that men are more likely than women to be in postgraduate study in their late 20s, depressing the rate in this age group and then entering the labour force later, raising the later rate.

Table 3.19: UK educational attainment, employed males and employed females

	Male, aged16-64		Female, aged 16-59		Both	
Year	**Employed NVQ level 4 and above (1,000s)**	**% of Employed**	**Employed NVQ level 4 and above (1,000s)**	**% of Employed**	**Employed NVQ level 4 and above (1,000s)**	**% of Employed**
1990	*2,507*	*16.8*	*1,786*	*16.1*	*4,293*	*16.5*
1991	*2,518*	*17.5*	*1,791*	*16.4*	*4,310*	*17.0*
1992	*2,883*	*20.6*	*2,130*	*19.4*	*5,013*	*20.1*
1993	3,079	22.9	2,264	21.3	5,343	22.2
1994	3,182	23.1	2,457	22.4	5,639	22.8
1995	3,356	23.8	2,530	22.8	5,887	23.4

** Due to changes in the classifications used there is a significant break in the series between 1992 and 1993*

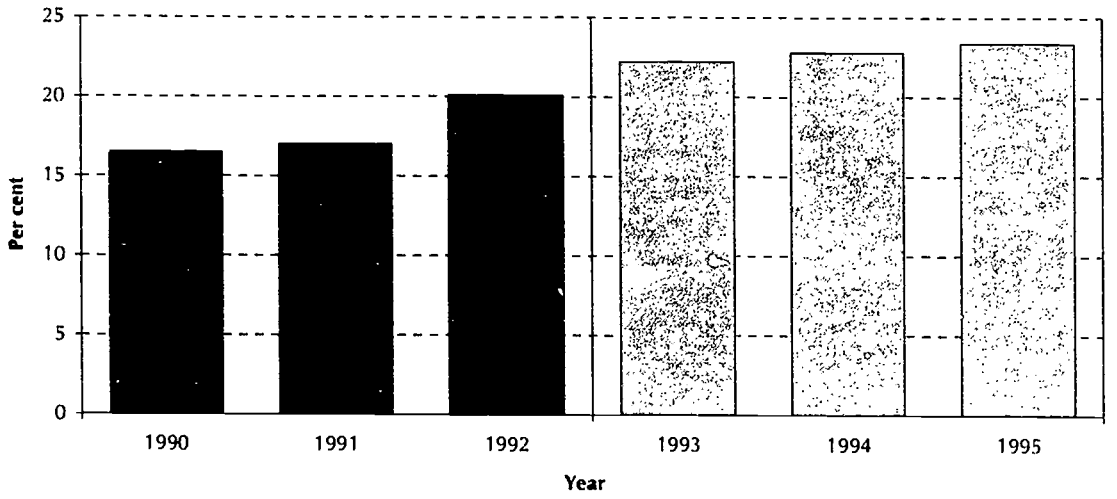
Source: IES/NACETT and UK LFS March to May Quarter 1993, 1994 and 1995

Table 3.20: Employed with NVQ level 4 and above, by gender and age bands, 1995

	Male		Female		Both	
Age Bands	**Employed NVQ level 4 and above (1,000s)**	**% of employed**	**Employed NVQ level 4 and above (1,000s)**	**% of employed**	**Employed NVQ level 4 and above (1,000s)**	**% of employed**
16-19	–	0.9	–	0.9	12	0.9
20-24	246	17.6	221	18.6	467	18.0
25-29	491	25.5	425	28.1	916	26.6
30-39	1,070	27.9	808	27.6	1,879	27.8
40-49	938	27.9	706	24.3	1,644	26.3
50-59	490	21.5	364	19.1	854	20.4
60 and above	115	18.9	na	na	115	18.9
All ages	3,356	23.8	2,530	22.8	5,887	23.4

Source: IES/UK LFS March to May Quarter 1995

Figure 3.6: UK educational attainment, employed males aged 16 to 64 and employed females aged 16 to 59, as percentage of employed



Source: IES/NACETT and UK LFS March to May Quarter 1993, 1994 and 1995

4. The Supply Side

4.1 Introduction

A number of factors will affect future attainment levels. The educational supply data show the potential rate of addition to the stock. This is principally driven in each country by the cohort of young people who normally have a higher attainment level than the overall average. A second influence on the overall attainment level will be the rising participation of women. If they are better qualified than the average for the workforce, as is normally the case for young women, then this is likely to increase the overall attainment level. If their attainment levels are lower than the average, as is often the case with older women entrants to the labour force, their rising participation will lower the overall average. A third influence will be those leaving the workforce; we saw in Chapter 3 that older workers are likely to have attainment levels below the average so that such an outflow is likely to raise the overall average attainment level.

We also saw in Chapter 3 that there are only limited data on the age and gender distribution of the qualified workforce. We are therefore unable to provide a projection of how these factors might change in the future for each country. Neither are we able to separate out the age structure of those obtaining qualifications and relate this to their economic status. A further problem with predicting the change in attainment levels is that many qualifications at NVQ level 4 and above act as entry qualifications to higher levels of study. We do not always know what proportion of those receiving a given qualification enter the labour market or go on to study at a higher level, *eg* first degree graduates staying on for postgraduate study. It was this problem that persuaded the Australian Government that predicting future attainment levels was practically impossible (*Australian Education Council Review Committee, 1991*). We have, however, been able to carry out some simple modelling of future change in the UK (section 5.4.2, Appendix 1); we have not been able to do this for the other countries.

In considering future changes in the attainment rates across the countries we have had to use as our single proxy of change the changing supply of those obtaining qualifications to NVQ level 4 and above. Thus in this chapter we consider the way in which attainment rates might change in the future by considering how the supply of those obtaining qualifications to NVQ level 4 and

above has been changing in each country, and also looking at how the population of young people, the prime source of newly qualified people entering the workforce, is expected to change in the future.

As well as presenting overall numbers, a subject breakdown is also given, however the available data on this are more limited.

4.2 Education and training supply

4.2.1 Overview

Obtaining comparable educational data is notoriously difficult. The OECD have collected data from the OECD countries (*ie* excluding Korea and Taiwan) covering the numbers of people obtaining first and higher degrees (or the various national equivalences). The National Science Foundation in the USA has also collected comparative data covering first degrees and doctorates in Europe and the Asian region. However, as we have seen in Chapter 3 an important component of the NVQ level 4 and above attainment in many countries, is at the sub-degree or Associate degree level. The only comparable source which includes sub-degree data and the whole range of degree and postgraduate data is UNESCO.

The problem with the UNESCO data is that it is usually published after long time lags and it often appears with major lacunae in the time series. Where possible, we have used nationally published data to supplement the UNESCO data. However, many countries do not publish the full range of qualifications at NVQ level 4 that are included in the UNESCO data. The following country sections present the output data that are, in our view, the best and most comparable that are available.

4.2.2 Output data

We have taken the output at ISCED levels 5, 6 and 7 to be comparable with the output of qualifications to NVQ level 4 and above. We have checked the various national definitions of what is an ISCED level 5 qualification (OECD, 1995) against our definitions used in Chapter 3 for the attainment data. This shows that apart from Germany, which considers some of the qualifications generated by the dual-system of apprenticeship to be ISCED level 5, that the use of ISCED level 5 data is a satisfactory proxy for qualifications to NVQ level 4 and above. *(In the UK, ISCED 5 broadly equates to HND and sub degree qualifications; ISCED 6 to first degrees, and ISCED 7 to higher degrees)*

Table 4.1 shows the overall output of qualifications at NVQ level 4 and above in each of the countries. We have sought to use data for comparable years, however, due to data constraints we are obliged to use a range of years from 1990 to 1992. More recent

data are not consistently available other than for the UK (1994). These output data are then compared with the population of 20 to 24 year olds in that country for the year concerned to normalise the data for population size, the age range being chosen to cover the typical ages of qualification *(although in some countries students qualify at older ages for degrees, eg Germany)*. The graduation rate is then obtained by dividing the output by the average population of 20 to 24 year olds. The graduation rate therefore allows the levels of output to be compared in terms of the age specific population that is most likely to qualify.

In these terms it can be seen that the USA represents the highest levels of output in absolute terms (2,025,000) and one of the highest graduation rates (53.6 per cent). Japan has the second highest level of output in absolute terms, but compared with its 20 to 24 year old population this represents a relatively low graduation rate (38.1 per cent). The UK, with a graduation rate in 1993/4 of 56.8 per cent, is the highest along with France, closely followed by the USA. The UK lead is, however, exaggerated as the UK data is for several years later than is the case for the other countries whose graduation rates for the later year were probably higher (Table 4.1).

Both the graduation rate and population size will determine the future flow into the workforce. Limited evidence is available on this, but in terms of the young population, significant falls in numbers are expected in Germany and the UK, and to a lesser extent France and Korea, while Taiwan is the only country expecting an increase (Table 2.2). The data are too limited to allow simple modelling of the combined effects of these changes.

An important policy concern has been the relative output of

Table 4.1: Output at NVQ level 4 and above

	Actual output at NVQ level 4 and above (1,000s)	Year	NVQ level 4 and above graduation rate[1] (%)	% of output in engineering & technology
Australia	121	1992	41.7	7.1
France	485	1991	56.7	3.9
Germany *	198	1992	21.8	na
Japan	697	1991	38.1	17.4
Korea	319	1992	36.1	18.8
Taiwan *	156	1992	43.1	na
USA	2,025	1990	53.6	na
UK	472	1994	56.8	13.6

The German data, although for the unified Germany, are only based on Universities and Polytechnics and are an undercount. The Taiwanese data are based on national sources as their data are not reported by UNESCO. Not all countries publish data on the numbers in engineering and technology at this level; data are normally available for degree level and above.

[1] The graduation rate is defined as the number qualifying that year as a percentage of the average number in the 20-24 age range (see section 4.2.2).

Source: IES and various national and international sources

engineering and technology qualifications. The UNESCO data allow us to calculate the percentage of the total output at NVQ level 4 and above that is categorised as engineering and technology subjects. Unfortunately, while there are good data for all countries at degree level and above (see *eg* OECD, 1995a), at NVQ level 4 and above the data are more limited.

There were significant variations between countries in terms of the percentage of the output at NVQ level 4 and above that was classified as engineering and technology. This ranged from 3.9 per cent in France to 18.8 per cent in Korea. The UK was at the top end of the range with 13.6 per cent of its output to NVQ level 4 and above in engineering and technology (Table 4.1). Data for individual countries follow.

4.3 Australia

The majority (66.2 per cent) of the Australian output at NVQ level 4 and above, reported to UNESCO, is at ISCED level 6 or the First Degree level. Just under ten per cent qualified at ISCED level 5, sub-degree level.

The main subject area with 43.8 per cent of the output was the social sciences, with engineering and technology accounting for 7.1 per cent, and the natural sciences for 12.7 per cent (Table 4.2).

The total output in 1990 of 94,399 with qualifications to NVQ level 4 and above, represented a graduation rate of 37.7 per cent of the average population of 20 to 24 year olds. This rose to 46.8 in 1992 (Table 4.3).

Looking ahead, the historic pattern of rising attainment levels among the young will lead to an increase in the overall numbers of young people qualifying, despite the decline in the 20 to 24 year old population expected in the year 2000. However, it is

Table 4.2: Australia, output at NVQ level 4 plus, by ISCED level and subject group, 1992

	NVQ level 4 and above	% of total	ISCED level 5	ISCED level 6	ISCED level 7
Natural Sciences	15,294	12.7	609	11,904	2,781
Engineering & Technology	8,512	7.1	493	6,049	1,970
Medical sciences	16,173	13.4	3,530	10,200	2,443
Agricultural Sciences	2,412	2.0	669	1,258	485
Social Sciences	52,758	43.8	5,176	30,825	16,757
Humanities	25,434	21.1	1,021	19,611	4,802
Other fields	–	–	–	–	–
Total	120,583	(100.0)	11,498	79,847	29,238
% of total	(100.0)	–	9.5	66.2	24.2

Source: IES/UNESCO

Table 4.3: Australia, actual output and 20 to 24 year old population in 2000

	1990	1992	2000
Actual output	94,399	120,583	–
Average population in 20 to 24 age range	288,400	288,800	268,200
Graduation rate (%)	37.8	46.8	–

Source: IES/UNESCO/World Bank

impossible to estimate whether the graduation rate in 2000 will have increased linearly or at a slower rate than in the years 1900 to 1992, although it is unlikely to grow at the same rate (Table 4.3).

4.4 France

Of those acquiring qualifications to NVQ level 4 and above in 1991, 44.2 per cent were at ISCED level 5, a proportion that has risen as result of a recent policy shift towards ISCED level 5 qualifications in response to rising baccalaureate graduation rates (*Ministry of Higher Education and Research, 1994*). The largest single subject category at NVQ level 4 and above was the social sciences (28.4 per cent), closely followed by the humanities (23.5). Engineering and Technology represented 3.9 per cent of graduations. This may be a result of under reporting to UNESCO as this figure is not consistent with the admittedly partial data published in the French Statistical Yearbooks (*INSEE, various years*). The natural sciences and other fields accounted for the bulk of the remaining qualifications, with 15.8 per cent and 20.1 per cent respectively (Table 4.4).

Nearly half, 44.2 per cent of those qualifying did so at sub-degree, ISCED level 5.

Table 4.4: France, output at NVQ level 4 plus, by ISCED level and subject group, 1991

	NVQ level 4 and above	% of total	ISCED level 5	ISCED level 6	ISCED level 7
Natural Sciences	76,603	15.8	23,683	34,802	18,118
Engineering & Technology	19,061	3.9	–	19,061	–
Medical sciences	39,398	8.1	18,859	2,899	17,640
Agricultural Sciences	962	0.2		962	–
Social Sciences	137,567	28.4	43,927	74,793	18,847
Humanities	113,807	23.5	41,521	60,878	11,408
Other fields	97,264	20.1	86,447	7,772	3,045
Total	484,662	(100.0)	214,437	201,167	69,058
% of total	(100.0)		44.2	41.5	14.2

Source: IES/UNESCO

Table 4.5: France, actual output and 20 to 24 year old population in 2000

	1990	1991	2000
Actual output	456,535	484,662	–
Average population in 20 to 24 age range	856,600	853,800	741,600
Graduation rate (%)	53.3	56.8	–

Source: IES/UNESCO/World Bank

The total output of qualifications to NVQ level 4 and above was 456,662 in 1990 and 484,662 in 1991. This represents a graduation rate of 53.3 per cent and 56.8 per cent of the average population of 20 to 24 year olds. This rising attainment rate should counteract the declining 20 to 24 year old population and at least maintain and probably increase the output levels by the year 2000 (Table 4.5).

4.5 Germany

In the absence of UNESCO data covering the united Germany, we have used the data published in their Statistical Yearbook covering the united Germany for 1992 (*Statistisches Bundesamt, 1995c*). These data mainly cover the output from the *Hochschulen*, or universities; this means that some of the substantial output from the *Fachhochschulen*, or Polytechnics, is not included.

On the basis of the reported data, just over 60 per cent of the German higher education qualifications are obtained by men. Similar gender ratios apply at all the levels of higher education (Table 4.6).

With only one year's higher education output data, it is difficult to make an assessment of the likely future pattern of output. However, the population projections indicate a sharp drop in the numbers of 20 to 24 year olds between 1990 and 2000, which means that without an equally significant increase in the graduation rate the overall output is likely to decline (Table 4.7).

Table 4.6: Germany, higher education output in 1992

	Male	Female	Both	% of total
First degree at polytechnic	60,424	38,633	99,057	50.0
Doctorate	15,252	6,186	21,438	10.8
Higher education qualification	4,389	11,196	15,585	7.9
First degree at university	41,577	20,485	62,062	31.3
Total	121,642	76,500	198,142	100.0
%	61.4	38.6	100.0	

Notes: 1) University type qualification obtained in the Fachhochschul, 2) Doctorate, 3) Non university HE qualification, 4) The first main university qualification equivalent in level to a Masters.

Source: IES/Statistisches Bundesamt, 1995 Statistical Yearbook

Table 4.7: Germany, actual output and 20 to 24 year old population in 2000

	1992	2000
Output	198,142	–
Average population aged 20 to 24	1,126,400	826,600
Graduation rate (%)	21.8	–

Source: IES/Statistisches. Bundesamt, 1995 Statistical Yearbook/World Bank

4.6 Japan

One third of those qualifying did so at sub-degree, ISCED level 5.

In terms of subject distribution the social sciences are the largest grouping at ISCED levels 5 and 6, but engineering and technology dominate at ISCED level 7 (postgraduate degrees) (Table 4.8).

Japan has a graduation rate of 38.1; trend data are not available. The population of young people is set to fall by nearly ten per cent over the decade to 2000 and this will reduce the flow of newly qualified entrants to the workforce (Table 4.9).

Table 4.8: Japan, output at NVQ level 4 plus, by ISCED level and subject group, 1991

	NVQ level 4 and above	% of total	ISCED level 5	ISCED level 6	ISCED level 7
Natural Sciences	17,960	2.6	156	14,217	3,587
Engineering & Technology	121,017	17.4	18,890	87,760	14,367
Medical sciences	34,944	5.0	8,929	22,044	3,971
Agricultural Sciences	17,038	2.4	1,453	13,572	2,013
Social Sciences	329,009	47.2	118,035	205,806	5,168
Humanities	146,962	21.1	67,581	75,920	3,461
Other fields	30,362	4.4	17,474	12,439	449
Total	697,292	(100.0)	232,518	431,758	33,016
% of total	(100.0)		33.3	61.9	4.7

Source: IES/UNESCO

Table 4.9: Japan, actual output and 20 to 24 year old population in 2000

	1991	2000
Output	697,292	–
Average population aged 20 to 24	1,829,200	1,670,400
Graduation rate (%)	38.1	–

Source: IES

One third of those qualifying did so at sub-degree, ISCED level 5.

In terms of subject distribution the social sciences are the largest grouping at all levels. Engineering and technology account for 18.8 per cent of the total (Table 4.10).

Korea had a graduation rate of 33.4 per cent in 1990; this rose to 36.1 per cent in 1992 and is expected to go on rising. The population of young people aged 20 to 24 is, however, set to fall by nearly 12 per cent over the period to 2000 and this will reduce the flow of newly qualified entrants to the workforce (Table 4.11).

Table 4.10: Korea, output at NVQ level 4 plus, by ISCED level and subject group 1992

	NVQ level 4 and above	% of total	ISCED level 5	ISCED level 6	ISCED level 7
Natural Sciences	35,025	11.0	12,705	20,072	2,248
Engineering & Technology	60,038	18.8	23,519	31,906	4,613
Medical sciences	24,352	7.6	14,671	6,725	2,956
Agricultural Sciences	15,342	4.8	5,402	8,853	1,087
Social Sciences	117,931	37.0	33,827	73,660	10,444
Humanities	56,774	17.8	12,407	40,658	3,709
Other fields	9,423	3.0	3,886	4,945	592
Total	318,885	100.0	106,417	186,819	25,649
% of total	100.0		33.4	58.6	8.0

Source: IES/UNESCO

Table 4.11: Korea, actual output and 20 to 24 year old population in 2000

	1990	1992	2000
Output	293,684	318,885	–
Average population aged 20 to 24	879,000	883,800	777,200
Graduation rate (%)	33.4	36.1	–

Source: IES

4.8 Taiwan

The output of college and degree level graduates has nearly doubled in the 1990s, giving a graduation rate of 43.2 per cent in 1992. The highest rate of increase has been at postgraduate level.

Subject data are not available.

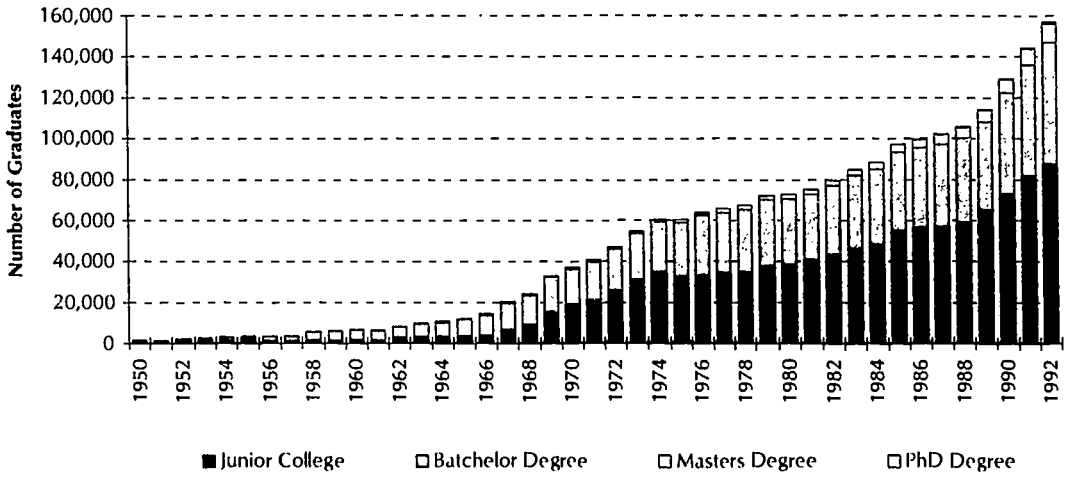
Looking ahead, the population of young people aged 20 to 24 is expected to rise by a small amount over the period to 2000. If the increase in the graduation rate also continues to rise, this will give a significant boost to attainment levels.

Table 4.12: Taiwan, output by level, 1985/6 to 1992/3

Year	Junior college	Bachelors degree	Masters degree	PhD degree
1985/86	54,703	38,625	3,800	161
1986/87	56,408	39,065	4,112	253
1987/88	57,082	40,380	4,483	297
1988/89	58,912	41,406	5,039	319
1989/90	65,177	42,952	5,774	410
1990/91	72,867	49,488	6,409	518
1991/92	81,683	54,375	7,688	608
1992/93	87,427	59,478	9,240	708

Source: IES/Education Statistics of the Republic of China, 1994

Figure 4.1: Taiwan, output by post-secondary level, 1950-51 to 1992-93



Source: IES/Education Statistics of the Republic of China, 1994

Table 4.13: Taiwan, actual output and 20 to 24 year old population in 2000

	1990	1992	2000
Output	128,764	156,145	–
Average population aged 20 to 24	371,100	360,200	380,100
Graduation rate (%)	34.7	43.2	–

Source: IES

4.9 USA

The output of college and degree level graduates in the USA has grown by about 10 per cent in the 1990s. It is projected to stabilise, and fall slightly over the period to 2001 (Table 4.14, Figure 4.2). The graduation rate rose from 53.6 in 1990 to 57.8 two years later.

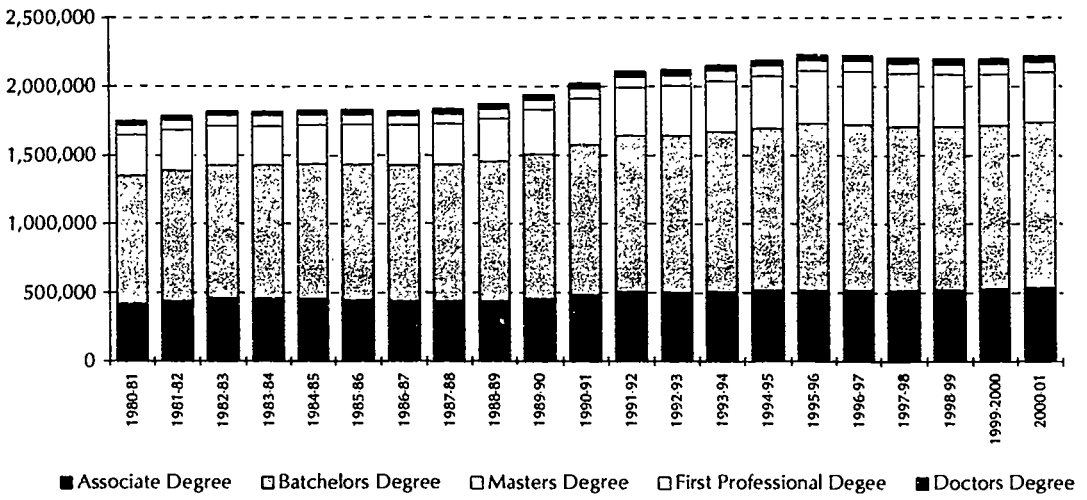
Subject data are not available for NVQ level 4 and above.

Table 4.14: USA, output by level, actual and projected 1980-81 to 2000-01

Year	Associate degree (1,000s)	Bachelors degree (1,000s)	Masters and first professional degrees (1,000s)	Doctoral degree (1,000s)	Total (1,000s)
1985/86	446	988	322	33	1,830
1986/87	436	991	323	34	1,823
1987/88	435	995	334	34	1,835
1988/89	437	1,019	346	35	1,873
1989/90	455	1,051	363	38	1,940
1990/91	482	1,094	376	39	2,025
1991/92	504	1,137	393	40	2,108
1992/93	497	1,145	405	41	2,121
1993/94 (P)	*504*	*1,165*	*411*	*41*	*2,155*
1994/95 (P)	*518*	*1,178*	*418*	*41*	*2,189*
1995/96 (P)	*518*	*1,214*	*424*	*41*	*2,232*
1996/97 (P)	*516*	*1,206*	*430*	*41*	*2,227*
1997/98 (P)	*517*	*1,194*	*424*	*41*	*2,210*
1998/99 (P)	*520*	*1,187*	*419*	*41*	*2,202*
1999/2000(P)	*528*	*1,190*	*412*	*41*	*2,204*
2000-01 (P)	*538*	*1,203*	*405*	*41*	*2,220*

Source: Digest of Education Statistics 1994, Table 234. Data from 1993/94 onwards are projections

Figure 4.2: USA, output by level, actual and projected 1980-81 to 2000-01



Source: IES/Digest of Education Statistics 1994, Table 234

Table 4.15: USA, actual output and 20-24 population in 2000

	1990	1992	2000
Output	2,024,668	2,121,000	—
Average population aged 20 to 24	3,780,800	3,678,600	3,475,350
Graduation rate (%)	53.6	57.8	—

Source: IES

4.10 UK

Between 1990/91 and 1993/4 the numbers qualifying at NVQ level 4 and above grew by nearly 27 per cent, with the highest growth at ISCED level 6 (broadly first degree level), up by over 30 per cent. The graduation rate rose from 45.9 in 1990 to 56.8 in 1994.

On a subject basis the social sciences dominate, accounting for over 40 per cent of all graduations, 13.6 per cent of the total gained qualifications in engineering and technology.

Looking ahead, the population of young people is projected to fall by nearly a third over the decade. This will act to reduce the numbers qualifying but the increase in the graduation rate is expected to counteract this fall. Projections suggest that the overall output at first and higher degree level will continue to grow in the mid 1990s but may then stabilise in the late 1990s as there is a current cap on admissions to higher education. If intakes in fact rise, then the number of entrants to first degrees could rise significantly over the period to 2000 with consequent rises in the later output (*Connor et al.*, forthcoming).

Table 4.16: UK, output at NVQ level 4 plus, 1990/91 to 1993/94

	1990/91 (1,000s)	1992/93 (1,000s)	1993/94 (1,000s)	% change 90/91 to 93/94
ISCED Level 7	65.0	74.2	75.9	16.8
ISCED Level 6	161.5	189.2	210.8	30.5
ISCED Level 5	145.3	173.0	184.8	27.2
NVQ 4 and above	371.8	436.5	471.5	26.8

Source: IES/DFEE

Table 4.17: UK, output at NVQ level 4 and above, by ISCED level and subject group, 1993/94

	NVQ level 4 and above (1,000s)	% of total	ISCED level 5 (1,000s)	ISCED level 6 (1,000s)	ISCED level 7 (1,000s)
Natural Sciences	58.7	12.4	13.8	34.7	10.6
Engineering & Technology	64.3	13.6	28.6	27.2	8.4
Medical sciences	59.8	12.7	43.7	11.3	4.8
Agricultural Sciences	5.6	1.2	2.5	1.9	1.2
Social Sciences	198.3	42.1	77.0	78.4	42.8
Humanities	36.4	7.7	9.5	21.9	5.0
Other fields	40.1	8.5	9.5	28.8	1.8
Total*	471.5	(100.0)	184.8	210.8	75.9
%	(100.0)		39.3	44.7	16.1

**Note: does not sum due to rounding errors and inclusion of Open University in totals but not in subject groups*

Source: IES/Education Statistics for the UK: 1995

Table 4.18: UK, actual output, 1990 and 1993/94 and 20 to 24 year old population in 2000

	1990	1992/93	1993/94	2000
Output	371,818	436,500	471,500	–
Average population aged 20 to 24	909,400	856,800	830,400	679,400
Graduation rate (%)	45.9	55.9	56.8	–

Notes: 1992/93 and 1993/94 output data in 1,000s, 1993/94 data provisional

Source: IES/UNESCO/Education Statistics for the UK: 1995

5. The Appropriateness of the UK Target

5.1 Introduction

In considering the appropriateness of the UK Target, account has to be taken of where we start from in terms of both the UK's own performance and its performance relative to other countries. We also have to take account of how the UK and our competitors will improve over the next five years on the basis of existing trends.

The research showed that there is a considerable body of data available from which to draw international comparisons, but that considerable care has to taken when using the data. Each country is different in terms of its history, culture and economic structure. Such a simple comparison of numbers can therefore potentially hide as much as it reveals. This difficulty is compounded by different education, training and qualification systems. Finally, data collection procedures vary, as does the timeliness of the data, such that one has often to compare data several years in arrears and use different reference dates for different countries. This means that is rarely possible to be absolutely certain that one is comparing like with like.

Thus in considering the appropriateness of the UK Target, the need is to focus on data in terms of orders of magnitude, not to expect a spurious degree of precision that analyses and contrasts data to the nearest decimal point.

Before considering the UK target we first look at how the demand for qualified workers is expected to change over the period to the end of the decade, and then at the existence of targets in other countries.

5.2 Demand trends

All the available evidence on future demand trends suggest significant growth in professional and technical occupations, and in administrative and managerial occupations. Growth rates for the decade of the 1990s are expected to range between about 20 per cent and 40 per cent in the cases of Australia, Japan, the US and the UK. Table 5.1 shows a synthesis of projections for these four countries. In all of these countries for which we have occupational projections, the professional and technical occupations are seen as the main growth areas, with reductions,

Table 5.1: Occupational projections, Australia, Japan, USA and UK — percentage change

	Australia 1991 to 2001	Japan 1990 to 2000	USA 1992 to 2005	UK 1990 to 2000
Professional and technical	27.7	42.0	36.4	18.7
Administrative and managerial	21.2	7.9	25.9	12.6
Clerical and related	15.2	11.7	13.7	0.0
Craft and skilled manual	21.3	0.9	13.3	−6.4
Production, service and labourer	9.2	//	22.4	−4.6
Sales workers	24.4	4.4	20.6	3.2
Agricultural and related	−11.0	−30.6	3.4	−18.9
Total	17.9	5.9	21.8	0.1

Notes: // indicates included in previous category.

Source: OECD

or at least relatively low growth, in agricultural occupations and production, service and labourer occupations. Since the professional occupations are those that require the higher level skills, this implies a growth in demand for those with skills at NVQ level 4 and above (Table 5.1). German data complement this picture (see below).

More specifically, in the UK the forecasts of the occupational profile of the economy show a continuing shift towards occupations such as managers and professionals where qualifications to NVQ level 4 and above are normally required. The projections show that over the period 1990 to 2000 the number of managers and administrators, for example, is expected to grow by over 13 per cent and professional and technical occupations by 19 per cent. This compares with virtually static overall employment growth *(IER, 1991)*. More recent projections *(Wilson, 1995)* confirm these general trends but suggest greater overall employment growth. The detailed projections for Australia, Japan, the USA and Germany are given below.

Table 5.2: UK occupational projections 1990 to 2000

	1990 (1,000s)	2000 (1,000s)	% of total, 2000	% change 1990 to 2000
Professional and technical	4,784	5,679	21.1	18.7
Administrative and managerial	3,675	4,139	15.2	12.6
Clerical and related	4,437	4,435	16.4	0.0
Craft and skilled manual	4,048	3,789	14.0	−6.4
Production, service and labourer	6,943	6,627	24.6	−4.6
Sales workers	2,074	2,141	7.9	3.2
Agricultural and related	196	159	0.6	−18.9
Total	26,155	26,969	100.0	0.1

Source: OECD/IER

Table 5.3: Australian occupational projections, 1991 to 2001

	1991 (1,000s)	2001 (1,000s)	% of total, 2001	% change 1991 to 2001
Professional and technical	1,513	1,932	20.9	27.7
Administrative and managerial	624	756	8.2	21.2
Clerical and related	1,325	1,526	16.5	15.2
Craft and skilled manual	1,223	1,483	16.0	21.3
Production, service and labourer	1,906	2,082	2.5	9.2
Sales workers	1,009	1,255	13.6	24.4
Agricultural and related	246	219	2.4	−11.0
Total	7,846	9,253	100.0	17.9

Source: OECD/IER

Table 5.4: Japanese occupational projections, 1990 to 2000

	1990 (1,000s)	2000 (1,000s)	% of total, 2000	% change 1991 to 2000
Professional and technical	6,900	9,800	14.8	42.0
Administrative and managerial	2,390	2,580	3.9	7.9
Clerical and related	11,570	12,920	19.5	11.7
Craft and skilled manual	27,720	27,960	42.2	0.9
Production, service and labourer	//	//	//	//
Sales workers	9,400	9,810	14.8	4.4
Agricultural and related	4,480	3,110	4.7	−30.6
Total	62,490	66,170	100.0	5.9

Notes: // indicates included in previous category

Source: OECD/Japan Ministry of Labour

Table 5.5: USA occupational projections, 1992 to 2005

	1992 (1,000s)	2005 (1,000s)	% of total, 2005	% change 1992 to 2005
Professional and technical	20,874	28,465	19.3	36.4
Administrative and managerial	12,066	15,195	10.3	25.9
Clerical and related	22,349	25,406	17.2	13.7
Craft and skilled manual	13,580	15,380	10.4	13.3
Production, service and labourer	35,707	43,722	29.6	22.4
Sales workers	12,993	15,664	10.6	20.6
Agricultural and related	3,530	3,650	2.5	3.4
Total	121,099	147,482	100.0	21.8

Source: OECD/Silvestri (1993)

Table 5.6: Manpower demand by level of qualification, GDR to 2010

	1987 (1,000s)	2010 (1,000s)	% of total, 2010	% change 1987 to 2010
University training	1,795	3,214	11.6	79.1
Non-university HE	980	1,887	6.8	92.6
Trade and technical school	1,983	3,069	11.1	54.8
Apprenticeship/vocational training	14,751	15,963	57.6	8.2
Unskilled	5,905	3,579	12.9	-39.4
Total	25,414	27,712	100.0	9.0

Source: Prognos/IAB

Other projections give a similar profile, in **Germany** a scenario of 'the future labour landscape' was produced by IAB/Prognos. It projected employment patterns to 2010 including five qualifications bands; this was based on the data for West Germany and a subsequent sub-model for East Germany drawing on a different data set. The results show an increase in demand for tertiary graduates and for university graduates of around 80 per cent over the period 1987 to 2010 (Table 5.6).

Finally, in **France** a government review of employment trends in the late 1980s predicted an increase in the number of jobs requiring skilled and trained labour and a decline in the number of unskilled jobs.

5.3 International targets

The UK appears alone in having a comprehensive set of national education and training targets although Australia has a set for levels up to NVQ 3. In this section we review the available data about targets in the comparator countries. In considering the existence of and background to these targets it is not our purpose to provide a critique or explanation of their education and training systems, there are a number of reports already available with such information (for example *OECD, 1995c).*

5.3.1 Australian targets

The most specific targets are those in Australia. In 1992 the Australian Government endorsed a report prepared by the National Board of Employment, Education and Training which set out a national strategy for vocational education and training (*ANTA, 1994*). That report included three 'foundation' targets for education and training, for example:

'By 2001 60 per cent of 22 year olds are expected to have an AVC[1] level 3 or higher, or be proceeding to a higher qualification.'

However all the targets are below NVQ level 4 and the specific figures are not, therefore, directly relevant.

These targets are part of a broader strategy to develop the Vocational Certificate Training System through a four stage process which includes reference to the development of plans, funding, certification, monitoring, targets and structural arrangements. By 1995 there was expected to be a sound method of collecting and analysing data about training progress to AVC levels 2 and 3. This approach is endorsed in subsequent reports on competitiveness (*ANTA, 1995 and DEET 1995a*).

5.3.2 French targets

In France there were a series of attainment targets, but these were dropped in the late 1980s. Now the principal target, set in 1989, is that 80 per cent of 18 year olds reach *baccalaureate (bac)* level in the year 2000. The implication is that 60 per cent will pass the examination; in 1994 58.9 per cent of 18 year olds passed the *bac*. This target was set following a government review of employment trends which predicted an increase in the number of jobs requiring skilled and trained labour and a decline in the number of unskilled jobs.

5.3.3 Korean targets

In Korea there has been a long history of educational policy making and planning going back to 1948, each plan usually covering a period of about five years. The Sixth Plan (1987 to 1991) projects the move from a 'medium' to a 'large' economic power and the internationalisation of Korea. It has also been argued that the Korean education system is undergoing a wide ranging critique and that this might be a prelude for large scale reforms. The report of the 1987 Presidential Commission identified 42 tasks that needed to undertaken to meet the challenges of the 21st century. These were stated in qualitative terms such as of 'improve . . . ' 'maximise . . . ' 'reform . . . ' and 'increase . . . ' (*Adams and Gottlieb, 1993*). Overall, Korea appears to place greater reliance on market forces and a philosophical approach to change and development and does not have specific UK style attainment targets (*Cheng, 1992*).

5.3.4 Taiwanese targets

Taiwan has long history of producing 'Development Plans' to guide economic development, and since 1996 these have guided

[1] Australian Vocational Certificate.

educational expansion. These 'Manpower Development Plans (MDP), which appear every three or four years, have included reference to the proportion of GNP to be spent on education, and the ratio of general to vocational education. In recent years they have set limits on enrolments to colleges and universities, recommending shifts in the focus of curricula towards science and technology and away form the humanities. There is, however, no apparent reference to explicit UK style targets. Further information may be contained in a new ten year compulsory education plan which is being drafted by the Ministry of Education (MOE) for implementation in 1996 (*Ministry of Education, 1995*).

5.3.5 USA goals

In the USA the National Education goals are very generalised, ranging from 'all children in America will start school ready to learn' to 'all students will leave grades 4, 8, 12 having demonstrated competency over challenging subject matter including English, maths . . . '. There is, however, no apparent reference to explicit UK style targets.

5.3.6 Germany and Japan

In Germany, educational policy is developed at the Lander level and as such there appear to be no Federal UK style targets.

We have not been able to find any reference to Japanese targets. There are plans for educational development in Japan, however they have not to our knowledge articulated any explicit attainment targets.

5.4 The appropriateness of the UK target

5.4.1 Projecting future change

The UK starts with an attainment level of 23.4 per cent in 1995. This has grown significantly over the last decade.

A number of factors will lead to further change including:

- the changing economic and occupational structure of the UK workforce;

as well as the numbers and relative qualifications profile of those:

- entering the workforce for the first time; the numbers are expected to grow and their qualification profile is expected to be higher than the average
- in the workforce; qualification profiles are expected to continue to rise

- re-entering the workforce, most notably women; there are no clear data on their relative qualification profile
- leaving the workforce; their qualifications are normally below the average.

It has not been possible with current data to separate out these effects. (The Australian Government concluded that the complexities involved were too great to predict future attainment levels, *Australian Educational Council Review Committee, 1991*). Using the available data and making some key assumptions a simple modelling exercise was carried out to examine possible future trends in the UK (Appendix 1).

5.4.2 Future change in the UK

Over 471,000 students graduated with qualifications to NVQ level 4 and above in 1993/94 and many stayed on to study for a higher qualification (*eg* the majority of HND and similar graduates are believed to continue on to first degree courses), while more than one in five first degree graduates stay on for further postgraduate study. A further proportion do not enter the workforce or are not available for work or leave the country. As such the numbers entering employment were significantly below the actual numbers qualifying. Using the data that are available along with a series of simple assumptions it is suggested that less than half (about 190,000) of those graduating at NVQ level 4 and above went straight into employment in 1993/4 (Appendix 1).

Projections of output at degree level and above (about 60 per cent of all those qualifying at NVQ level 4 and above) suggest that output might rise by about another 15 to 20 per cent over the period to the end of the century *(Connor et al., forthcoming)*. It was not possible to project the impact on the attainment rate of changes in the other flows into and out of employment, although the overall impact is likely to be positive — for example, the qualifications profile of those retiring, one of the main flows, is normally below the average (Table 3.20) and thus their loss will raise the overall attainment rate.

The UK's current attainment level is 23.4 per cent. On the basis of expected trends in those qualifying at NVQ level 4 and above, and some simple assumptions about the main flows into the labour market, it is suggested that the attainment rate could rise to over 27 per cent by the year 2000, but it is not likely to reach the 30 per cent figure until several years into the next century. The actual figure will depend on the influence of a combination of factors, including the rate of economic growth and industrial change, and the consequent changes in employment and the occupational structure; the flow and qualifications of those, particularly women, entering employment; the rate of outflow and qualifications of those retiring, being made redundant and

otherwise leaving employment; as well as changes in the supply of those acquiring qualifications at NVQ level 4 and above.

5.4.3 The international context

While the UK's current attainment rate matches or exceeds that of many of the comparator countries it does lag behind that of Japan and, we estimate, the USA. The UK's rate of improvement does however match or exceed that in the comparator countries for whom data are available. It has not proved possible to link attainment rates to competitiveness within the scope of this study.

5.4.4 The appropriateness of the UK Target

The UK Target is challenging. The attainment rate is unlikely, on current trends, to reach the 30 per cent figure by the year 2000 without further, significant improvements in the qualifications of those in employment and in the supply of those qualifying in the education and training system and entering employment. On current trends the target is not likely to reached until several years into the next century.

In international terms the choice is whether to benchmark the UK with the international 'average' or the best. If it is to be benchmarked on the 'average' then the current figure seems comparable; however if it is benchmarked to the best (the USA and Japan), then a Target attainment rate several percentage points higher would be appropriate.

In drawing a final conclusion as to the appropriateness of the target, it is important to recognise that the attainment level focuses on those in employment; it does not take account of the extent to which their skills and competences are being utilised, nor is a highly qualified workforce alone a guarantee of economic competitiveness. At the same time, the setting of a target in itself does not bring about change. To meet the target means that attention has to be given to the skills of the existing workforce as well as those in the education and training system. This needs to be addressed and acted upon by all the actors involved, including the government, agencies, employing organisations and individuals.

6. Monitoring and the Need for Further Research

6.1 Introduction

A secondary objective of the study was to advise on what additional work might be needed to provide the Council with updated, comparative data on an ongoing basis, to inform the Council on progress against the new target for higher level skills.

The research showed that comparative data can usefully be collected to place the UK in a wider context, but that vagaries of international comparisons and the differing country circumstances are such that the resultant figures should only be used for the purposes of broad illustration, not for precise comparisons.

6.2 Further research and monitoring

In setting an agenda for further research and monitoring it is important to bear in mind the use that is to be made of the data. Before doing this we would comment that there are a number of individuals and bodies who have been involved in making international comparisons relating to education, training and employment issues. Each has its body of expertise, approach and contacts and there is only a limited sharing of knowledge and expertise about comparator countries. To improve the current level of understanding by both policy makers and researchers, NACETT, in conjunction with other policy bodies, might consider organising a conference or seminar to share such knowledge and to help identify a longer term, broader programme of monitoring.

Looking outside the UK, the OECD is giving greater attention to the collection of data on educational attainment; at present the main focus is ISCED levels 6 and 7 and as such they omit more than a third of the qualifications of interest to the Higher Level Skills Target. NACETT may wish, in conjunction with the relevant government departments, to raise the issue of OECD collecting a wider range of data embracing all levels from NVQ level 4 and above.

To meet NACETT's specific needs in monitoring and assessing the continuing appropriateness of its targets, consideration should be given to the following:

- confirming an agreed group of comparator countries; setting up regular contact points in these countries; collecting the missing data and setting up an agreed process for updating the data
- given the difficulties in collecting comparable data at NVQ 4 (ISCED level 5) consider monitoring international trends at NVQ 5 and above (ISCED 6 and 7) as an initial proxy indicator
- investigating how other countries monitor their own performance in education and training, and their apparent lack of interest in targets. It is not clear whether this is something for which the UK is leading or whether other countries have considered but chosen not to adopt targets, and if so why they came to that conclusion.
- investigating the potential for modelling the dynamics of change; this will require further investigation including the availability of more detailed UK and international data.

In developing such an approach to monitoring, consideration should also be given to embracing the full range of qualifications of interest to NACETT, from NVQ1 upwards, given the overlapping of data sources and definitions.

Appendix: Modelling Future Attainment Rates at NVQ Level 4 and Above of Those in Employment

A number of factors will influence the future attainment rate including the changes to the economy and the consequent changing occupational structure. On the one hand the econometric forecasts (*Wilson, 1995*) suggest a continued growth in professional and managerial jobs which will tend to be filled by those with higher level qualifications and so increase the overall attainment levels in the labour force. On the other hand, there has also been significant growth in part time, less skilled jobs which will tend to draw in the less well qualified and so lower the overall attainment rates. Overall, the expectation is of economic change requiring higher qualification levels among the workforce.

Looking at the supply side, which will of course be dependent on the demand side, the attainment rate in the future will depend on changes in the numbers and relative qualification profiles of:

- new entrants to the workforce
- the existing workforce
- re-entrants to the workforce, most notably women
- workforce leavers, due to retirement, redundancy and other reasons.

While it is not possible to separate out the effects of these factors with the current data, we list below some assumptions based on the available data to illustrate the possible directions of change, orders of magnitude and their possible impact on the overall attainment rate at NVQ level 4 and above.

A1 New entrants

The educational supply data do not distinguish between those who are studying and qualifying while already in the labour force, from those who are potential new entrants to the labour force. However, for those who do qualify we can make some estimates of the proportions who enter the labour force or who stay on for further study, or have other destinations.

Over 471,500 students graduated with qualifications at NVQ level 4 and above in 1993/94 (Table 4.16).

Of these 184,800 qualified at ISCED 5 (sub-degree). The first destination data for those with HNDs (the only analogous group for which relevant data are available[1]) show that in 1993/94:

- 63 per cent went on to further study, usually degree courses, and did not immediately enter employment. If this proportion is applied to all NVQ level 4 graduates, this implies approximately 115,000 NVQ level 4 graduates entered further study in 1993/94
- five per cent were not available for work or went overseas, and
- eight per cent were unemployed.

If these percentages apply to other groups then this gives, say, 44,500 people newly qualified at ISCED 5 (sub-degree) entering employment.

Among the 210,800 qualifying at ISCED 6 (first degree level) the first destination data[2] show that:

- 25 per cent went on to further study, usually postgraduate courses, and so did not immediately enter employment
- twelve per cent were not available for work or went overseas, and
- eleven per cent were unemployed.

This gives, say, 110,000 people newly qualified at first degree level entering employment.

Finally there are 75,900 graduating at ISCED 7 (postgraduate degrees); the first destination data show that:

- eleven per cent went on to further study and so did not immediately enter employment
- 40 per cent were not available for work or went overseas, and
- three per cent were unemployed.

This gives, say, 35,000 people newly qualified at postgraduate level entering employment.

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1 Data covering the new universities for men and women full time and sandwich HND students graduating between October 1992 and September 1993 (CSU, 1995).

2 An aggregation of old and new university data for full time and sandwich first degree graduates.

Thus overall about 190,000 people newly qualified at NVQ level 4 and above entered employment in 1993/4.

Forecasting output over the period to 2000 is particularly difficult given the rapid changes that have been taking place in higher education in recent years, the most significant short term development being the brake, put on by government, on the growth in entry of home students to first degree courses. Expansion is nevertheless continuing for overseas students as well as those on postgraduate courses; trends at sub-degree are less clear. Evidence on the numbers entering higher education and overall student numbers suggest that the output of graduates might by rise by perhaps 15 to 20 per cent over the period 1994 to 2000 (*Connor et al.*, forthcoming). If we assume this rate of growth applies to all those qualifying with NVQ level 4 and above, and past trends in entry to employment continue, then this suggest an average flow of perhaps 210,000 people newly qualified at NVQ level 4 and above entering employment each year during the second half of the 1990s, a net increase over this period of about 1.25m.

A2 Existing workforce

The qualifications of those in the workforce are expected to continue to rise as a result of continued investments in education and training; the key issue is not the level of training, rather the numbers whose qualifications rise to NVQ Level 4 and above. These numbers are believed to be small and will be included in educational supply figures above (A1).

A3 Workforce re-entrants

Re-entrants who have recently qualified will be counted above (in A.1) under the new supply. There are no data about the numbers and qualifications profiles of those re-entering the workforce. The majority are likely to be women aged 30 to 49; their attainment rate is above the average and thus their re-entry is likely to raise the overall level.

A4 Workforce leavers

There are three main categories:

- women leaving for family reasons
- those retiring or taking early retirement
- other leavers including those made redundant.

We do not know the numbers in each category.

The effect of **women leaving for family reasons** is likely to raise the overall attainment rate as those with higher qualifications

Table A.1: Economic activity rates, for women aged 24 to 39 and ages by qualifications, 1991

	Aged 24 to 29	Aged 30 to 34	Aged 35 to 39	All ages
With qualifications at NVQ level 4 and above	88.4	79.9	81.4	72.8
Without qualifications at NVQ level 4 and above	64.5	61.6	67.8	47.0
All women	68.9	65.0	70.4	50.0

Source: IES/1991 Census Qualified Manpower Tables: Table 3

are the least likely to leave. This is for three reasons. First they are less likely to have children; second they tend to delay first births for longer than the unqualified; and third they tend to return to employment more rapidly. Data from the 1991 Census illustrates this with the activity rates of the population aged 24 to 29, 30 to 34 and 35 to 39 being significantly higher for those with qualifications at NVQ level 4 and above than for the less well qualified. It is not, however, possible to quantify the precise effects of the inflows and outflows in any given time period.

In terms of **those retiring** the attainment rates of older workers tends to be below the average (Table 3.20) so that the result of retirees leaving the workforce will tend to raise the average.

We have no data about **other, younger leavers** some of whom may have entered or re-entered higher education.

A.5 The unemployed

In the Spring quarter of 1995, 10.7 per cent of the unemployed had qualifications at NVQ level 4 and above, compared with the 23.5 per cent of the employed population. There is evidence that the long-term unemployed have even lower qualification levels. It is possible that with growing professional employment insecurity, people with qualifications will become more likely to be unemployed, but they are also the group more likely to return to employment. Overall the impact of movements between employment and unemployment will be incorporated in the above flows, and are likely to have marginal impact on the levels of qualifications in the labour force in the year 2000.

A.7 The consequences of these flows

In 1995 there were 25.2 million in employment and an attainment rate of 23.4 per cent (*ie* 5.9m qualified at NVQ level 4 and above). To reach a rate of 30 per cent by the year 2000, by which time the numbers in employment are projected to have grown to 26.5m (*Wilson, 1995*), will require a net addition of about 2 million (to total 7.9m) or 333,000 per annum additional qualified workers.

The new entrants assumptions (A1 above) suggests an average annual inflow of about 210,000; this factor alone will, all things being equal, add about 1.25m and lead to a rise in the attainment rate about 27 per cent. The effects of retirements and labour force withdrawals, women returners and other flows are unknown but are probably positive and, while they seem unlikely to be significant, they will probably move the attainment rate above 27 per cent. This rate of change is compatible with earlier modelling of those with qualifications in the labour force (*Wilson, 1994*).

The attainment rate is not likely, on current trends, to reach the 30 per cent target by the year 2000 without further improvements in the qualifications profile of the existing workforce and the supply of those qualifying in the education and training system and entering employment. On current trends the Target is not likely to reached until several years into the next century.

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THE TARGET FOR HIGHER LEVEL SKILLS IN AN INTERNATIONAL CONTEXT

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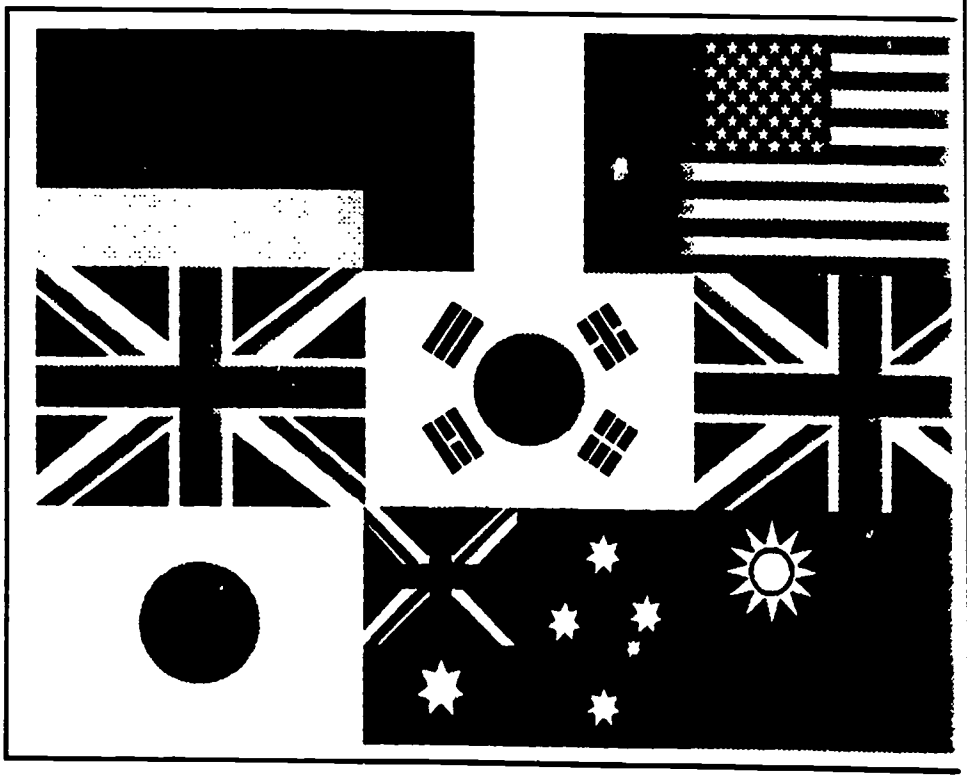
Commissioned by NACETT (the National Advisory Council on Education and Training Targets) the study examines the appropriateness of the Higher Level Skills Lifetime Learning Target in an international context; this Target states that 30 per cent of the working population should be qualified to NVQ level 4 and above by the year 2000. The study compares the position in seven competitor countries with the situation in the UK, using comparable data on their economies, demographics and output at NVQ level 4 and above. Countries covered are: Australia, France, Germany, Japan, Korea, Taiwan, and the USA.



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