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**PROGRESS TOWARDS THE LISBON OBJECTIVES IN
EDUCATION AND TRAINING**

Indicators and benchmarks

2007

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I. INTRODUCTION

“Progress towards the Lisbon objectives in education and training” is the fourth in the series of annual reports examining performance and progress in education and training systems in the EU under the Education and Training 2010 work programme. For the first time, it uses the core indicators identified and adopted by the Education Council in May 2007.

The purpose of this series of reports is to draw on indicators and benchmarks in order to provide strategic guidance for the Education and Training 2010 programme and to set out the evidence available on progress towards the objectives agreed by ministers. Use of indicators and benchmarks in this way responds to the wishes of the Education Council which set out its views early in the process and has sought progressively to develop this framework throughout the process. The previous progress reports (2004, 2005 and 2006) therefore focused on the three strategic objectives and 13 detailed objectives adopted by the Education Council in 2002. Monitoring was based on 29 indicators and the five benchmarks for Europe’s educational performance levels adopted by the Council in May 2003. The reports gave progressively more detailed analyses of performance and progress, benefiting from time series of data available for a period of up to five years (2000-2005) and from a series of targeted studies launched by the Commission in specific areas such as access to education, pupil performance, early school leavers, civics education, financing of education and mobility.

On 25 May 2007 the Education Council adopted conclusions on a coherent framework of 16 core indicators for monitoring progress towards the Lisbon objectives in education and training¹. The 2007 report is based on an in-depth analysis of these 16 core indicators:

16 core indicators for monitoring progress towards the Lisbon objectives in education and training	
1) Participation in pre-school education	10) Professional development of teachers and trainers
2) Special needs education	11) Higher education graduates
3) Early school leavers	12) Cross-national mobility of students in higher education
4) Literacy in reading, mathematics and science	13) Participation of adults in lifelong learning
5) Language skills	14) Adult skills
6) ICT skills	15) Educational attainment of the population
7) Civic skills	16) Investment in education and training
8) Learning to learn skills	
9) Upper secondary completion rates of young people	

¹ Council conclusions of 25 May 2007 on a coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training(2007/C 1083/07), <http://register.consilium.europa.eu/pdf/en/07/st10/st10083.en07.pdf>

Reflecting these indicators and the political priorities of the Education and Training 2010 programme, the report is structured in eight chapters as follows:

1. Improving equity in education and training;
2. Promoting efficiency in education and training;
3. Making lifelong learning a reality;
4. Key competences among young people;
5. Modernising school education;
6. Modernising vocational education and training (the Copenhagen process);
7. Modernising higher education (the Bologna process);
8. Employability.

The report highlights key messages emerging from detailed statistical analysis of progress towards the objectives set by the Education Council. Based on available statistics, qualitative information and research results, it analyses these eight policy objectives. The report provides an overview of progress towards the five European benchmarks adopted by the Council in May 2003. The data give an indication of the direction in which European education systems are moving and of how they are contributing to Europe's potential to meet the objectives set in Lisbon.

The report was prepared by the Directorate-General for Education and Culture, in close cooperation with CRELL (the new research unit in the Joint Research Centre), Eurostat and the Eurydice European Unit.

The report shows that a number of EU Member States are already achieving world-best performances in specific areas, whereas others face serious challenges. It shows that there is real added value in exchanging information on best policy practice at European level and thus lays the foundation for further development of the policy exchanges and further improvement of the framework of indicators and benchmarks which underpins it.

The policy framework - the re-launched Lisbon strategy

Drawing on lessons learnt from five years of implementing the Lisbon strategy, in March 2005 the European Council decided to re-launch the strategy. It agreed to refocus priorities on jobs and growth in the light of the overall objective of sustainable development supported by appropriate national and Community resources.² At the same time the European Council called for monitoring to give a clear picture of implementation of the strategy at national level.

The revised Lisbon strategy places strong emphasis on knowledge, innovation and optimisation of human capital. Education and training play an important role in several of the integrated guidelines for delivering it.

The Education and Training 2010 work programme³ is the means by which Member States can achieve the broad common objectives they have set for their education and training systems. This is why it is seen as a major contribution to the Lisbon strategy and why the European Council called on Member States to step up their efforts to implement it.

² Presidency Conclusions, Brussels (2006).

³ Presidency Conclusions, Brussels (2005), paragraph 34.

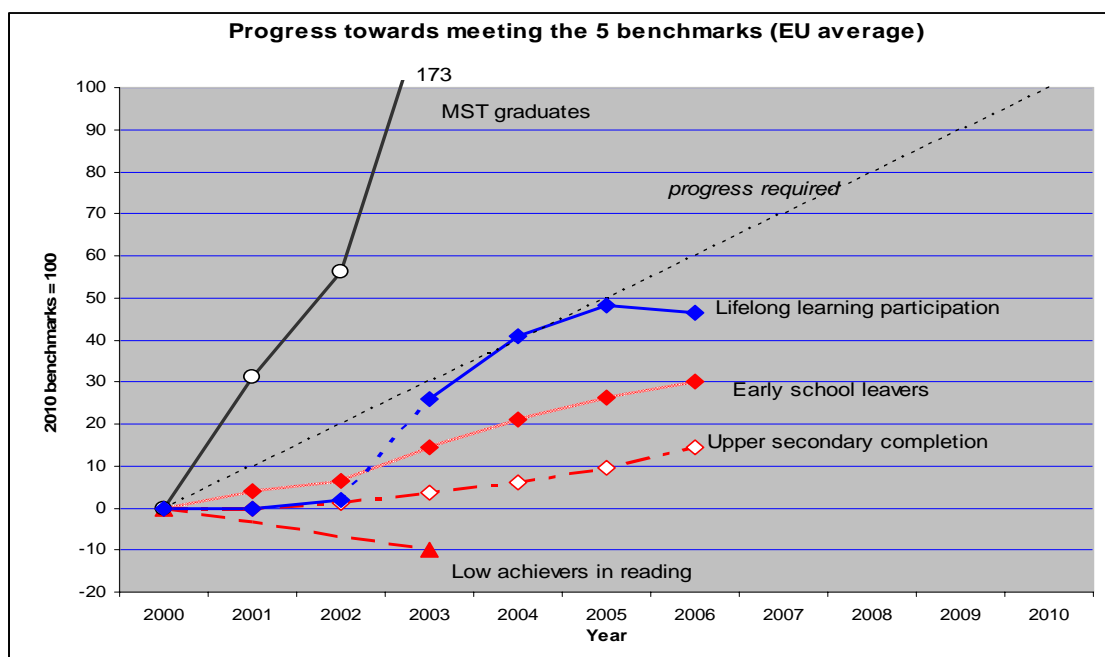
II. PERFORMANCE AND PROGRESS IN EDUCATION AND TRAINING 2000-2006

1. *Progress towards achieving the five benchmarks for 2010 in education*

Regular monitoring of performance and progress using indicators and benchmarks is an essential part of the Lisbon process, allowing strengths and weaknesses to be identified with a view to providing strategic guidance for the Education and Training 2010 work programme. Indicators and benchmarks serve as tools for evidence-based policymaking at European level. The five benchmarks adopted by the Council in May 2003 are of continuing relevance in guiding policy action within the 2010 work programme. By adopting five European benchmarks in May 2003, the Council set measurable objectives indicating the policy areas in which, in particular, it expected to see clear progress. The benchmarks to be achieved by 2010 were:

- No more than 10% early school leavers;
- Decrease of at least 20% in the percentage of low-achieving pupils in reading literacy;
- At least 85% of young people should have completed upper secondary education;
- Increase of at least 15% in the number of tertiary graduates in Mathematics, Science and Technology (MST), with a simultaneous decrease in the gender imbalance;
- 12.5% of the adult population should participate in lifelong learning.

Chart II.1: Overview of progress towards the five European benchmarks in EU-27⁴



Source: DG Education and Training

⁴ In this chart the starting point (in 2000) is set as zero and the 2010 benchmark as 100. The results achieved each year are measured against the 2010 benchmark (= 100). The diagonal line shows the progress required, i.e. an additional 1/10 (10%) of progress towards the benchmark has to be achieved each year to reach the benchmark. If a line stays below this diagonal line, progress is not sufficient; if it is above the diagonal line progress is stronger than needed to achieve the benchmark. If the line turns down, the problem is getting worse.

In the case of lifelong learning, it should be borne in mind that there have been many breaks in the time series, which tend to overstate the progress made, especially in 2003. Therefore the 2002-2003 line on LLL participation is dotted. For low achievers in reading (data from the PISA survey) there are results for only 16 EU countries and for two years (new data will become available in December 2007).

In 2007 these goals still pose a serious challenge for education and training systems in Europe. Except for the EU benchmark on increasing the number of mathematics, science and technology graduates, on which there has already been clear progress and the benchmark has been accomplished, too little progress has been made against the vital benchmarks related most closely to the knowledge-based society and social inclusion. Unless significantly greater efforts are made on early school leaving, completion of upper secondary education and key competences, a high share of the next generation will be at risk of social exclusion, at great cost to themselves, the economy and society.

Key results

- As regards the number of MST graduates, the progress required by the benchmark had already been achieved by 2005. Progress towards reducing the gender imbalance, however, has been limited.
- Participation in lifelong learning showed a positive trend until 2005, but this may have been overstated given breaks in national series. In 2006 there was a slight drop in participation in lifelong learning in EU-27.
- There has been constant improvement as regards early school leavers, but faster progress is needed in order to achieve the benchmark.
- In the case of upper secondary attainment, there has been slow but steady progress. Furthermore progress has picked up slightly in recent years, but is not sufficient to achieve the 2010 objective.
- Results for low achievers in reading have not improved (but there are only two data points; new data will be available in December 2007).

Countries' contributions to European average performance

The EU averages produced by Eurostat and used for measuring progress show the weighted average for EU-27 (data are mostly weighted by the reference population relating to the indicator). The six largest countries account for about 70% of the weighted average, and the six smallest countries for only about 1%. Using arithmetic averages (where every Member State equals 1/27) gives greater weight to smaller countries and hence to their contribution to the EU level. In policy terms information on arithmetic averages might be equally relevant because it shows the average improvements over systems and is thus closer to the contribution of Member States. While “weighted averages” of performance and progress show the “average situation” of citizens in Europe, the “arithmetic average” shows the average situation of education systems in the Member States.

For four of the five benchmarks (low achievers in reading, early school leavers, upper secondary attainment and participation in lifelong learning) performance is better and progress faster if arithmetic averages are used. This can be explained by the fact that some of the best performing countries (for example the Nordic countries and Slovenia) have relatively small populations. The faster progress in these countries might be explained by the fact that smaller countries in some cases have fewer administrative levels and can reform their education systems faster.

The only exception is MST graduates since some small countries have limited university systems (Malta, Luxembourg and Cyprus) and therefore perform less well than bigger countries.

The data on progress in the arithmetic average performance of education systems in the Member States imply that more efforts have been made at national and sub-national level than shown by the EU-weighted average levels of performance and progress.

Table II.1: Position of each country (latest year available) and progress achieved since 2000.

Benchmark indicator (based on data from Eurostat, low achievers: OECD PISA)	Low achievers in reading (15 years old, %)		Early school leavers (18-24, %)		Upper secondary attainment (20-24, %)		MST graduates (per 1000 young people)		Lifelong learning participation (25-64, %)	
	2000	2003	2000	2006	2000	2006	2000	2005	2000	2006
EU average (weighted)	19.4	19.8	17.6	15.3	76.6	77.8	10.2	13.1	7.1	9.6
Belgium		↗		→		→		↗		
Bulgaria		nd	2001	↗		↗		↗		
Czech Republic		↘	2001	→		→		↗		
Denmark		↗		↗		↗		↗		
Germany		↗		↗		↘		↗		
Estonia	nd	nd		↗		↗		(↗)		
Ireland		→	2002	↗		↗		↗		
Greece		↘		↗		↗	2004	↗		
Spain		↘		↘		↘		↗		
France		↘		↗		→		↗		
Italy		↘		↗		↗		↗		
Cyprus	nd	nd		↗		↗		↗		
Latvia		↗	2002	↗		↗		↗		
Lithuania	nd	nd		↗		↗		↗		
Luxembourg	()	(↗)		↘		↘		:		
Hungary		↗		↗		→		↗		
Malta	nd	nd		↗		↗		↗		
Netherlands	()	(↘)		↗		↗		↗		
Austria		↘		↗		→		↗		
Poland		↗	2001	↗		↗		↗		
Portugal		↗		↗		↗		↗		
Romania		nd		↗		↗		↗		
Slovenia	nd	nd		(↗)		↗		↗		
Slovakia	nd			↘		↘		↗		
Finland		↗		↗		↘		↗		
Sweden		↘		↘		↗		↗		
United Kingdom		nd		↗		↗		↘		
Croatia	nd	nd		↗	2002	↗	2004	↗		
FYR Macedonia	nd	nd	nd	nd	nd	nd		↗	nd	nd
Turkey	nd			↗		↗		↗		
Iceland		↘		↗		↗		↗		
Norway		↘		↗		↘		↗		

Above EU average	EU average	Below EU average	No data
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Performance:

↗↗ improvement of performance above EU average

↗ improving

↘ getting worse

→ not changing (< 1% change)

||: break in series

nd: no data

() not comparable

If 2000 data were not available another reference year is indicated; Lifelong learning participation: too many breaks in series, hence no arrows shown

For annotations on the data see footnotes in corresponding tables in chapters 1, 3 and 7

Table II.2: Progress in EU-27 towards the benchmarks based on arithmetic averages of Member States' performance (based on Eurostat data)

Benchmark	2000	2006
Early school leavers (18-24, %)	17.3	15.3
Low-achievers in reading (15-year-olds, %)	18.7	18.2 (2003)
Upper secondary attainment (20-24, %)	77.3	79.1
MST graduates (per 1000 young people (20-29))	9.3	11.9 (2005)
Lifelong Learning Participation (% of adults, 25-64)	7.1	9.9

All Member States can learn from the best performers in the Union

Another objective of benchmarking performance and progress in education and training is to identify countries which are performing well in particular areas, so that their expertise and good practice can be shared with others. This is why, when the Council adopted the detailed work programme on the follow-up to the objectives for education and training systems in Europe, it asked for identification of the three best performing countries in specific policy areas. Almost half the Member States are among the three leading countries in at least one of the five areas. Good practice and expertise in education and training are not, therefore, confined to just a few countries in the Union.

On the two benchmarks which target participation in school education (early school leavers and completion of upper secondary education), strong performances are found in the new Member States: Poland, the Czech Republic and Slovakia, but also in Slovenia.

When it comes to quality of school education as measured by the share of low achievers in reading literacy (PISA study), Finland, Ireland and the Netherlands perform best, but two new Member States (Latvia and Poland) are among the countries whose results have improved most.

Table II.3: Best performers on the benchmarks relating to secondary education

Benchmark	2010 target for EU	Three best performers in the EU			EU-27 average	USA	Japan
Early school leavers (18-24, %)	No more than 10%	2006					
		<u>Czech Rep.</u> 5.5%	Poland 5.6%	Slovakia 6.4%	15.3%	-	-
Low-achievers in reading (15-year-olds, %)	At least 20% decrease (to 15.5%)	Change in the percentage of low achievers in %, 2000-2003					
		<u>Latvia</u> -40.2%	Poland -27.6%	Finland (-18.6%)	+2.1%	+8.4%	+88.1%
		% of low achievers in 2003					
		<u>Finland</u> 5.7%	Ireland 11.0%	Netherlands 11.5%	19.8%	19.4%	19.0%
Upper secondary attainment (20-24, %).	At least 85%	2006					
		<u>Czech Rep.</u> 91.8%	Poland 91.7%	Slovakia 91.5%	77.8%	-	-

Growth in mathematics, science and technology graduates has been strongest in new Member States where the number of tertiary students has increased rapidly over the last decade. Ireland, France and Lithuania have most MST graduates per 1000 young people (20-29), while Estonia, Bulgaria and Romania lead when it comes to gender balance. On adult lifelong learning the best performers are Sweden, Denmark and the UK, followed by Finland. Only Finland and Ireland are among the best performers in both school and post-compulsory education.

Table II.4: Best performers on the benchmarks relating to tertiary education and lifelong learning

Benchmark	2010 target for EU	Three best performers in the EU			EU-27 average	USA	Japan
Graduates in Mathematics, Science Technology (per 1000 young people)	Increase of at least 15% (= 100 000 graduates or 1.6% annual increase over period 2001-2010)	Average annual increase 2000-2005					
		<u>Slovakia</u> +14.7%	Portugal +13.1	Poland +12.1%	+4.7%	+3.1%	-1.1%
		Graduates per 1000 population (aged 20-29) in 2005					
		<u>Ireland</u> 24.5	France 22.5	Lithuania 18.9	13.1	10.6	13.7
		% of female graduates in 2005					
		<u>Estonia</u> 43.5	Bulgaria 41.1	Greece 40.9	31.2	31.1	14.7
Lifelong learning participation (25-64, %).	At least 12.5%	2006					
		<u>Sweden</u> 32.1% (2005)	Denmark 29.2%	UK 26.6% (p)	9.6%	-	-

Additional note :
p = provisional

2. Progress on other key indicators

Taking into account other key indicators for which targets have been set by the Council (Lisbon objective of increasing per capita investment in human resources and Barcelona objective of ensuring that 90% of all children aged from 3 years to the beginning of compulsory schooling should be in pre-school institutions) or for which data are available, the geographic scope of good performance widens to countries like Italy, Cyprus and Hungary.

Table II.5: Best performers on other key indicators

Indicator	Three best performers in the EU			EU-27 average	USA	Japan
Participation in pre-school education	Participation of 4-year-olds in pre-primary education, 2005					
	<u>France</u> 100%	<u>Italy</u> 100%	<u>Belgium</u> 100%	85.7%	65.3%	94.7%
Investment in education and training	Public spending on education as a % of GDP, 2004					
	<u>Denmark</u> 8.47	<u>Sweden</u> 7.35	<u>Cyprus</u> 6.71	5.09	5.44	3.65
	2000-2004 increase in public spending on education, in percentage points of GDP					
	<u>Cyprus</u> +1.27	<u>Hungary</u> +0.93	<u>UK</u> +0.65	+0.41	+0.18	-0.17
Educational attainment of the population	Percentage of adult population (25-64) with tertiary education, 2006					
	<u>Denmark</u> 35%	<u>Finland</u> 35%	<u>Estonia</u> 33%	23%	39% (2004)	37% (2004)

3. Key messages emerging from the report in the eight policy areas

This report is structured around the eight areas of the coherent framework which reflects the political priorities of the Education and Training 2010 strategy as they have developed. The main messages emerging from the analysis of progress and performance in each of the eight policy areas are summed up below.

Improving equity in education and training

Evidence from international surveys (PISA, TIMSS and PIRLS) shows that family background, for example household income, parental education, parental occupational status, family structure or ethnic/migration background, are factors significantly influencing achievement by pupils in schools in the EU.

However, there is also evidence that some education and training systems manage to counteract such factors and thereby positively influence equity in education. As regards the performance gap between children of migrants and the general population, the EU is performing worse than countries like Australia and the USA. However, certain EU countries, such as Ireland, Luxembourg and France, show a relatively narrow gap. The impact of other dimensions of family background also differs significantly within Europe. The occupational status of parents is less important for pupils' performance in Finland, Iceland and Latvia and "mother's educational status" is less important for pupils' performance in the Netherlands, Iceland and Norway than in other European countries.

Early childhood education is of great importance for learning at later stages of life and for reducing disadvantages linked to the parental background of learners. In 2005 about 85% of all 4-year-olds were enrolled in pre-primary educational programmes within EU-27, an increase of three percentage points compared with 2000. In France, Belgium, Italy and Spain this figure rises to 99% or more. There are only three Member States in which not more than about half of 4-year-olds were participating in education in 2005.

As regards early school leavers, every sixth young person aged 18 to 24 in EU-27 still leaves school with no more than lower secondary education and participates in no kind of education or training after this point. Continuous progress has been made in recent years towards reducing this number, but progress must be faster to attain the EU benchmark of 10% in 2010. In 2006 only the Czech Republic, Austria, Poland and Slovakia had rates of early school leaving at or below the European benchmark. The Nordic countries (Denmark, Finland and Sweden) are also performing well but have showed no further improvement in recent years.

The percentage of pupils with special education needs who are educated in segregated settings varies widely between countries. Some (the Czech Republic, Estonia, Germany, Latvia, the Slovak Republic and also the Flemish Community in Belgium) place more than 4% of pupils with special education needs in segregated settings, whereas others (Cyprus, Greece, Iceland, Ireland, Italy, Lithuania, Malta, Norway, Portugal, Spain and Sweden) have fewer than 1% of pupils in such settings, reflecting the diversity of approaches within Europe.

Promoting efficiency in education and training

As regards efficiency of investment in education, there is not yet any agreed indicator to measure progress. This analysis therefore focuses on the financial input to education and training.

As regards the Lisbon objective of increasing per capita investment in human resources, good progress was made over the period 2000-2003 on increasing public spending on education, with average annual growth in real spending of 5% (while the whole population and the number of pupils and students increased by less than 0.5% per year). However, real spending growth slowed down to about 1% in 2004, while the economy expanded at a rate of 2.5%. At EU-27 level spending as a percentage of GDP, which had increased from about 4.7% in 2000 to 5.2% in 2003, thus dropped back slightly to 5.1% in 2004. The countries where education spending as a percentage of GDP has increased most since 2000 include Greece, Cyprus, Hungary and the UK. In some of these countries, however, spending growth came to a halt in 2004.

Total spending on higher education in the EU (1.34% of GDP in 2003 for all activities, including both education and research) is far below the level in the United States (2.80%). While the level of public expenditure is quite similar, the level of private funding is more than seven times higher in the United States. Europe would have to spend an additional €10 000 per student per year to draw level with the USA. In 2004 expenditure per full-time equivalent tertiary student in the USA was more than twice the EU average. And the EU has not been catching up in recent years since spending on tertiary education has only increased in line with the growth in the number of students.

Expenditure on educational institutions from private sources as a percentage of GDP has increased slightly since 2000 but progress slowed down in 2004. It now stands at slightly more than 0.6% of GDP. Only the UK, Germany, Slovenia, Latvia and Cyprus have levels of private spending close to or above 1% of GDP. Private spending on education as a percentage of GDP is nearly twice as high in Japan (1.2%) and more than three times higher in the USA (2.3%).

Making lifelong learning a reality

The European benchmark that by 2010 at least 85% of 22-year-olds in the European Union should complete at least upper secondary education still poses a significant challenge for the majority of Member States. The present average in the Union (for 20-24 year olds) is 77.8% (2006) and has improved by only 1.2 percentage points since 2000.

As regards the benchmark on participation of adults in lifelong learning, in 2006 an average of 9.6% of Europeans aged 25-64 were participating in education and training activities, which is even slightly

less than in 2005. The best performing countries in 2006 were Denmark, the UK and Finland (plus Sweden, for which only 2005 data are available), followed closely by the Netherlands, Slovenia and Austria. All the other EU countries still have rates below the European average of 12.5%.

On average, women participated more than men. Adults with a high level of education are more than six times as likely to participate in lifelong learning as the low skilled. There are therefore still large challenges to tackle in the field of lifelong learning, such as the poor overall progress in recent years and the low participation of people with low educational attainment. Participation also decreases markedly with age.

As regards the ICT skills of adults - an essential condition for participation in the knowledge society in today's digital age - surveys show a continuing increase in usage and skills. Nevertheless a large group without ICT skills remains: in 2005, within EU-25, nearly 40% of all individuals aged 16 to 74 had no computer skills and 34% had never used a computer. However, there are big differences between Member States: across Europe this figure ranges from only one in ten people who have never used a computer in Denmark and Sweden to almost two out of three (65%) in Greece.

Key competences among young people

No progress was made on the benchmark for the percentage of low achievers in reading literacy over the period 2000-2003 (2006 results will not be available until December 2007). The average in the 16 EU countries for which comparable data are available was 19.4% in 2000 and 19.8% in 2003. In 2003 Finland had the lowest proportion of low-achievers in reading literacy (5.7%), followed by Ireland, the Netherlands and Sweden.

In relation to the general objective of teaching at least two foreign languages from an early age, good progress was made from 2000 to 2005. In 2005 pupils in upper secondary education were learning, on average, 1.5 foreign languages, up from 1.2 in 2000.

As regards ICT skills, ICT usage, a proxy for ICT skills, in the adult population is increasing continuously. The level of ICT equipment in schools has also progressed. In 2006 there were on average 11 computers per 100 pupils in schools in EU-25, but there were large variations between countries. 96% of EU schools had Internet access (in many countries 100%) and 67% had broadband access.

Modernising school education

The Education Council adopted only one core indicator – on professional development of teachers – linked to modernising school education. Hence, the analysis is based on a number of more qualitative indicators that the Commission has identified as central for the “modernising school education” agenda.

The four indicators identified are school management, professional development of teachers, schools as multi-purpose local learning centres and financing of schools. The chapter highlights the main concepts related to the four indicators and the related stakes. This first step will enable policy-makers to debate and exchange information on the priorities for school modernisation.

Forthcoming data collection activities like the OECD TALIS (Teaching and Learning International Survey) will provide more information in the years ahead, especially on professional development of teachers and school leadership.

Modernising vocational education and training

In the EU the average increase in enrolment in vocational programmes at upper secondary level was 5.3% from 2000 to 2004, compared with 4.8% in upper secondary enrolments generally. In many EU

countries, there has been a shift in participation, away from lower level vocational programmes to programmes that give access to studies at the next programme level.

The proportion of upper secondary pupils enrolled in a vocational stream remained constant in the EU countries over the period 2000-2004 at about 56%. However, there are sizeable differences between countries, ranging from less than 10% in Ireland and Portugal to over 70% in the Czech Republic, Slovakia, Austria and the UK. There are wide variations between countries in their levels of total *public expenditure on secondary VET programmes as a percentage of GDP*. In 2003 Finland had the highest relative spending at 1.1% of GDP, followed by the Czech Republic, Hungary, the Netherlands and Slovakia, all of which allocated 1% of their GDP to VET.

Modernising higher education

The EU is on course to surpass the benchmark of an increase of 15% in the number of graduates in mathematics, science and technology (MST) by 2010 (equal to an absolute increase of 100 000 graduates). Average annual growth was 4.7% over the period 2000-2005 (over 35 000 graduates per year, making a total of over 175 000 in this period). However, this achievement needs to be set in a global context: growth is currently even stronger in important new competitor countries like India and China (in 2004 the number of MST graduates in China already surpassed the EU figure). Demographic trends (decreasing cohort size) could spell a further slowdown in growth in the number of MST graduates in Europe in the long term.

The strong overall growth in the EU also masks considerable differences between Member States and between disciplines: while the number of graduates in computing increased by over 80% between 2000 and 2005, the number of graduates in physical science declined by 5% over the same period.

Little progress was made on reducing the gender imbalance among MST graduates. The proportion of female graduates increased slightly, from 30.8% in 2000 to 31.2% in 2005.

The percentage of students with foreign citizenship is increasing in the EU continuously. Three quarters of the outgoing students from EU countries, however, go to another EU country. Mobility within the Erasmus programme also continues to increase – by over 7% between 2005 and 2006. More than 1.5 million students have taken part in the Erasmus scheme since its inception in 1987.

As regards the quality of higher education, international university rankings show a relatively high share of institutions in western and northern European countries ranked among the well performing institutions. The very top end of the rankings is, however, dominated by US universities. There is furthermore still a wide gap in employment of researchers per thousand labour force between the EU and USA and Japan.

Employability

Over the period 2000-2006 there was a considerable improvement in the educational attainment of the working age population in EU-27. All EU countries reported a decline in the share of the population with low educational attainment and an increase in the population with medium to high levels of education. However, about 80 million people or 30% of the labour force (aged 25-64) still have low educational attainment (only lower secondary education or less) and are hence considered low-skilled. This figure is declining by over 1 million per year because young cohorts with higher education are continuously replacing older cohorts with lower levels of education.

Labour force participation and employability are closely related to educational attainment and hence the shift to higher educational attainment levels can help to reduce unemployment rates and increase activity rates. In 2006 the unemployment rate of the population aged 15 to 64 with high education was 4.1% compared with 10.1% for the population with low education.

III. PERFORMANCE AND PROGRESS BY POLICY AREA

1. IMPROVING EQUITY IN EDUCATION AND TRAINING

Main messages

Access for all to and participation in education and training

Pre-primary education

- In 2005, 85.7% of all 4-year-old children in the EU were participating in education. The participation rate increased slightly (by 2.9 percentage points) from 2000 to 2005. The rate is higher than in the USA but lower than in Japan. There were only four Member States in which not more than about half of 4-year-olds were participating in education in 2005.

Early school leavers

- Every sixth young person aged 18 to 24 in EU-27 still leaves school with no more than lower secondary education and participates in no kind of education or training after this point.
- Continuous progress has been made in recent years towards reducing the number of early school leavers, but progress must be faster to attain the EU benchmark of 10% in 2010.
- In 2006 only the Czech Republic, Austria, Poland, Slovakia and Finland, together with Norway, had rates of early school leaving at or below the European benchmark (10% by 2010).

Special needs education

- At present 2.2% of the total student population in compulsory education are educated in special educational settings within the EU because of special education needs. No progress was made towards more inclusive policies within the EU between 1999/2001 and 2004/2006 (2.2% also in 1999/2001). However, the percentage of pupils who are educated in segregated settings varies widely between countries. Some place 4% to 5% of the total student population in segregated settings, whereas others educate less than 0.5% of pupils in such settings within compulsory education.
- Slightly less than 3% of the total student population within compulsory education are pupils with special education needs who are educated within regular compulsory education within the EU. However, this ratio also varies between individual countries and depends heavily on national definitions of pupils with special education needs.

Equity of conditions for education and training

- Evidence from international surveys (PISA, TIMSS and PIRLS) shows that family background, for example parental education, parental occupational status, family structure or migrant background, are factors significantly influencing achievement by pupils in schools in the EU.
- However, there is also evidence that some education and training systems manage to counteract such factors and thereby positively influence equity in education. As regards limitation of any negative impact of the foreign background of pupils on their performance at school, the EU is performing worse than countries like Australia and the USA. However, countries such as Ireland, Luxembourg and France are more successful in this area than other Member States.
- Also parents' occupational status is relatively less important for pupils' performance in Finland, Iceland and Latvia, as in Japan, and "mother's educational status" is relatively less important for pupils' performance in the Netherlands, Iceland and Norway.

Introduction

When launching the Lisbon strategy in 2000, the Heads of State agreed that the target that by 2010 the European Union should become “the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth, with more and better jobs”⁵ has to be accompanied by “greater social cohesion”.⁶ In the field of education and training, the Lisbon agenda was put into action in the “Education and Training 2010” programme containing three broad strategic objectives, of which the second directly concerned equity in education and training, stressing the need to facilitate access for all to education and training.⁷

Moreover, in 2003 the Council adopted a European reference level (benchmark) on early school leavers to be achieved by 2010, thereby acknowledging the central importance of the equity dimension for effective participation in lifelong learning in today’s increasingly competitive societies. The Council also stressed that specific issues, such as promotion of gender equality, integration of ethnic minorities, inclusion of disabled persons, reduction of regional disparities, etc., need to be monitored.

The need to ensure that European education and training systems are both efficient and equitable was recently reiterated by the 2006 spring European Council.⁸ As emphasised in the Communication on efficiency and equity, investigating equity in education and training means analysing the extent to which “individuals can take full advantage of education and training, in terms of opportunities, access, treatment and outcomes.”⁹

Taking into account the above-mentioned European policy context, the Communication from the Commission “A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training”¹⁰ mentions **(1) participation in pre-school education**, **(2) special needs education** and **(3) early school leavers** as core indicators for monitoring progress in this area.

Several theories of equity were developed, mainly after Rawls published his “theory of justice” in 1971,¹¹ for example Walzer’s “theory of spheres of justice”,¹² Sen’s “theory of capabilities”¹³ and the “theories of responsibility” developed by Arneson¹⁴ and Roemer.¹⁵ All these theories stress that “rewards” should be proportionate to “efforts” and, consequently, that inequalities of “talents” or threshold starting points, for which individuals are not responsible, should be balanced by opposite inequalities of “resources”.¹⁶

⁵ Presidency Conclusions, Lisbon, paragraph 37.

⁶ Ibid.

⁷ Adopted by the European Council, Stockholm, 2001. Work programme approved by the European Council, Barcelona, 2002.

⁸ European Council 23-24 March 2006, Presidency Conclusions, paragraph 23.

⁹ Communication from the Commission to the Council and to the European Parliament “Efficiency and equity in European education and training systems”, COM(2006) 481.

¹⁰ Communication from the Commission “A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training”, COM(2007) 61.

¹¹ Rawls, J. (1971), *A Theory of Justice*, Oxford University Press.

¹² Walzer, M. (1983), *Spheres of Justice*, New York, Basic Books.

¹³ Sen, A. (1982), *Quelle égalité?*, In *Ethique et Economie*, Paris.

¹⁴ Arneson, R. J. (1989), *Equality and equal opportunity for welfare*, *Philosophical Studies*, 56, pp. 77-93.

¹⁵ Roemer, A. (1996), *Theories of Distributive Justice*. Harvard University Press, Cambridge.

¹⁶ GERESE (2005), *Equity of the European Educational Systems*, Liège/Mons. Study co-financed by the EU Socrates programme.

Looking at equity in education and the role of education in promoting equity in society, the European Group of Research on Equity of Educational Systems (GERESE) analysed education and training in the European Union applying following five different philosophical/political approaches:

- Equality of access or opportunities;
- Equality of treatment;
- Equality of achievement or academic success;
- Equality of social output;
- The position of “no interest in equity questions”.¹⁷

Equity in education can be achieved only if the relationship between education and the economic, political and socio-cultural systems in society is taken into account. In order to eliminate inequities in education it is necessary to apply a holistic approach. For example, Kathleen Lynch and John Baker have developed a concept of equality of conditions in education and training in which they draw a distinction between the following key dimensions: equality in educational and related resources, equality of respect and recognition, equality of power and equality of love, care and solidarity.¹⁸

Because of limitations connected with the availability of reliable and internationally comparable data and space, this report addresses only two aspects of equity issues in education and training:

1. access for all to education and training and equal opportunities, focusing mainly on access and participation in pre-primary education, early school leavers, special needs education and access of older people to higher education;
2. equity of conditions, analysing the impact of various characteristics of pupils, such as their family background or belonging to other language and minority groups, on their achievements in school plus inequalities created by individual schools.

This report does not analyse in more detail many aspects of equity in education and training already identified, such as injustices connected with school life, the way pupils are treated by the school, its employees and their fellow pupils or inequalities linked directly to the teaching process or structure of the education and training systems. Nor does it analyse the impact of inequalities in education and training on the economy and social and political life.

“The European Union has every reason to be proud of its anti-discrimination legislation, which is one of the most extensive in the world. But very often people are not aware of their rights. That is why one of the main aims of the European Year of Equal Opportunities for All (2007) is to help to turn equal rights in theory into equal rights in practice.”¹⁹

1.1. ACCESS FOR ALL TO EDUCATION AND TRAINING

1.1.1 Significance of pre-primary education

There is evidence that participation in pre-primary education can have a strong impact on educational achievement during compulsory schooling, including on early school leaving, and on further

¹⁷ Ibid.

¹⁸ Lynch, K. and Baker, J. (2005), *Equality in education. An equality of condition perspective*. In *Theory and Research in Education*, Vol. 3, pp.1312-164.

¹⁹ *The European Year of Equal Opportunities for All – 2007. Celebrating diversity, ensuring equality (2006)*. Equal Voices, Issue 20.

participation in lifelong learning, two targets covered by European reference levels (benchmarks) for 2010. The target that 90% of all children aged from 3 years to the beginning of compulsory schooling should be in pre-school day-care institutions was set by the 2002 Barcelona Council in order to increase employment rates in Europe, especially for women.²⁰

However, apart from making it possible for parents to combine parenthood with employment or studies, the goal of pre-primary education is to support and stimulate children's mental and physical development. The pre-primary age is of great importance in each child's growing understanding of itself, of the opportunities it has and of its everyday reality.

Universal access to high-quality pre-primary education can be particularly important for reducing inequalities caused by factors such as the educational attainment of parents, the difference between the language spoken at home and the language of instruction at school and the socio-economic status of parents.

The importance of early childhood education for further success or failure at school and beyond in personal and professional life is also widely recognised at national level. Countries have reformed their education policies and introduced many new initiatives at national, regional and local levels to increase participation by very young children in various educational settings. Many of these initiatives have focused on children at risk. They are usually targeted at children aged 3 and over (up to compulsory education). In many countries the objective of pre-primary education is to reduce the negative impact of the socio-economic background of pupils and to try to counterbalance the impact of poverty and dysfunctional families on pupils' achievements at school, but barriers still exist, for example to access to pre-primary education for children whose parents are unemployed.

In countries for which national data are available immigrant children are usually underrepresented in pre-primary education. Therefore many national initiatives are focusing on improving the language skills necessary for success in compulsory schooling. Target groups for such initiatives are usually migrants and children belonging to ethnic minorities (mainly Roma children). Some countries are also concentrating on supporting children whose parents have very low skills, including in their mother tongue. Moreover, in some countries, like Luxembourg where almost 40% of the population is of foreign origin, language learning is one of the key objectives of pre-primary education.

Impact of participation in pre-primary education on achievement at school

According to PISA data on the achievements of 15-year-olds in reading, the difference in the mean score between pupils who participated in pre-primary education for more than one year and pupils who received no pre-primary education was 25 points for the European countries participating in PISA. The biggest differences were observed in Belgium and Germany, followed by the UK. By contrast, this indicator was slightly below the EU average in Slovakia, Italy, Ireland, the Czech Republic and Finland. One possible reason why non-participation in pre-primary education had a greater impact on performance at school in countries with almost universal participation in pre-primary education may be that in these countries children who were not enrolled in pre-primary education are in an even more difficult situation at school in comparison with children who have already received some kind of education or have already had an opportunity to adapt to school.

²⁰ Presidency Conclusions, European Council, Barcelona, 2002.

Table 1.1: Participation in pre-primary education and school performance in reading
(Difference in mean achievement score between pupils who were enrolled in pre-primary education for more than one year and pupils who were not)

	Score difference	Socio-economic background
France	101	15
Belgium	96	11
Germany	84	9
Turkey	72	13
Hungary	54	18
Austria	53	9
Netherlands	49	12
Denmark	45	12
Greece	44	9
Poland	44	10
Sweden	43	7
Norway	40	7
Japan	39	15
Spain	30	7
Luxembourg	30	5
United States	26	13
EU	25	2
Slovakia	24	6
Italy	24	9
Ireland	21	6
Czech Republic	15	7
Finland	13	5
Portugal	5	5
Iceland	-5	8
Latvia	-6	5
United Kingdom*	58	7

Source: OECD (PISA 2003 dataset). Differences in bold are statistically significant. The OECD average performance in PISA was fixed as 500 points in 2000. Weighted EU averages have been calculated for PISA data whenever data exist for at least 15 of the 25 member states, representing at least 60 per cent of the total EU population.

Additional note:

*UK: response rate too low to ensure comparability.

However, the socio-economic background of children can influence their ability to benefit from pre-primary education. After adjusting for the socio-economic background of children, the net effect of pre-primary education tends to be roughly halved, but is still statistically significant. Data from PIRLS and TIMSS (2003) confirm this observation on the role of pre-primary education. Longitudinal research also supports this finding.²¹

Nevertheless, a more holistic approach is needed in order fully to understand why some countries with very high levels of participation in early learning, for example Belgium and France, also still have above-average levels of inequity in education (both between groups and between individuals) and why a country like Finland, with relatively low participation rates in early learning, comes out best in the world in the PISA reading test.

As stated in a UNESCO publication, "... even though, overall...(day-care facilities) generally have a positive effect on performance at school ..., such facilities may be more or less beneficial to the

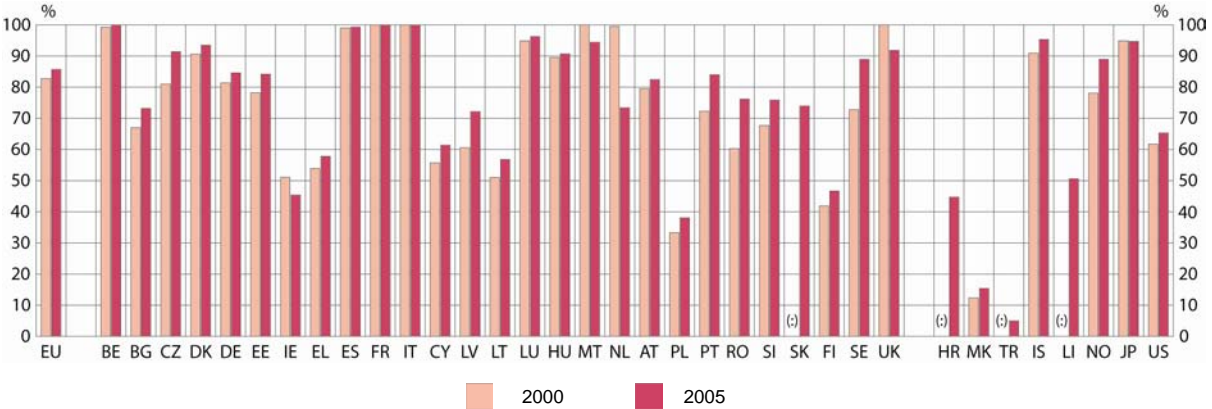
²¹ Sammons, P., Sylva, K., Melhuish, E., Siraj-Blatchford, I., Taggart, B. and Elliot, K. (2002). *Measuring the Impact of Pre-Schooling on Children's Cognitive Progress over the Pre-School Period*. Technical Paper 8a, London: Institute of Education/Department for Education and Skills.

development of very young children, depending on how they are organized in practice and the content of what they provide. In particular, they have a more regularly positive impact on the capacity of children to adapt socially than on their linguistic development. Their impact in terms of reducing social inequality will thus also vary, and the overall influence of various forms of pre-school day-care will remain far weaker than that of the educational level of a child’s mother.”²²

Participation in pre-primary education

In 2005, 85.7% of all 4-year-old children in the EU were participating in education. Children of this age were usually enrolled in pre-primary institutions (kindergartens), but in some countries they were already attending primary school.²³ The institutions range from schools to non-school centres, which sometimes come under authorities or ministries other than those responsible for education.

Chart 1.1: Participation rates of 4-year-olds in education, 2000-2005



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU	MT
2000	82.8	99.2	67.0	81.0	90.6	81.4	78.2	51.1	53.9	99.0	100.0	100.0	55.7	60.6	51.0	94.9	89.5	100.0
2005	85.7	100.0	73.2	91.4	93.5	84.6	84.2	45.4	57.8	99.3	100.0	100.0	61.4	72.2	56.8	96.3	90.7	94.4

	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO	JP	US
2000	99.5	79.5	33.3	72.3	60.3	67.7	-	41.9	72.8	100.0	-	12.4	-	90.9	-	78.1	94.9	61.7
2005	73.4	82.5	38.1	84.0	76.2	75.9	74.0	46.7	88.9	91.8	44.7	15.4	5.0	95.3	50.6	88.9	94.7	65.3

Source: Eurostat (UOE data collection)

Additional notes:

Data include participation in both pre-primary and primary education (ISCED level 1 and 2).
 BE: Data exclude independent private institutions, but these are attended by only a very limited number of children. Data from the German-speaking community are missing.
 IE: There is no official provision of ISCED level 0 education. Many children attend some form of ISCED level 0 education, but for the most part data are missing.
 NL: In 2002 the reference date for collecting these data was changed from 31 December to 1 October.
 MK: Data for 2004.

As shown in Chart 1.1, between 2000 and 2005 the upward trend which started after the 1960s in most countries continued: participation by 4-year-olds in education increased again slightly from 82.8% to 85.7%.²⁴ This EU average is higher than in the USA (65.3%) but lower than in Japan (94.7%).

²² Duru-Bellat, M. (2004). *Social inequality at school and educational policies*. UNESCO, International Institute for Educational Planning.

²³ According to the ISCED definition, pre-primary education covers “programmes at level 0, defined as the initial stage of organised instruction designed primarily to introduce very young children to a school-type environment, i.e. to provide a bridge between the home and a school-based atmosphere.” That means that day-care without any educational element is excluded.

²⁴ Some countries have participation rates of 100% or close to 100% for children aged 4 (as BE, FR, ES and IT where children normally start in school at the age of 3 (also see Eurydice information on this)).

However, access levels vary widely across Europe. In France, Belgium, Italy, the UK and Spain, participation by 4-year-olds in education is almost universal, whereas in four countries – Ireland, Lithuania, Poland and Finland – not more than about half the 4-year-olds participate in education. Participation by 4-year-olds is extremely low in Turkey (5%) and in Macedonia (15.4%).

In Greece pre-primary education is available only from the age of 4 onwards, whereas in Ireland, the Netherlands and the UK 4-year-olds are already enrolled at primary school and in Finland the majority of 4-year-olds attend day-care centres with highly qualified staff which also play a certain educational role.²⁵

Poland has one of the lowest participation rates in pre-primary education because relatively few places are available. Demand outstrips supply and priority is given to 6-year-olds (due to their obligation to attend one year of pre-primary education in preparation for primary school), children of single parents, children of disabled parents and children placed in foster families. Access to pre-primary education in rural areas is a particular challenge in Poland. In 2005/2006, 41% of all children aged 3-5 years were enrolled in pre-primary education in Poland, but while in urban areas the figure was 58.4%, in rural areas it was only 19.1%.²⁶

1.1.2 Early school leavers

Young people who leave school with only lower secondary education are at a disadvantage on the labour market in today's knowledge-based society. Their personal and social development is in danger of being curtailed and they are at risk of a life of poverty and social exclusion. They are also less likely to participate in lifelong learning than other young people who continue their education and training.

The need to decrease the number of young people at this risk was identified and recognised in 2003 when the (Education) Council set a European reference level (benchmark) in this area for 2010. The same target to reduce early school leaving is also included in the Employment Guidelines (2005/2008) for the revised Lisbon process.²⁷

European benchmark
By 2010 an EU average of no more than 10% early school leavers should be achieved.

The European objective is to encourage young people to remain in education or training after the end of compulsory education and to obtain at least upper secondary education. Educational attainment of at least this level is understood as the minimum necessary for active participation in the knowledge-based economy.

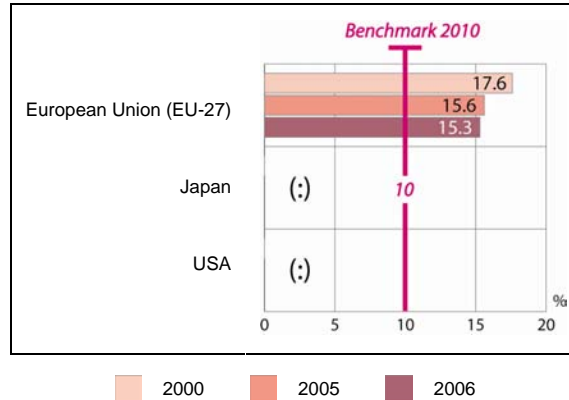
²⁵ Eurydice (2005). *Key Data on Education in Europe 2005*.

²⁶ Information provided by the Polish Eurydice unit in 2007.

²⁷ http://ec.europa.eu/employment_social/employment_strategy/prop_2005/adopted_guidelines_2005_en.htm.

Chart 1.2: Early school leavers – benchmark for 2010

(Percentage of the population aged 18-24 with only lower secondary education and not in education or training, 2000, 2005 and 2006)



Data source: Eurostat (EU-Labour Force Survey)

In 2006 the average early school leavers rate was 15.3% for EU-27, 2.3 percentage points lower than in 2000. However, at the current rate of improvement, the benchmark of no more than 10% early school leavers will not be attained by 2010. Additional efforts need to be made to meet the target.

As can be seen from the map (Chart 1.3) and Chart 1.4, there is a geographical divide between the higher performers in northern and central Europe and the lower performers in the south of the European Union.

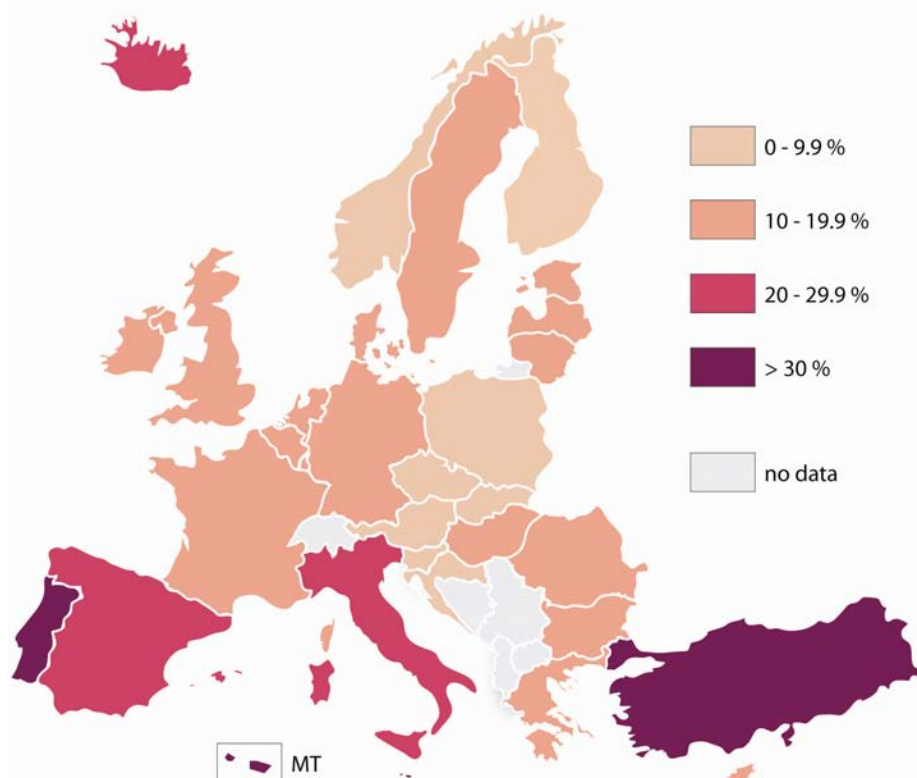
The best performers – the Czech Republic, Austria, Poland Slovakia and Finland along with Norway – all have early school leaving rates below the European reference level (benchmark) for 2010 (not more than 10%).²⁸

By contrast, in 2006 Malta and Portugal still had the highest proportions of early school leavers in the EU (41.7% and 39.2% respectively). The new Member States which joined the EU in 2007 – Bulgaria and Romania – also have relatively high proportions of early school leavers (18.0% and 19.0% respectively).

²⁸ Data for Slovenia are unreliable because of the small sample size.

Chart 1.3: Early school leavers by groups of country, 2006

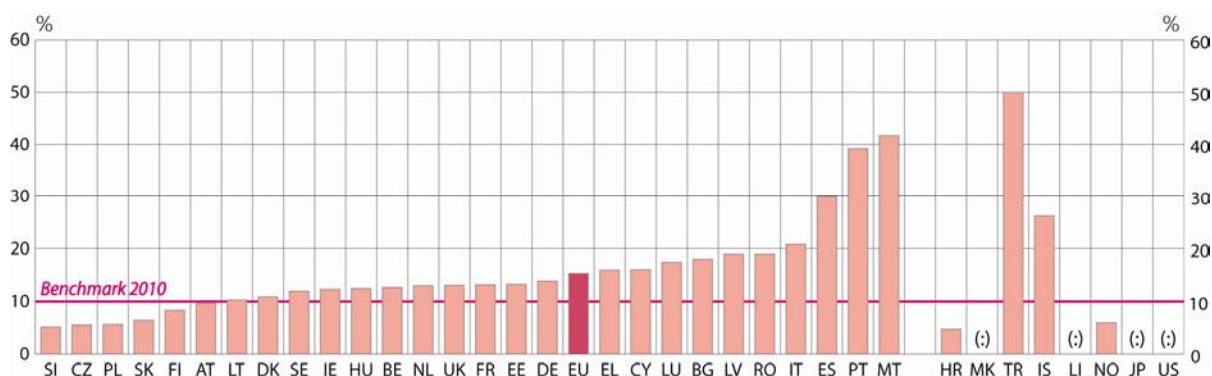
(Percentage of the population aged 18-24 with only lower secondary education or less and not in education or training, 2006)



Data source: Eurostat (EU-Labour Force Survey), 2006

Chart 1.4: Early school leavers, 2006

(Percentage of the population aged 18-24 with only lower secondary education or less and not in education or training, 2006)



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU	MT
2006	15.3	12.6	18.0	5.5	10.9	13.8	13.2	12.3	15.9	29.9	13.1	20.8	16.0	19.0	10.3	17.4	12.4	41.7
	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO	JP	US
2006	12.9	9.6	5.6	39.2	19.0	5.2	6.4	8.3	12.0	13.0	5.3	:	50.0	26.3	:	5.9	:	:

Data source: Eurostat (Labour Force Survey), 2006

Additional notes:

2006: provisional data for LV, PT, FI and IS

SI (all indicators) and EE and LT (indicators by gender): unreliable because of the small sample size.

In DK, LU, IS, NO, EE, LV, LT, CY, MT and SI the high degree of variation of results over time is partly influenced by the low sample size.

Due to the implementation of harmonised concepts and definitions in the survey, the breaks of series were noted in the majority of countries, especially in 2003 and 2004.

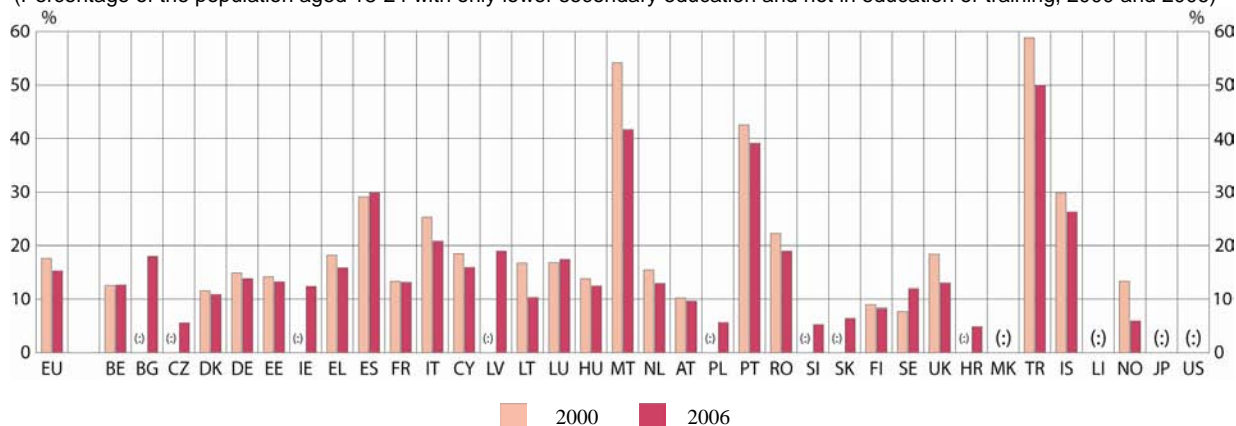
CY: Pupils studying abroad are not covered by the survey; this indicator is therefore overestimated.

The EU aggregates are calculated using the closest available year result in case of missing country data.

In the majority of countries the percentage of early school leavers decreased between 2000 and 2006 (see Chart 1.5). However, in almost every country the quality and comparability of the data on early school leaving over this period are affected by breaks in time series, small sample sizes or changes in the surveys. As can be seen from the footnotes to Chart 1.5, one of the major changes made is the “wider coverage of the activities taught” which has been introduced in the surveys since 2003. Such a change could, in itself, have been expected to “decrease” the proportion of early school leavers meeting the definition in the survey. Notwithstanding such changes, in Sweden, for example, a country that introduced the wider concept in 2003 and reported a significant (12%) increase in the proportion of early school leavers in 2006, a more than 50% increase can be observed over the rate reported in 2000.

Chart 1.5: Early school leavers, 2000 and 2006

(Percentage of the population aged 18-24 with only lower secondary education and not in education or training, 2000 and 2006)



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU	MT
2000	17.6	12.5	:	:	11.6	14.9	14.2	:	18.2	29.1	13.3	25.3	18.5	:	16.7	16.8	13.8	54.2
<i>Females</i>	15.6	10.2	:	:	9.9	15.2	12.1	:	13.6	23.4	11.9	21.9	13.9	:	14.9	17.6	13.2	56.1
<i>Males</i>	19.7	14.8	:	:	13.4	14.6	16.3	:	22.9	34.7	14.8	28.8	25.0	:	18.5	15.9	14.3	52.5
2006	15.3	12.6	18.0	5.5	10.9	13.8	13.2	12.3	15.9	29.9	13.1	20.8	16.0	19.0	10.3	17.4	12.4	41.7
<i>Females</i>	13.2	10.2	17.9	5.4	9.1	13.6	:	9.0	11.0	23.8	11.2	17.3	9.2	16.1	7.0	14.0	10.7	38.8
<i>Males</i>	17.5	14.9	18.2	5.7	12.8	13.9	19.6	15.6	20.7	35.8	15.1	24.3	23.5	21.6	13.3	20.9	14.0	44.6

	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO	JP	US
2000	15.5	10.2	:	42.6	22.3	:	:	8.9	7.7	18.4	:	:	58.8	29.8	:	13.3	:	:
<i>Females</i>	14.8	10.7	:	35.1	21.3	:	:	6.5	6.2	17.9	:	:	51.2	29.6	:	13.5	:	:
<i>Males</i>	16.2	9.6	:	50.1	23.3	:	:	11.3	9.2	19.0	:	:	65.8	29.9	:	13.2	:	:
2006	12.9	9.6	5.6	39.2	19.0	5.2	6.4	8.3	12.0	13.0	5.3	:	50.0	26.3	:	5.9	:	:
<i>Females</i>	10.7	9.8	3.8	31.8	18.9	3.3	5.5	6.4	10.7	11.4	3.8	:	42.7	22.0	:	4.3	:	:
<i>Males</i>	15.1	9.3	7.2	46.4	19.1	6.9	7.3	10.4	13.3	14.6	5.6	:	56.6	30.5	:	7.4	:	:

Data source: Eurostat (EU-Labour Force Survey)

Additional notes:

2006: provisional data for LV, PT, FI and IS

SI (all indicators) and EE and LT (indicators by gender): unreliable because of the small sample size.

In DK, LU, IS, NO, EE, LV, LT, CY, MT and SI the high degree of variation of results over time is partly influenced by the low sample size.

Due to the implementation of harmonised concepts and definitions in the survey, the breaks of series were noted in the majority of countries, especially in 2003 and 2004.

CY: Pupils studying abroad are not covered by the survey; this indicator is therefore overestimated.

The EU aggregates are calculated using the closest available year result in case of missing country data.

The Netherlands

On almost 9%, the rate of early school leavers with a non-western background is higher than among native Dutch pupils (5%). The first generation has a higher rate than the second and the rate is particularly high among pupils who have been living in the Netherlands for less than five years. Broken down by country of origin, there are no striking differences. Pupils from single-parent families often leave school prematurely: on 9% the rate is nearly twice as high as for children from two-parent families. A small proportion of school pupils live on their own. This category also has a relatively high rate of early school leaving on nearly 17%. Generally, the rate is lower for pupils from high-income households. There appears to be no link between early school leaving and the number of members of the household. Approximately one third of current early

school leavers are from ethnic minorities. Over 50% of early school leavers come from vocational training. The largest numbers of new early school leavers are found in large urban areas.²⁹

Austria

There is evidence that the proportion of early school leavers is more than twice as high in cities than in the country, which could be connected with the fact that in cities the proportion of migrants is often higher. Another influence on the number of early school leavers is whether or not the pupils live with their parents and their parents' employment situation (unemployment or low salary). More than 50% of early school leavers are the children of parents with a low level of educational attainment.³⁰

Despite all the progress, the latest (2006) figure for early school leavers in the EU (15.3%) is still far in excess of the European benchmark of 10% in 2010. In order to achieve more progress, eight Member States (Belgium, Estonia, Greece, Lithuania, Malta, the Netherlands, Portugal and Spain) set quantified national targets for reducing early school leaving in their 2005 Lisbon National Reform Programmes.

Cyprus

*There are also a number of specific national factors influencing the international comparability of data. For example, the national figures on early school leavers for **Cyprus** are much lower because the EU LFS data:*

- *do not include the large number of Cypriots in the 18-24 age group studying abroad (in 2004 nearly 16 000 Cypriots or over 22% of this age group);*
- *do not include persons aged 18 to 24 years on compulsory national military service: in Cyprus military service is compulsory for all males at the age of 18, immediately after finishing upper secondary education;*
- *but do include the considerable number of foreign workers in Cyprus, who mainly have a low level of educational attainment; according to the Labour Force Survey over 40% of non-nationals are early school leavers.³¹*

Nevertheless, the Cypriot authorities have recognised "early school leavers" and the "level of youth educational attainment" as problem areas and have taken policy measures that should contribute significantly to alleviating these problems. They include reforms of the secondary technical vocational system and of apprenticeship schemes, inter alia to make this form of education and training more attractive to potential early school leavers.

Some of the reforms and other initiatives introduced recently at national level can be expected to produce an improvement later. The initiatives are not focused only on curricula, but also on extracurricular activities such as sports.³² The national targets set in some countries (Belgium, Estonia, Greece, Lithuania, Malta, the Netherlands, Portugal and Spain) combined with lessons learned from the peer learning activities on this subject (the cluster on "access and social inclusion in lifelong learning")³³ by the European Commission have shown that equity in education and, especially, the problems linked to early school leaving are high on the policy agenda, not only in countries with a high proportion of early school leavers but also in the countries which have been quite successful in the past.

²⁹ Huisman, P.W. and Noorlander, N.W. (2007). *Preventing dropout and discrimination in the Netherlands*. Paper presented at the ELA Conference, Potsdam, May 2007.

³⁰ Steiner, M. and Steiner, P.M. (2006). *Dropout und Übergangsprobleme. Ausmaß und soziale Merkmale jugendlicher Problemgruppen*. Research report, Institute for Advanced Studies.

³¹ Ministry of Finance, Cyprus, 27 July 2006. The Statistical Office has adjusted the series on early school leavers to take account of the three above-mentioned factors, i.e. to include Cypriots studying abroad or doing their compulsory military service and to exclude non-nationals. After these adjustments the rate of early school leaving falls from 20.6% to 11.6% in 2004 and from 18.2% to 9.8% in 2005. The largest adjustments are for Cypriots studying abroad which reduce the rate of early school leaving by over 4 percentage points in 2004 and 2005. Consequently, the adjusted series show that the Eurostat definitions tend to overestimate early school leaving in Cyprus.

³² The role of sports in combating early school leaving is for example investigated also in two studies supported by the European Commission within the frame of the Socrates programme (Action 6.1.2): the study Associazione Centri Sportivi Italiani (coor. Franco Alavro) "Education par le sport de plein air contre le décrochage scolaire" (2006); and Lambrakis Research Foundation (Coor. Nikitas Kastis) "VALUE SCOUT – Value Schools and Citizenship Observatory for Culture and Sport" (2006).

³³ Peer learning activities are organised by the European Commission in selected areas within the Education and Training 2010 programme. From 2006 on, site visits within this cluster were organised in Belgium, Ireland and Hungary.

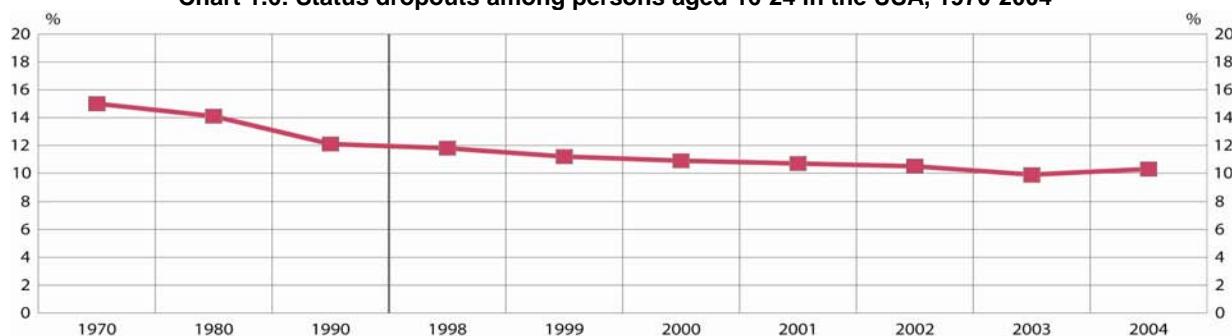
Early school leaving is also on the policy agenda outside Europe.

It is not possible directly to compare the data on early school leavers between the EU and the USA and Japan since different definitions are used, but national data on the situation in these countries can be useful.

In the USA the concept of early school leaving, more popularly known as “dropping out”, is based on several definitions of dropout rates and indicators used by official authorities, among which the “status dropout” rate seems to be most comparable with the EU benchmark.³⁴

According to official US data, 10.3% of 16- to 24-year-olds in the USA had no upper secondary education and were not enrolled in a high school programme (“status dropouts”) in 2004.³⁵

Chart 1.6: Status dropouts among persons aged 16-24 in the USA, 1970-2004



Year	1970	1980	1990	1998	1999	2000	2001	2002	2003	2004
%	15.0	14.1	12.1	11.8	11.2	10.9	10.7	10.5	9.9	10.3

Data source: Digest of Education Statistics for data from 1970 to 2001, Youth Indicators for data from 2002 and 2003, both published by the US Department of Education.

³⁴ The USA has a longer tradition of and more comprehensive approach to measuring dropouts using several types of rate. The “status dropout” rate is a cumulative rate that estimates the proportion of young adults aged 16 to 24 in the civilian, non-institutionalised population who are dropouts (i.e. who are not enrolled in a high school programme and have not received a high school diploma or obtained an equivalent certificate), regardless of when they dropped out. The “event dropout” rate measures the number of “new” dropouts in a given year, i.e. the percentage of young people aged 15-24 who dropped out of grades 10 and 12 in the previous year. The “cohort dropout” rate measures what happens over time for a particular cohort of pupils sharing similar characteristics. Combination of these measurements allows a more robust understanding of the situation with early school leaving. The limitations of one indicator are counterbalanced by the advantages of another. For example, the year-on-year status dropout rate may be increasing, seeming to indicate a worsening of the situation, but the event dropout rate for the same years could be decreasing, indicating that, although the overall proportion of early school leavers within a population is increasing, the situation may not actually be so negative since, year on year, fewer people are actually dropping out. The “stop out” rate essentially measures the return to education after temporarily dropping out. By taking such a measurement together with the other dropout rates, the flows into and out of education by young people can be better understood and therefore better addressed and targeted. These rates are based on both survey data and school records reported and are aggregated up to state and national levels.

³⁵ Using data from the Current Population Survey (CPS), a US household survey similar to EU LFS, status dropout rates show the percentage of young people aged 16-24 who are not in school and who have not gained any high school credential (either diploma or equivalent credential such as a General Educational Development certificate). That means that not only the age groups observed are different (18-24 for the EU and 16-24 for the USA), but also the definition (participation in formal, non-formal and informal education in the EU in contrast to only formal education in the US definition). However, recently about half a dozen US studies by independent researchers have also expressed serious doubts about the reliability of the US data on dropout rates. They concluded that the state estimates provided by the US Department of Education, along with the rates supplied by the states under the reporting requirements of the “No Child Left Behind” Act, are inaccurate and generally inflated. A study published in 2005 (Barton, P. (2005) *One-third of a Nation: Rising Dropout Rates and Declining Opportunities*. Educational Testing Service. www.ets.org/research/pic) estimated that, in reality, dropouts or early school leavers account for about one third of young people in the appropriate age cohort in the USA.

A number of reasons exist for the inaccuracy of the statistics, according to US researchers. The main reservation is that the statistics on high school graduation include General Education Development (GED) certificates, which are obtained by passing a test, not by completing high school.

It took the USA more than 30 years to reduce the dropout rate by about 5 percentage points (from 15% in 1970 to 10.3% in 2004). This could be compared with the EU objective of decreasing the share of early school leavers by about 7 percentage points over a period of 10 years (from 2000 to 2010).

Also in the USA dropping out is more a problem of boys than girls (11.6% in comparison with 9.0% respectively) and of persons from certain ethnic backgrounds (23.8% for persons of Hispanic origin and 11.8% for black persons of non-Hispanic origin in comparison with 6.8% for white persons of non-Hispanic origin).³⁶

In Japan every five years the Statistics Bureau investigates³⁷ the situation of people aged 15-34 years old who do not attend school, are unmarried and do not usually work for remuneration.

The latest survey put the number of such young people at 2 132 000 in 2002. In 1992, just after the collapse of the bubble economy, this group consisted of only 1 307 000 persons. This means that the number of such persons increased by about 800 000 over that “lost decade”.

Now a new category of jobless 15- to 34-year-olds, known as “NEETs” (not in education, employment or training), who are not looking for a job and do not even wish to work (“discouraged”), is attracting the attention of policy-makers in Japan. The number of NEETs rose to 847 000 in 2002. One of the main features of this group is that there is a strong correlation with their educational attainment and family income. Also in Japan young people with lower education and from poor families are more likely to end up in jobs with poor working conditions and are hence more likely to quit their jobs.

However, more than 20% of NEETs come from wealthy families with high incomes.

The increase in the number of NEETs can be explained as the outcome of the changing social structure and working conditions in firms in the 1990s and 2000s.³⁸ Many NEETs lack confidence in their knowledge and capability to work. NEETs feel that they lack the skills required for working in companies, such as communication skills. Some of them report that they cannot work because of illness or injury. The number of sick or injured jobless young persons in Japan increased rapidly in the late 1990s and early 2000s. In 2002 they numbered almost 100 000 in Japan.

1.1.3 Pupils with special education needs

Equal opportunities and integration of people with disabilities into society have been an issue in the European policy dialogue since the 1980s, with the launch of the Helios programme in 1988 and adoption of the first Resolution concerning integration of children and young people with disabilities into ordinary systems of education in 1990.³⁹ In 1996 a European Agency for Development in Special Needs Education was set up to support the efforts fully to integrate young people with disabilities into education and training.⁴⁰ The main objective of this Agency, established on the initiative of the Danish Government, is to support cooperation and exchanges of information and experience on education of pupils with special needs between Member States. Further European initiatives in this area led to 2003 being declared the European Year of People with Disabilities and the adoption of two Council Resolutions in 2003, one on improving access of people with disabilities to the knowledge-based

³⁶ Digest of Education Statistics (2007), US Department of Education.

³⁷ The Employment Status Survey.

³⁸ Genda, Y. (2005). *The "NEET" problem in Japan*. Social Science Japan, September 2005.

³⁹ OJ C 162, 3.7.1990.

⁴⁰ <http://www.european-agency.org/>.

society,⁴¹ the other on equal opportunities for pupils and pupils with disabilities in education and training.⁴²

At global level, the UN Convention on the Rights of People with Disabilities⁴³ was adopted at the end of 2006 and is now open for signature. Under this Convention, ratifying countries must ensure that persons with disabilities are not excluded from the education system on grounds of disability. Furthermore, persons with disabilities should have access to inclusive, high-quality and free primary and secondary education on an equal basis to others in the communities in which they live. They should receive the support they need to facilitate their education. Effective individualised support measures should be provided in environments that maximise academic and social development, consistent with the goal of full inclusion.

The EU, supported by the European Agency, is aligning on a social and educational model of disability, rather than a medical/clinical model. According to this model, disability does not correspond to impairment but to the social barriers that impaired persons face because of the ways schools are structured. The Commission, supported by the Member States, therefore uses the concept of “special educational needs”.

EU Member States take very different approaches to how pupils with special education needs are to be supported in education and training and how schooling can be better adapted to their needs. There are great disparities between EU Member States on allocation of additional resources for pupils with special education needs.⁴⁴ Evidence also points to different approaches to training of teachers and others who need to be trained to teach in special education needs settings.⁴⁵

1.1.4 Different policies focused on education of pupils with special education needs

The difficulties faced by pupils in terms of access to the curriculum and social inequalities are linked to the ability of schools to provide every pupil with the same chance to make progress in the education system and to achieve success in an appropriate learning environment.

In some countries pupils with special needs are educated mainly in special schools or special classes, while in others they are mainly integrated in ordinary classes.

Education of pupils with special education needs in segregated settings

As shown in Chart 1.7, at present 2.2% of the total population in compulsory education within the EU are taught in special settings because of their special education needs.⁴⁶ No progress was made towards more inclusive policies for educating pupils with special needs between 1999/2001 and 2004/2006 at the European level.

⁴¹ Council Resolution of 5 May 2003 on equal opportunities for pupils and students with disabilities in education and training.

⁴² Resolution of 6 February 2003 on e-accessibility "Improving access of people with disabilities to the knowledge-based society", OJ C 39, 18.2.2003 and Council Resolution of 5 May 2003 on equal opportunities for pupils and students with disabilities in education and training, OJ C 134, 7.6.2003.

⁴³ On 13 December 2006 the Plenary of the General Assembly adopted by consensus the Convention on the Rights of Persons with Disabilities and the optional protocol. The Convention and the optional protocol have been open for signature by all States and by regional integration organisations at United Nations headquarters in New York since 30 March 2007.

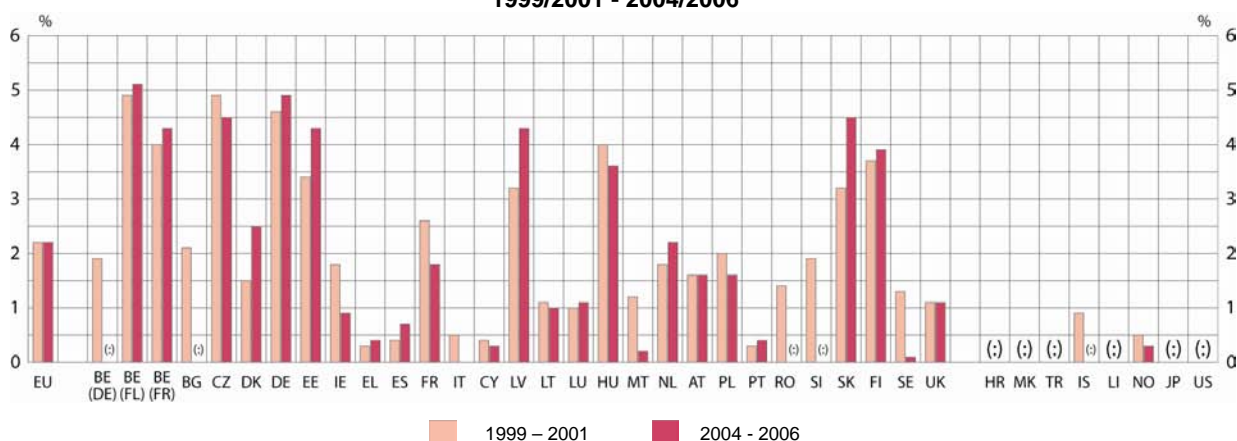
⁴⁴ OECD (2004) *Equity in Education, Students with Disabilities, Learning Difficulties and Disadvantages*, Paris. OECD (2005), *Students with Disabilities, Learning Difficulties and Disadvantages, Statistics and Indicators*. Paris.

⁴⁵ OECD (1999), *Inclusive Education at Work*, Paris, OECD; European Agency for Development in Special Needs Education (2005). *Inclusive Education and Classroom Practices in Secondary Schools*.

⁴⁶ The percentage of pupils in compulsory education who are taught in segregated settings because of their special education needs is calculated as a percentage of the total compulsory school-age population. The data show public and private grant-aided provision but exclude pupils educated in private non-grant-aided schools. This indicator takes two reference periods. Although national definitions of segregated setting may differ, the definition applied here is that the student spends most of the school week in a non-mainstream (separate) school or class.

However, the situation varies between individual countries. About 4% to 5% of all pupils in compulsory education are taught in segregated settings (special schools or special classes) in Belgium, the Czech Republic, Estonia, Finland, Latvia and Slovakia, whereas the figure is not more than about 0.5% in Cyprus, Greece, Italy, Malta, Portugal and Sweden, along with Norway.

Chart 1.7: Percentage of pupils in compulsory education with special needs in segregated settings, 1999/2001 - 2004/2006



	EU27	BE (DE)	BE (FL)	BE (FR)	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
1999-2001	2.2	1.9	4.9	4.0	2.1	4.9	1.5	4.6	3.4	1.8	0.3	0.4	2.6	0.5	0.4	3.2	1.1	1.0	4.0
2004-2006	2.2	:	5.1	4.3	:	4.5	2.5	4.9	4.3	0.9	0.4	0.7	1.8	0.0	0.3	4.3	1.0	1.1	3.6

	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO	JP	US
1999-2001	1.2	1.8	1.6	2.0	0.3	1.4	1.9	3.2	3.7	1.3	1.1	:	:	:	0.9	:	0.5	:	:
2004-2006	0.2	2.2	1.6	1.6	0.4	:	:	4.5	3.9	0.1	1.1	:	:	:	:	:	0.3	:	:

Data source: European Agency for Development in Special Needs Education and Eurydice for 1999-2001; European Agency for Development in Special Needs Education for 2004-2006.

Additional note: EU average calculated as arithmetic average of EU Member States for which data are available.

Because of the different definitions and types of provision of education developed in individual Member States, it is difficult to draw conclusions, but it is interesting to observe the trend.

The proportion of pupils with special education needs who are educated in special settings decreased in under half the countries for which data are available (11 out of 25 countries). The highest decreases were by 1 percentage point and slightly less in Italy, Sweden, Malta, Ireland and France. Italy now teaches almost no pupils with special education needs in special settings.

By contrast, the proportion of pupils with special education needs who are taught in special settings increased in almost half the countries for which data are available (12 out of 25). The highest increases were by 1 percentage point and slightly more in Slovakia, Latvia and Denmark. However, in Denmark the change was influenced by different methods used to identify pupils with special needs in the two periods.

No change was reported in the proportion of such pupils within the period observed in Austria and the UK (it remained slightly below 2%).

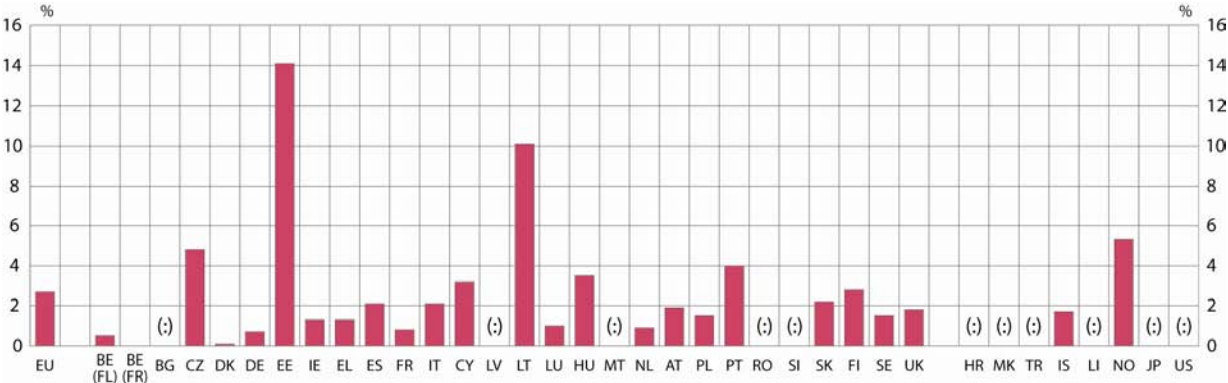
Furthermore, formal and informal strategies of segregating Roma and traveller pupils persist in some Member States, despite strategies and policies developed to combat such practices. Although systematic segregation no longer exists as an educational policy, segregation is practised by schools and education authorities in a number of different, mostly indirect, ways, sometimes as an unintended effect of policies and practices and sometimes as a result of residential segregation. Schools and education authorities may segregate pupils on the basis of a perception of their “different needs”

and/or in response to behavioural issues and learning difficulties. The latter also frequently lead to placement of Roma pupils in special schools for mentally handicapped children. However, steps are being taken to review testing and placement procedures, taking into account the norms and behavioural patterns of Roma and traveller children’s social and cultural background.⁴⁷

Pupils with special education needs within ordinary education

Within the EU 2.7% of pupils in compulsory education are pupils with special education needs who are educated in “inclusive” settings and follow most of their education among peers in mainstream classes.

Chart 1.8: Percentage of the total population in compulsory education with special education needs educated in ordinary compulsory education (2004-2006)



	EU27	BE (FL)	BE (FR)	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU	
2004-2006	2.7	0.5	0.0	:	4.8	0.1	0.7	14.1	1.3	1.3	2.1	0.8	2.1	3.2	:	10.1	1.0	3.5	
	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO	JP	US
2004-2006	:	0.9	1.9	1.5	4.0	:	:	2.2	2.8	1.5	1.8	:	:	:	1.7	:	5.3	:	:

Data source: European Agency for Development in Special Needs Education, 2006
 Additional note: EU average calculated as arithmetic average of EU Member States for which data are available.

Two countries – Estonia and Lithuania – report that extremely high proportions of the total school population (over 10%) are identified as pupils with special education needs and taught in inclusive settings within ordinary compulsory education. The high proportions reported may be due to the extremely broad definitions of pupils with special education needs in these two countries. For example, in Estonia all pupils who receive certain learning support, including speech therapy and remedial teaching, are reported as pupils with special needs.⁴⁸ Estonia is also amongst the group of countries with the highest proportions of the total school population identified as pupils with special education needs and educated in segregated settings (over 4%).

In the remaining countries for which data are available this figure ranges from below 1% to about 5%.

⁴⁷ European Monitoring Centre on Racism and Xenophobia (2006). *Roma and Travellers in Public Education. An overview of the situation in the EU Member States.*

⁴⁸ *European Agency for Development in Special Needs Education (2006), Special Needs Education. Country Data 2006.* In contrast to Estonia, in Denmark, for example, only pupils with severe special needs fully integrated into ordinary classes are reported as pupils with special education needs in ordinary education; data are not collected on all other pupils with special education needs who are in ordinary education. These two very different approaches to reporting data are mentioned by way of illustration, but there are also differences in the national definitions of pupils with special education needs taught in ordinary education in other Member States. Therefore there is a need to improve international comparability of these data in the future.

Relatively high proportions of pupils with special education needs - between 3% and 5% - are taught in inclusive settings within compulsory education in Cyprus, the Czech Republic, Hungary, Malta and Portugal. The figure in Norway is even slightly higher – 5.3%. Within this group of countries, in the Czech Republic and Hungary the situation is balanced, i.e. about half the pupils with special education needs are taught in inclusive settings and the other half in segregated educational settings. In the other countries in this group - Cyprus, Malta and Portugal - nearly all pupils identified as having special education needs are integrated into ordinary education.

In another group of countries – Greece, Ireland, Italy, Luxembourg and Sweden, along with Iceland – about 2% or under of the total school population are identified as pupils with special education needs, nearly all of whom are taught within ordinary education.

Very low percentages (below 1% of the total school population) are identified as pupils with special education needs and taught in inclusive settings within compulsory education in Belgium, Denmark, France, Germany and the Netherlands. Belgium and Germany are also amongst the countries with the highest proportion of pupils with special education needs who are taught in segregated settings within compulsory education.

1.1.5 Education of pupils with special education needs depending on the type of difficulty

Following the analysis of the data on special needs education collected by the European Agency for Development in Special Needs Education in the previous section, the data collected by the OECD on pupils with special needs make it possible to analyse the policies of Member States on education of pupils with special needs from other angles. The OECD concept is based on additional resources⁴⁹ of various kinds available to pupils who have particular difficulties, for a variety of reasons, with gaining access to the standard curriculum, whether or not they fell within the national definition of special educational needs. This framework draws a distinction between three groups:

1. The "disabilities" category: Pupils who have clear organic reasons⁵⁰ for their difficulties in education (Category A);
2. The "difficulties" category: Pupils with emotional and behavioural difficulties or specific difficulties in learning (Category B);
3. The "disadvantages" category: Pupils in need of additional educational resources to compensate for problems due to aspects of their socio-economic, cultural and/or linguistic background (Category C).⁵¹

The next section focuses mainly on findings and issues concerning one group: pupils with disabilities (Category A). However, it also analyses some of the data on pupils with learning difficulties (Category B) and with disadvantages (Category C) since in some countries there are considerable differences in the way these groups of pupils with special education needs are identified and educated. The data collected by the OECD allow comparison of the situation in the EU with the EU's main competitors. Although they refer to the situation in 2001, can therefore be considered out of date and do not cover all the EU countries, nonetheless they allow analysis of some of the key dimensions of special educational needs and equity considerations.

⁴⁹ Additional resources are those made available over and above the resources generally available to pupils regardless of the needs of pupils likely to have particular difficulties with access to the standard curriculum. Resources can be of many different kinds, including personnel (e.g. additional teachers), material (e.g. hearing aids, Braille or conversion of classrooms) and financial (e.g. favourable funding formulae) OECD (2004). *Equity in Education - Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*. Paris.

⁵⁰ Pupils with disabilities or impairments viewed in medical terms as organic disorders attributable to organic pathologies (e.g. related to sensory, motor or neurological defects). OECD (2005). *Students with Disabilities, Difficulties and Disadvantages: Statistics and Indicators*. Paris.

⁵¹ OECD (2005), *Students with Disabilities, Learning Difficulties and Disadvantages: Statistics and Indicators*. Paris.

1.1.6 Education of pupils with disabilities

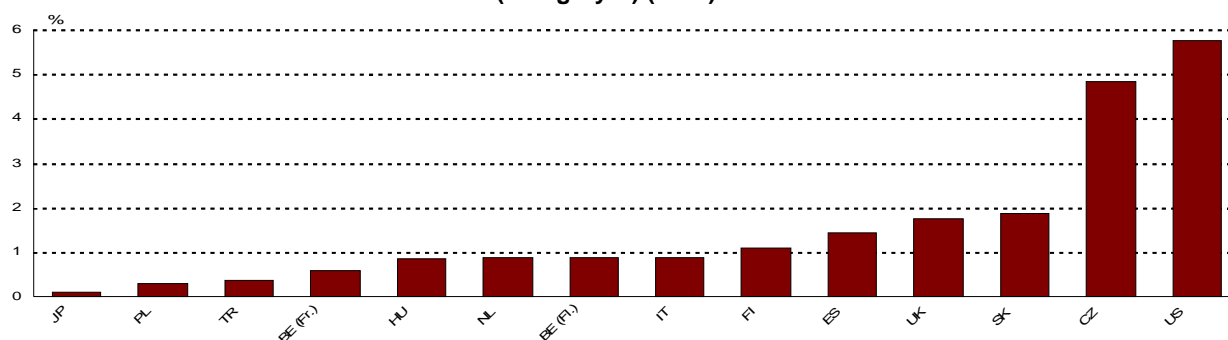
Since the “organic” bases of disability are unlikely to differ greatly between countries, the different proportions of pupils with disabilities who receive additional resources shown in Charts 1.8, 1.9 and 1.10 are therefore most likely to be attributable to national differences in the conceptualisation of disability, identification procedures, educational practices, comprehensiveness of provision and policy priorities. These variations suggest that there are differences between the ways in which countries try to overcome the consequences of disabilities and that these could have an impact on the outcomes for different types of student.⁵²

Pre-primary education of children with disabilities

In many countries pre-primary education is regarded as especially important for children with disabilities. Early identification and intervention for children who have difficulties with access to the curriculum is essential.⁵³ Research shows that participation in free, high-quality pre-primary education, as introduced, for example, in Belgium, Spain, France and Italy, can have long-lasting benefits for achievement and socialisation during individuals’ schooling and careers because it can facilitate later learning. Repeatedly studies have shown that early intervention programmes can produce large positive socio-economic returns which persist well into adulthood.⁵⁴

The proportion of all children in pre-primary education receiving additional resources for disabilities varies within the EU from 0.3% in Poland to 4.8% in the Czech Republic (0.1% in Japan and 5.8% in the USA). The median percentage of all children in pre-primary education receiving additional resources for disabilities is 0.9%, with an inter-quartile range of 0.6% to 1.7%. The EU mean is 1.4%. As shown in Table 1 in the annex, for the countries for which comparisons can be made, these percentages are smaller than the corresponding figures at primary level (except in the Czech Republic). The median values are 0.9% at pre-primary and 2.7% at primary level.

Chart 1.9: Percentage of children in pre-primary education receiving additional resources for disabilities (Category A) (2001)



Source : OECD (SENDDD database)

Additional note:

Countries are ranked in ascending order of percentage of pupils.

Compulsory education of pupils with disabilities

As shown in Chart 1.10, the percentage of all children in compulsory education receiving additional resources for disabilities varies from 1.54% in Germany to 4.08% in the Czech Republic (0.49% in Turkey, 1.31% in Japan and 5.16% in the United States). The median percentage of pupils receiving

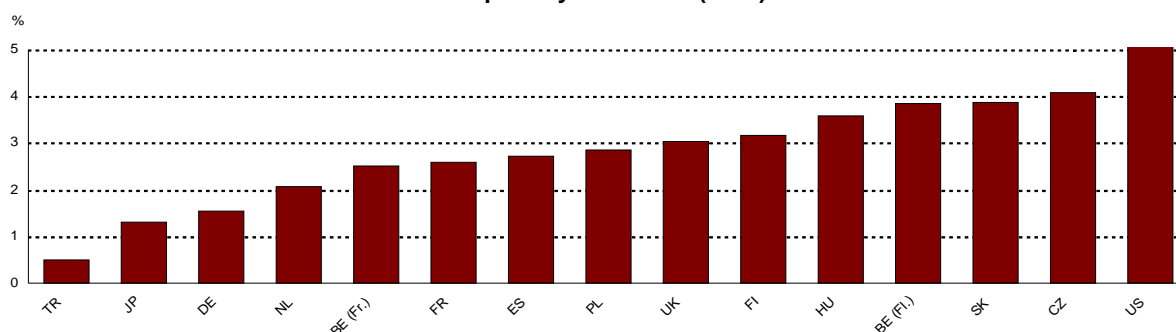
⁵² OECD (2003), *Education Policy Analysis*, Paris; OECD (2003), *Society at a Glance – OECD Social Indicators*, Paris, OECD (2004), *Equity in Education - Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*, Paris. OECD (2005) *Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*, Paris.

⁵³ European Agency for Development in Special Needs Education (2005). *Early Childhood Intervention. Analysis of Situations in Europe. Key Aspects and Recommendations* .

⁵⁴ MEMO/06/321.

additional resources for disabilities is 2.85%, with an inter-quartile range of 2.1% to 3.7%. The EU mean is 2.9%, a little higher than the international disability rate (2.5%)⁵⁵ and the OECD mean (2.4%).

Chart 1.10: Percentage of pupils with disabilities receiving additional resources over the period of compulsory education (2001)



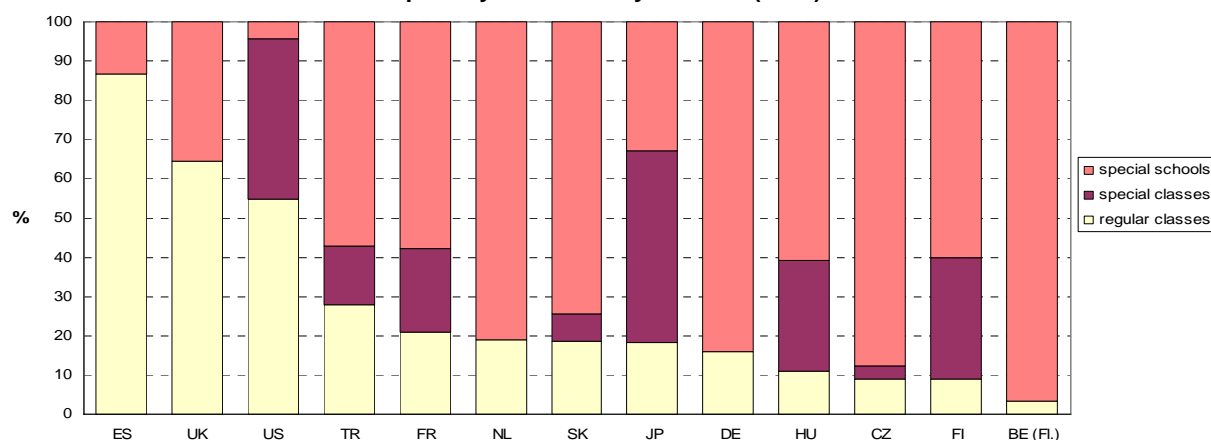
Source : OECD (SENDDD database)

Additional note: Countries are ranked in ascending order of percentage of pupils.

Education of pupils with disabilities in compulsory education by kind of setting

There are differences in the proportions of pupils with disabilities educated in special schools, in special classes and in ordinary education. In 2001 relatively large proportions of pupils with disabilities were educated in special classes rather than in special schools in the USA, Japan, Finland and Hungary in comparison with other countries such as Spain, the Netherlands, Belgium and Germany where such pupils were educated mainly in special schools.

Chart 1.11: Percentages of pupils with disabilities receiving additional resources over the period of compulsory education by location (2001)



Source: OECD (SENDDD database)

Additional notes:

Special classes: Not applicable: Belgium (Flanders), Netherlands.

Included in special schools: Germany, Spain.

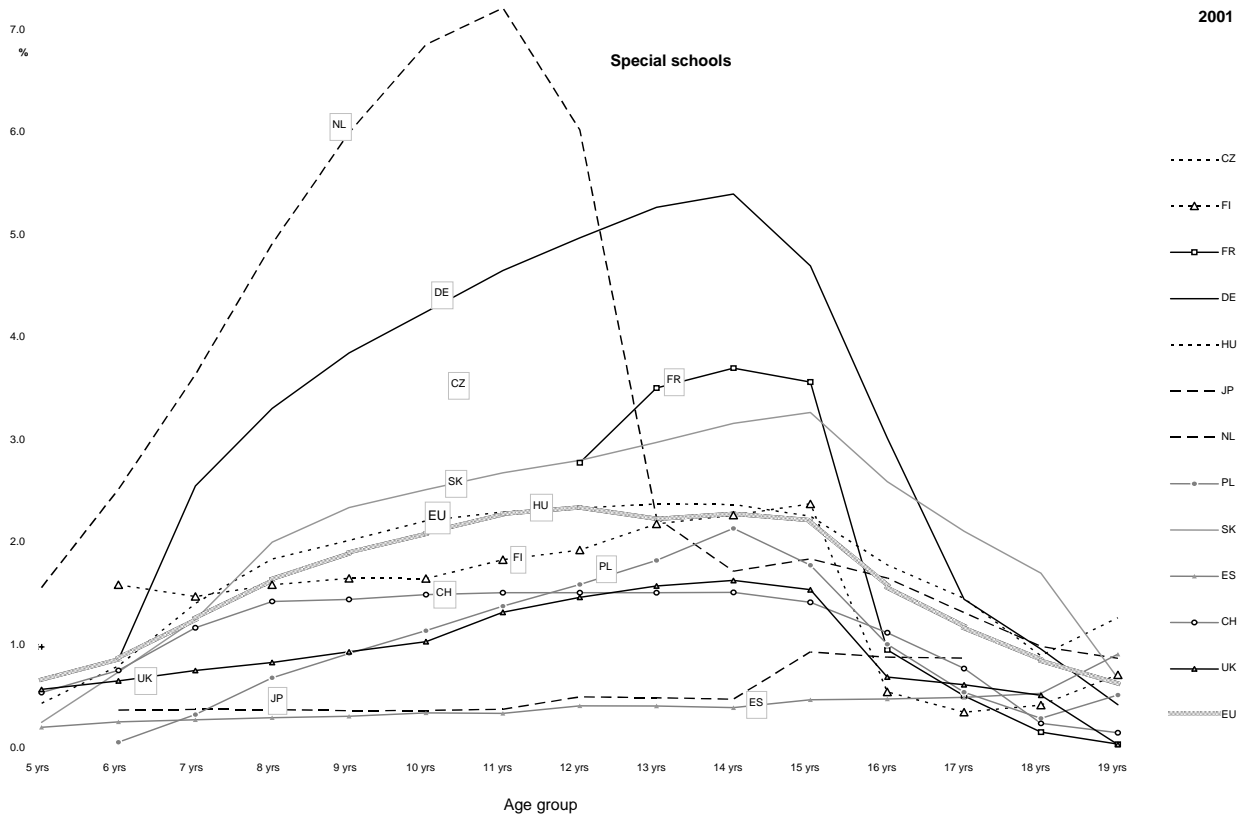
Included in ordinary classes: United Kingdom.

Age pattern of education of pupils with disabilities in special schools within compulsory education

Looking at the age pattern of education of pupils with disabilities in special schools, in most countries generally only about 1% of 5- to 6-year-olds with disabilities are in special schools. However, the proportion starts to rise from around 8 years of age and then declines rapidly after the age of 15.

⁵⁵ The European Academy of Childhood Disabilities considers a disabled children rate of at least 2.5% to be the “norm”, with 1% having serious conditions. These averages exclude chronic illnesses like diabetes. Insight, I. (2004). *Children and Disability in Transition in CEE/CIS and the Baltic States*. UNICEF.

Chart 1.12: Proportion of all pupils receiving additional resources in special schools by age



Source : OECD (SENDDD database)

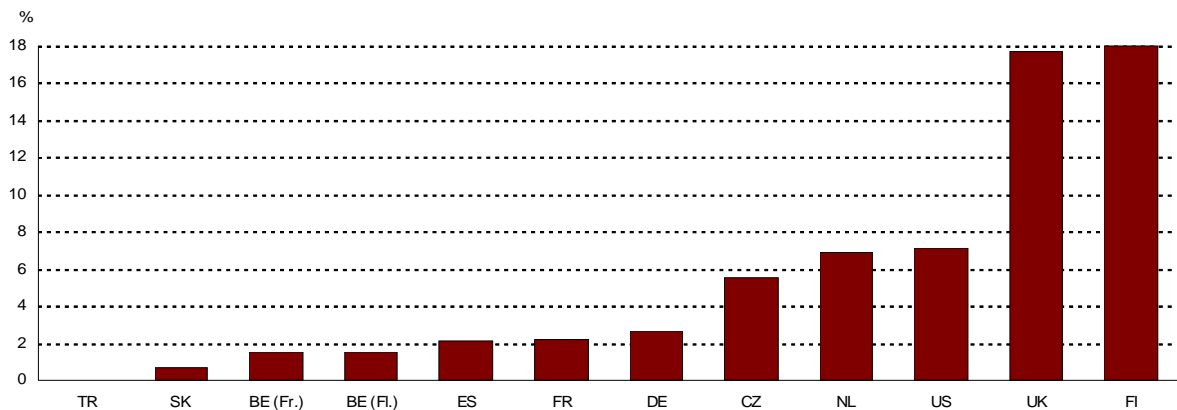
According to the OECD analysis, these increases reflect the movement of pupils out of ordinary schools and special classes into special schools. The decrease after around the age of 15 possibly reflects the fact that most pupils do not continue their education beyond compulsory schooling.⁵⁶

1.1.7 Education of pupils with learning difficulties

Chart 1.13 shows that the percentage of all pupils in compulsory education receiving additional resources for emotional, behavioural and/or specific learning difficulties (Category B) ranges from 0.01% in Turkey to nearly 18% in Finland and the UK. It is also very low in Slovakia, Belgium (1.5% in Flanders) and France. The EU mean is 6% and 7.1% in the USA.

⁵⁶ OECD (2003). *Education Policy Analysis*. Paris.

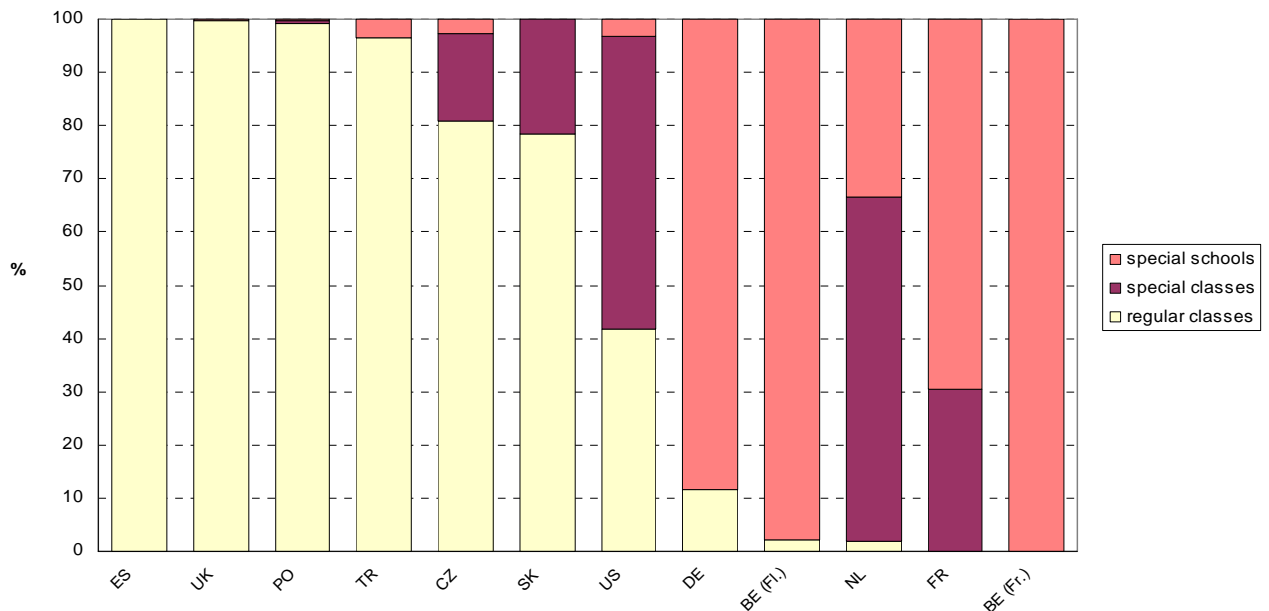
Chart 1.13: Percentage of all pupils in compulsory education receiving additional resources over the period of compulsory education in cross-national Category B, 2001



Source: OECD (SENDDD database)

Chart 1.14 shows the variation in the distribution of pupils with learning difficulties (Category B) educated in special schools, special classes and ordinary classes in 2001. In Belgium, Germany, France and the Netherlands the majority of pupils with learning difficulties are educated in special schools or special classes, whereas nearly all pupils with learning difficulties are taught within ordinary education in Spain, the UK, Turkey and the Czech Republic. In the USA the majority of pupils with learning difficulties are educated in special classes.

Chart 1.14: Distribution of pupils with learning difficulties (Category B) receiving additional resources over the period of compulsory education, by location (2001)



Source: OECD (SENDDD database)

Additional notes:

Ordinary classes: Not applicable: BE (Wallonia) and FR.
 Special classes: Not applicable: BE (Flanders), BE (Wallonia) and ES.
 Special schools: Not applicable: ES.

Comparing these data with those from Chart 1.11 on the distribution of pupils with disabilities (Category A) it is clear that there is substantial variation between countries in the extent to which pupils in both these categories are included in ordinary schools. Belgium (Flanders), the Czech

Republic, Germany, the Netherlands and the Slovak Republic have high percentages of pupils with disabilities (Category A) in special schools and classes. Belgium and Germany also educate high proportions of Category B pupils in special schools and classes, whereas the Czech Republic and the Slovak Republic educate most of their pupils with learning difficulties in ordinary schools. Similar, though less extreme, results can be seen for Spain and the UK.

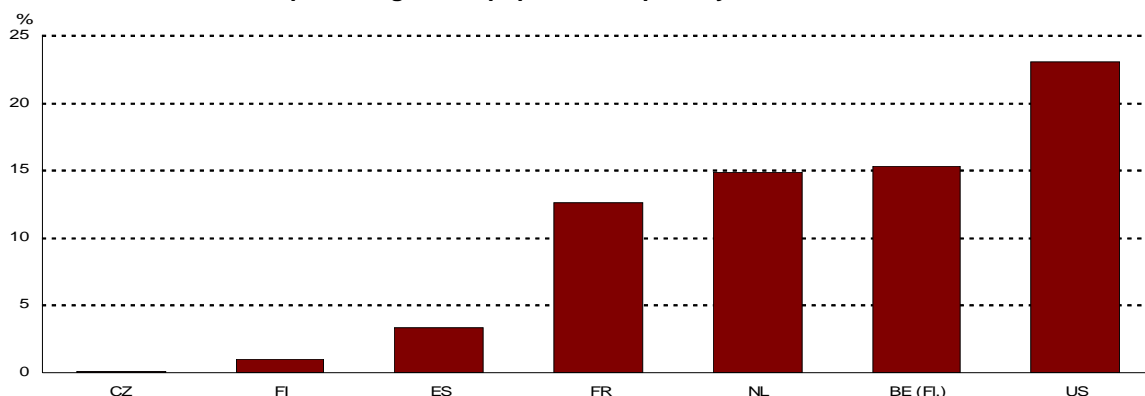
1.1.8 Education of pupils with disadvantages

Countries also provide additional resources of various kinds for pupils who have difficulty with access to the curriculum and appear to be at a disadvantage compared with others because of some aspect of their background (Category C). This disadvantage to be counterbalanced in the educational system could stem, for example, from the poverty of the family or community. Additional resources are targeted, in particular, on migrants or ethnic minorities, mainly for language learning and preparatory classes before compulsory primary education. In some countries these fall under the definition of special education needs, but in others this is not the case.⁵⁷

It is evident from OECD data that the number, labelling and definitions of categories of disadvantage vary greatly and that some countries provide additional resources for disadvantages which do not receive resources in others. Some countries make additional resourcing of pupils with disadvantages a priority, because they perhaps have more pupils living in poverty than others. Another difference between countries is in the number of migrant pupils who require additional resources to learn a second language, which depends on immigration rates.

Limiting the analysis to the period of compulsory education, the figures indicate that when categories of pupils with disadvantages are included in national systems, the numbers of pupils receiving additional resources are substantial, particularly in Belgium (Flanders), the Netherlands and France, but still much lower than in the USA.

Chart 1.15: Disadvantaged pupils receiving additional resources over the period of compulsory education as a percentage of all pupils in compulsory education, 2001



Source : OECD (SENDDD database)

Additional notes:

Countries are ranked in ascending order of percentage of pupils.

The majority of countries for which data are available teach pupils with disadvantages within compulsory education, mostly in integrated settings. On the other hand, the data for the Czech Republic (1999) and the Slovak Republic (2001) depict a different picture, with the majority of such pupils attending preparatory classes in basic schools. However, the total identified as pupils with disadvantages in compulsory education is very low (0.08% in the Czech Republic).

With regard to the quality and quantity of data available on this group of pupils who are at risk because of disadvantages related to their socio-economic background, it has to be stressed that it is difficult to identify this group. In particular, in countries implementing inclusive policies it is not

⁵⁷ OECD (2005). *Students with Disabilities, Learning Difficulties and Disadvantages: Statistics and Indicators*. Paris.

always easy to single out the additional resources allocated to support pupils with disadvantages although this, of course, does not mean that these countries do not identify and support this group of pupils at risk.

1.1.9 Gender dimension of education of pupils with special needs

In almost every country for which data are available, more male than female pupils are placed in schemes receiving additional resources for disabilities. In almost every country there is a male-to-female ratio of about 60 to 40. However, this is more extreme for pupils with learning difficulties, where it rises to almost 70 to 30.⁵⁸ A number of possible reasons have been identified, including biological and behavioural factors, and each may play some role.⁵⁹ These include evidence that males seem more prone than females to illness and trauma and therefore might require extra resources for their schooling. Other hypotheses are that in some societies education of males is given greater social priority and, hence, greater support than that of females, that males adopt more noticeable deviant behaviour than females and are thus identified and labelled or that schooling is becoming increasingly “feminised”. These hypotheses have far-reaching potential implications in terms of the equity of any educational system and must be treated with caution.

1.1.10 Different national policies and approaches to data collection on education of pupils with special education needs

The different national policies on inclusion and data collection explain the differences between the various data sets analysed in this section of the report. These policies may be influenced by features of ordinary schools and their curriculum and the training and attitudes of teachers which can either facilitate or obstruct inclusion practices.⁶⁰ Furthermore, special schools may offer features which parents and educators view as desirable.⁶¹ Different cultural and societal views may also influence this choice.

To make inclusive education work, evidence points to a need for schools to become learning organisations and to adapt to a more diverse set of pupils’ needs, including pupils with severe disabilities. This will result in flexible provision that can provide additional support to all pupils. Evidence has shown how non-disabled pupils also benefit from this extra support.⁶² The European Agency has concluded from its analysis of classroom practices in secondary education that “What is good for pupils with special education needs is good for all pupils.”⁶³

Overall, in countries which make extensive use of special schools it is necessary continually to monitor how children come to be referred to them and also the nature and consequences of the provision in such schools. However, countries that place strong emphasis on inclusive education in ordinary schools also need ongoing assessments to ensure that their objectives are being achieved.⁶⁴

⁵⁸ OECD (2003). *Society at a Glance – OECD Social Indicators*, Paris. OECD (2004). *Equity in Education - Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*, Paris;. OECD (2005). *Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*. Paris.

⁵⁹ Ibid.

⁶⁰ OECD (2004). *Equity in Education - Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*. Paris; OECD (2005). *Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*. Paris. Similar conclusions were drawn in the report by the European Agency for Development in Special Needs Education (2005): *Inclusive Education and Classroom Practices in Secondary Schools*.

⁶¹ OECD (2004). *Equity in Education - Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*. Paris; OECD (2005). *Students with Disabilities, Difficulties, and Disadvantages: Statistics and Indicators*. Paris.

⁶² OECD (1999). *Inclusive Education at Work*, Paris.

⁶³ European Agency for Development in Special Needs Education (2005). *Inclusive Education and Classroom Practices in Secondary Schools*.

⁶⁴ OECD (2003). *Education Policy Analysis*. Paris.

1.2. EQUITY OF CONDITIONS IN EDUCATION AND TRAINING

One of the major challenges facing European education and training systems is to compensate for any differences in the pupils' background which could place certain groups at a disadvantage.

At present in many countries characteristics such as social origin, poverty, ethnicity, age and gender significantly affect individuals' opportunity of attaining higher levels of education and degrees.

There is evidence, mainly from PISA and similar large-scale international surveys, that family background influences the performance of pupils if the education and training systems take no account of the fact that the pupils come into education and training with different family backgrounds, particularly as regards their socio-economic status and family structure.⁶⁵

1.2.1 Parental education and achievement in compulsory education

A supportive family environment can help to improve pupils' performance at school. Parents can read to young children and help them with homework. Parental education is therefore important for children's educational performance. The data from PISA 2003 set out below show positive, statistically significant relationships in the vast majority of countries between both mothers' and fathers' educational attainment on the one hand and pupils' performance in mathematics, reading and science on the other.

In the EU **pupils whose mothers completed only primary or lower secondary education** score, on average, 20 points worse in the PISA survey tests on mathematics, reading and science than pupils whose mothers completed upper secondary education.

However, the performance in individual countries differs significantly. In some the average difference in the achievement scores is nearly 80 score points higher for pupils whose mothers completed upper secondary education than for pupils whose mothers completed only primary or lower secondary education.

The significance of mothers' education is generally higher in Slovakia, Germany, Hungary and Turkey (78 to 52 points) than in Finland, Spain and the Netherlands (12 to 24 points) and in Iceland and Norway (12 to 25 points). In the Netherlands the effect of mothers' education is not even statistically significant.

Both the USA and Japan perform worse than the EU. The average difference is 20 points in the EU but 50 in the USA.

⁶⁵ Findings of the study by Haahr, J.H. et al. (2005). *Explaining Student Performance. Evidence from the international PISA, TIMSS and PIRLS surveys* prepared for the Commission by the Danish Technological Institute (DTI) are used in this section.

Table 1.2: Difference between pupils with mothers with upper secondary education and pupils with mothers with primary or lower secondary education, 2003

	Mathematics		Reading		Science		Average difference
	Score difference	95% confidence interval	Score difference	95% confidence interval	Score difference	95% confidence interval	
EU	24	2.9	15	3.0	22	3.3	20
Belgium	36	7.6	36	7.4	40	7.8	37
Czech Republic	49	15.5	46	14.5	45	17.8	46
Denmark	36	9.2	31	9.6	35	11.6	34
Germany	67	9.0	73	10.0	78	9.8	73
Greece	38	8.2	32	9.0	34	9.0	35
Finland	19	7.3	13	6.5	13	7.8	15
France	38	9.4	43	10.6	48	12.3	43
Ireland	30	7.6	28	8.2	34	8.6	30
Spain	18	7.6	17	8.0	23	8.2	19
Italy	42	7.3	43	8.0	45	8.8	43
Latvia	36	24.5	19	27.0	16	24.3	24
Luxembourg	28	8.2	36	9.2	37	9.4	33
Hungary	57	11.0	51	11.6	52	11.8	53
Austria	41	10.0	57	11.8	58	10.4	52
Netherlands	7	10.2	7	8.4	11	11.4	8
Poland	41	11.6	52	15.3	48	15.9	47
Portugal	39	7.8	36	8.6	36	8.8	37
Slovakia	77	18.0	66	19.0	90	32.1	78
Sweden	46	10.0	45	11.4	50	12.2	47
Turkey	73	13.9	65	13.7	65	12.7	67
Norway	26	11.2	24	15.5	26	13.1	25
Iceland	17	7.1	8	8.0	12	7.6	12
Japan	28	19.0	29	19.8	25	18.0	28
USA	47	12.0	55	12.2	49	13.1	50

Data source: DTI, OECD (PISA 2003 data set)

Additional note:

The OECD average performance in PISA was fixed as 500 points in 2000. The EU average is the mean of the values for all EU countries for which data are available or can be estimated. The EU average does not take into account the absolute size of the population in each country, i.e. each country contributes equally to the average. The EU average is calculated on the basis of replication methods where several sub-samples, or replicate samples, are generated from the whole sample. The EU average is then estimated for each of these replicate samples and finally calculated from these estimates. As a consequence of this method, the EU average may deviate from the arithmetic average of the EU Member States' score differences.

A similar picture emerges when looking at the difference in achievement between **pupils whose mothers completed tertiary education** and pupils whose mothers completed upper secondary education. Mothers' education is still a statistically significant factor in the vast majority of countries. However, the average score difference across countries between pupils whose mothers completed tertiary education and pupils whose mothers completed upper secondary education is generally somewhat smaller, ranging from 66 points to negative values.

In Poland, Hungary and Slovakia mothers' education has a comparatively strong effect on pupils' achievement scores, regardless whether comparing mothers with upper secondary education with mothers with primary and lower secondary education or comparing mothers with tertiary education with mothers with upper secondary education.

Once again, Finland is among the countries where mothers' education has a relatively small effect, regardless of the levels of education compared.

The educational background of fathers is also a significant factor in the vast majority of countries, with the difference in score between pupils whose fathers completed upper secondary education and those whose fathers completed only primary and lower secondary education being larger, on average, than the difference between fathers with tertiary and fathers with upper secondary education.

Overall there is therefore also a close correlation between countries where the mother's and the father's education matter. If the mother's education is of considerable significance to average achievement scores, so is the father's.

Undoubtedly, there is also a correlation between the parents' level of education and other socio-economic factors such as their occupational status. However, even after adjusting for a number of other socio-economic factors, each additional year of formal education of parents adds an average of 3.3 points to pupils' achievement score.⁶⁶

Ireland

*The significant role which parents play in the education and training of their children is fully recognised by the Irish Government.⁶⁷ The **Home-School Community Liaison** scheme aiming at establishing collaboration between parents and teachers, targeting in particular families and/or neighbourhoods identified as being "at risk", has the potential to be highly successful. Each target school has a home-school coordinator who acts as mediator and contact person, visits homes and intervenes in cases such as persistent absenteeism or disruptive behaviour. The Home-School Community Liaison scheme has given birth to particularly innovative initiatives, such as parents giving mathematics and reading classes at schools.*

1.2.2 Structure of the family - Single-parent families

For young children and older pupils alike, it can be difficult for single parents to provide support, since often they have less time and energy and relatively fewer general resources available for this purpose.

The PISA 2003 mathematics scale shows that in a number of countries, the difference in the mean performance score between pupils from single-parent families and from other types of family is more than 30 points.

The differences are largest in the USA and Belgium, with 43 and 42 points respectively. They are much smaller and statistically insignificant in Latvia, the Czech Republic, Slovakia and Austria and also in Iceland and Turkey.

⁶⁶ Arithmetic average score difference associated with parents' highest level of education for 26 countries, adjusted for highest occupational status of parents, possessions related to classical culture, single-parent status, immigration status and language spoken at home (OECD (2005). *Learning for Tomorrow's World – First Results from PISA 2003*, Paris, p. 385). Analysis of data from PISA 2000 at the level of individual pupils supports the finding that there is a statistically significant relation between parents' education and student achievement when the influence of a large number of other factors is kept constant (Fuchs, T. and Wößmann, L. (2004) "What Accounts for International Differences in Student Performance? In: A Re-Examination Using PISA Data", CESIFO Working Paper No 1235. <http://www.CESifo.de>).

⁶⁷ This initiative was widely discussed during the second PLA of the Cluster on "Access and Social Inclusion in Lifelong Learning" which focused on preventative and compensatory measures against early school leaving (Dublin, 31.1.-2.2.2007).

Table 1.3: Family structure and performance on the PISA 2003 mathematics scale

	Single-parent families		Other families		
	Mean score	95% confidence interval	Mean score	95% confidence interval	Score difference
EU	454	7.6	497	5.7	-43
Belgium	499	8.2	541	4.9	-42
Czech Republic	518	8.4	523	6.7	-5
Denmark	495	7.6	521	5.7	-26
Germany	504	11.2	514	6.7	-10
Greece	431	11.4	450	7.8	-19
Spain	475	8.6	487	4.9	-12
France	498	8.4	516	4.9	-18
Ireland	475	8.2	508	4.9	-33
Italy	454	8.8	469	6.1	-15
Latvia	480	9.2	485	7.6	-6
Luxembourg	478	7.3	497	2.5	-19
Hungary	478	7.1	493	5.9	-16
Netherlands	517	10.6	548	5.7	-31
Austria	505	9.0	508	6.5	-3
Poland	479	10.2	492	4.9	-13
Portugal	458	10.0	468	6.7	-10
Slovakia	496	10.4	500	6.7	-4
Finland	538	6.5	546	3.7	-9
Sweden	488	6.7	517	5.1	-29
FYR Macedonia	471	2.4	493	2.7	-22
Turkey	480	6.3	502	5.3	-22
Iceland	535	11.6	555	8.6	-20
Norway	480	6.3	502	5.3	-22
Korea	535	8.8	544	6.3	-9
USA	454	7.6	497	5.7	-43

Source: DTI, OECD(PISA 2003 dataset)

Additional note:

The OECD average performance in PISA was fixed as 500 points in 2000. Weighted EU averages have been calculated for PISA data because data exist for at least 15 of the 25 member states, representing at least 60 per cent of the total EU population

Information on family structure based on pupils' self-reports. Results in bold are statistically significant.

The effect of family structure on reading achievement scores was also analysed on the basis of PISA 2000 data. These results confirm the observation from PISA 2003: among the countries included, family structure was of greatest significance in the USA, Belgium and Ireland and was also found to have a relatively large effect in the Nordic countries.

On the basis of the information available, it is not possible to provide any exhaustive explanations for the differences in the significance of family structure for average achievement scores across countries. However, the social profile of single parents differs significantly between countries.

In a number of countries, the share of single-parent families is significantly higher in low occupational status families. This is the case, among others, in the USA, Latvia, Sweden and Denmark and also in Norway. In Austria, on the other hand, the share of single-parent families is larger in high occupational status families than among low occupational status families. Other explanations are also

possible. It is notable, however, that in the vast majority of countries the effect of family structure persists even after adjusting for a number of other socio-economic factors.⁶⁸

1.2.3 Parents' occupational status

Table 1.4 shows PISA 2003 data indicating that there is also a significant relationship between parents' occupational status, as measured by the HISEI index,⁶⁹ and pupils' achievements in the three domains tested by PISA.⁷⁰

Table 1.4: Achievement scores for pupils whose parents have low occupational status and pupils whose parents have high occupational status, 2003

(Mean achievement scores for pupils whose parents have a low score (0-24 points out of a possible 100) on the index of parents' highest occupational status (HISEI) and difference from pupils whose parents score 75-100 points)

Country	Average difference across countries	Reading		Mathematics		Science	
		Mean	Difference	Mean	Difference	Mean	Difference
EU	105	447	101	453	104	450	110
Belgium	116	462	110	481	119	459	119
Czech Republic	92	458	83	477	100	488	92
Denmark	84	463	75	480	85	439	93
Germany	125	449	118	462	119	454	138
Greece	94	438	96	412	95	448	90
Spain	78	456	76	459	76	459	81
France	105	454	100	470	98	462	118
Ireland	90	480	86	470	84	466	101
Italy	87	440	89	433	79	448	93
Latvia	55	467	53	455	54	462	57
Luxembourg	105	428	99	449	102	431	113
Hungary	117	443	111	447	125	464	115
Netherlands	94	476	80	495	98	477	104
Austria	101	442	116	466	87	446	101
Poland	114	462	109	457	109	463	123
Portugal	93	449	86	436	99	440	93
Slovakia	97	430	93	457	97	452	100
Finland	60	518	53	515	68	521	60
Sweden	92	483	84	475	94	469	97
Turkey	163	420	143	399	181	411	164
Iceland	37	478	30	497	42	478	39
Norway	92	455	89	452	85	433	101
Japan	43	469	44	502	44	518	42
USA	94	455	91	443	92	448	99
UK*	96	468	91	469	94	476	102

Source: DTI, OECD (PISA 2003 dataset)

Additional note:

The OECD average performance in PISA was fixed as 500 points in 2000. Weighted EU averages have been calculated for PISA data because data exist for at least 15 of the 25 member states, representing at least 60 per cent of the total EU population

*UK: response rate too low to ensure comparability.

⁶⁸ Haahr, J.H. et al. (2005). *Explaining Student Performance. Evidence from the international PISA, TIMSS and PIRLS surveys.*

⁶⁹ HISEI is derived from pupils' responses to questions concerning their parents' occupation. The index reflects the attributes of occupations that convert parents' education into income. It is derived by optimum scaling of occupation groups to maximize the indirect effect of education on income through occupation and to minimize the direct effect of education on income, net of occupation (both effects being net of age).

⁷⁰ Analysis of data from PISA 2000 at the level of individual pupils supports the finding that parents' occupational status is related to pupils' achievement. The relationship remains statistically significant when the influence of a large number of other factors is kept constant (Fuchs and Wößmann 2004a).

In Latvia and Finland, as in Iceland and Japan, the parents' occupational status makes little difference to pupils' performance at school. By contrast, Poland, Belgium, Hungary, Germany and Turkey are the five countries with the largest differences between pupils whose parents have low scores on the occupational index and those whose parents have high scores.

The significance of parental occupation can also be assessed by looking at the average performance gap between the quartile of pupils with parents with the highest occupational status and the quartile with parents with the lowest. The results largely confirm the results of the table above, with Latvia, Finland and Iceland showing the smallest difference between the quartile of pupils with the highest parental occupational status and the quartile with the lowest. Similarly, Belgium, Germany and Hungary are among the countries where parental occupational status is of greatest significance.⁷¹

1.2.4 Migrant background of pupils and achievement at school

Foreign ethnic background is another factor significantly influencing pupils' achievement at school in many countries. Data from all relevant international surveys confirm this (PISA, TIMSS and PIRLS).⁷²

The table below shows, in particular, that the percentage of pupils with foreign background varies considerably between countries. Among the countries for which data are available, the proportion of pupils with foreign background is 5% or less in only three countries (Portugal, Ireland and Spain) and above 5% in 13, with the highest levels in Luxembourg (33%), Germany (15%), France (14%), Austria (13%), Belgium and Sweden (both 12%).

Within the group of countries where more than 5% of all pupils have a foreign background, Belgium and Germany stand out. In these two countries, the differences in the average achievement score between native pupils and pupils with foreign background are larger than in other countries, to the disadvantage of pupils with foreign background. The differences in Sweden, Norway, the Netherlands, Denmark and France are lower but still high. The differences in the USA are at a relatively lower level although the proportion of foreign pupils is fairly high.

Table 1.5: Difference in average score between native pupils and pupils with foreign background, PISA 2003

	Average difference	Reading	Science	Mathematics	% of pupils with foreign background
Belgium	99	99	98	100	12
Germany	90	91	99	81	15
Austria	71	76	76	61	13
Sweden	66	55	79	64	12
Norway	65	64	80	52	6
Netherlands	65	54	75	66	11
Denmark	64	50	73	68	7
France	58	55	64	54	14
Luxembourg	48	58	48	38	33
Greece	44	44	45	43	7
USA	32	34	34	28	14
Latvia	4	10	-1	3	9
Portugal	50	45	44	61	5
Ireland	7	12	6	4	4
Spain	48	45	54	45	3

Source: DTI, OECD (PISA 2003 dataset). Since the data cover only 13 of the EU-25 countries the EU average has not been calculated for this table.

Additional notes:

The OECD average performance in PISA was fixed as 500 points in 2000. Because the number of observations was insufficient to provide reliable estimates, the data for countries with very low proportions of pupils with foreign background have been omitted.

⁷¹ See data in Haahr, J. H. et al. (2005). *Explaining Student Performance. Evidence from the international PISA, TIMSS and PIRLS surveys.*

⁷² See also OECD (2006). *Where Immigrant Students Succeed. A comparative review of performance and engagement in PISA 2003.*

Foreign background is negatively related to pupils' achievement scores even after adjusting for background factors. The relation remains statistically significant even when the influence of a large number of other factors is kept constant.

One explanation for the differences in the various education systems' ability to reduce the differences between foreign and native pupils' achievement levels is the different composition of the foreign population in individual countries, in terms of the national origin and socio-economic, educational and linguistic background of the immigrant population.

The composition of immigrant populations is shaped by immigration policies and practices, and the criteria used to decide who will be admitted into a country can vary considerably across countries. The extent to which the social, educational and occupational status of potential immigrants is taken into account in immigration and naturalisation decisions differs. As a result, immigrant populations have more advantaged backgrounds in some countries than in others.

There are many examples of the different nature of the immigrant population. In Latvia, for example, large parts of the population who were either born outside the country or whose parents were belong to the Russian minority which traditionally has held a relatively strong social and economic position in society. In the majority of EU-15 Member States, by contrast, a larger proportion of immigrants stem from the Middle East, Africa or Asia and are in a weaker position in society in various respects.⁷³

Although many differences between countries can undoubtedly be attributed to differences in the composition of the foreign population, there are still significant differences between countries with relatively uniform foreign school populations.

For example, Denmark and Germany have similar profiles of non-European foreign nationals with respect to continent of origin,⁷⁴ yet German pupils with a foreign background perform relatively worse in the PISA 2003 survey than Danish pupils with a similar background.

The table below adjusts for pupils' socio-economic background. The performance gap between native pupils and pupils from families with a migrant background is thus reduced considerably in many countries. This suggests that a large part of the difference between the performance of native and foreign pupils can be explained by the fact that pupils with a foreign background have a weaker socio-economic background than native pupils.

⁷³ Eurydice (2004). *Integrating Immigrant Children into Schools in Europe*. Brussels.

⁷⁴ Ibid.

Table 1.6: Difference in average score in mathematics between native and foreign pupils, adjusted for socio-economic background, 2003

Country	A. Difference between native and foreign pupils	B. Difference between native and foreign pupils, adjusted for ESCS ⁷⁵	Difference A-B (effect of ESCS)
USA	28	4	24
Latvia	3	9	-6
Luxembourg	38	13	25
Ireland	4	18	-14
France	54	21	33
Greece	43	27	16
Norway	52	34	18
Germany	81	35	46
Austria	61	36	25
Spain	45	36	9
Netherlands	66	37	29
Denmark	68	39	29
Sweden	64	41	23
Belgium	100	60	40
Portugal	61	62	-1

Source: DTI, OECD(PISA 2003 dataset). The figures concern average performance on the PISA mathematics scale.

Additional notes:

Because the number of observations was insufficient to provide reliable estimates, the data for the countries with very low proportions of foreign pupils have been omitted. The OECD average performance in PISA was fixed as 500 points in 2000. Differences in bold are statistically significant.

To calculate the EU average, data for at least 15 of the EU-25, accounting for at least 60% of the total EU population, must be present. Since the data cover only 13 of the EU-25 countries the average has not been calculated for this table.

Belgium is still among the countries exhibiting the largest disparities between native pupils and pupils with a foreign background, but the absolute difference in performance falls from 100 to 60 points. However, in Germany the adjustment for socio-economic background reduces the performance differences between native and foreign pupils even more significantly, to below the difference in a number of other countries. Consequently, a very significant share of the performance difference between native and foreign pupils in Germany is because German pupils with a foreign background have a weaker socio-economic background than native pupils. However, data also show that the German education system has managed to counterbalance some of the negative effects of foreign background on pupils' performance.

In Portugal the average socio-economic status of pupils with a foreign background is close to the average of native pupils. This can be seen from the fact that adjustment to correct for socio-economic status has virtually no effect. This means that, after adjusting for socio-economic background, Portugal is among the countries with the biggest difference in average achievement scores between native and foreign pupils.

⁷⁵ The index of economic, social and cultural status (ESCS) covers a number of aspects of a student's family and home background. Based on pupils' self-reports, it is derived from the following variables: 1) the highest international socio-economic index of occupational status of the father or mother; 2) the highest level of education of the father or mother converted into years of schooling; and 3) the number of books at home and access at home to educational and cultural resources, obtained by asking pupils whether in their homes they have a desk to study at, a room of their own, a quiet place to study, a computer they can use for school work, educational software, a link to the Internet, their own calculator, classical literature, books of poetry, works of art (e.g. paintings), books to help with their school work and a dictionary. The rationale for the choice of these variables was that socio-economic status is usually seen as determined by occupational status, education and wealth. As no direct measure of parental wealth was available from PISA, access to relevant household items was used as a proxy. Pupils' scores on the index are factor scores derived from principal component analysis which are standardised to give an OECD mean of zero and a standard deviation of one.

Nevertheless, inter-country differences in the performance of native and non-native pupils remain substantial, even after adjusting for socio-economic background. Furthermore, most countries' ranking in terms of differences between native and non-native performance remains the same and in several respects analysis of the PISA 2003 data confirms the ranking established by Stanat (2004).⁷⁶

This suggests that, in addition to the composition of countries' immigrant populations, other factors determine inter-country differences in non-native pupils' relative performance.

Language barriers

One factor which could be considered here is the language background of immigrants. The extent to which immigrants have to overcome language barriers varies considerably between countries, depending, for instance, on whether the country has a colonial history, in which case many immigrants already speak the official language of the country at the time of their arrival.

After adjusting for language, the differences are reduced slightly, but still remain.

One possible explanatory factor is the procedure for determining the appropriate level of schooling. For example, in France schools rely on case-by-case assessments in the student's previous language of instruction, if possible. The student is not, however, placed in a class more than two years below that of his/her age. In Belgium, by contrast, pupils who hold a foreign certificate or diploma can apply for equal recognition.⁷⁷ This may mean that more non-native pupils at the age of 15 in Belgium than in France are receiving instruction which is not suited to their level of schooling.

Another possible explanation is the possibility to create smaller classes or the existence of special norms for classes with many immigrant children. For example, in France special reception classes can be formed for pupils who have not previously attended school.⁷⁸

Although PISA 2003 provides no exact figures, immigrant pupils clearly benefit where there are well-established language teaching systems for immigrants, such as in Australia, Canada and Sweden.⁷⁹

Germany

Aware that sufficient knowledge of German combined with the socio-economic background seem to be key factors in school achievement by immigrant pupils, Germany introduced compulsory language tests for such children as early as at pre-school age along with a wide range of special programmes focused on improving these pupils' language skills. These sometimes also include family members.⁸⁰

Instruction in the mother tongue

Most likely, however, other factors on which no information is available explain much of the difference between the performance of non-native pupils in Belgium and France. Differences in the composition of the school population with a foreign background other than the ones adjusted for above may be significant. Other differences in the approach to education of immigrant children may also be

⁷⁶ Stanat, P. (2004). *The Role of Migration Background for Student Performance. An International Comparison*. Paper presented at the 2004 Annual Meeting of the American Educational Research Association, 12-16 April, San Diego, California.

⁷⁷ Eurydice (2004). *Integrating Immigrant Children into Schools in Europe*. Brussels. European Commission, DG Education and Culture.

⁷⁸ Eurydice (2004). *Integrating Immigrant Children into Schools in Europe*. Brussels. European Commission, DG Education and Culture.

⁷⁹ Keeley, B. (2007). *Human Capital. How what you know shapes your life*. OECD.

⁸⁰ Avenarius, H., Füssel, H.-P. and Richter, I. (2007). *Dropouts in Germany*. Paper presented at ELA Conference, Potsdam, 11-12 May 2007.

important. Finally, another possibility is that the variables measuring socio-economic background are not precise enough.

The question of mother-tongue instruction could be important, as there is solid evidence that mother-tongue-based schooling has positive effects on academic performance.⁸¹

According to Eurydice,⁸² out of the 30 European countries analysed, bilingual tuition is offered in only Sweden, Norway, Finland, Estonia, Latvia and Cyprus.⁸³ The Norwegian legislation on mother tongue instruction was changed in 2004 to give municipalities wider scope to decide how they will meet the general obligation to provide special language training for pupils who do not speak Norwegian well enough to follow normal education. This will weaken the right to bilingual tuition.

Density of non-native pupils at school

Also the density of non-native pupils at school is negatively correlated with the school achievement of non-native pupils.

The PISA data in the table below show that achievement by non-native pupils who attend schools with high densities of non-native pupils (40% or more) is lower than non-native pupils who attend schools with low densities (under 10%). This generally applies for all skills measured in PISA (mathematics, reading and science) and persists even after adjusting for the socio-economic background of the non-native pupils (i.e. when studying non-native pupils of similar socio-economic background).

In some countries, the percentage of non-native pupils attending schools with high densities of non-natives (40% or more) is high. This is the case in the Netherlands, Sweden, Germany, Norway, Austria and Denmark (from 34.7% to 25.3%).

In these countries, the average achievement scores of these pupils are considerably lower than those of pupils attending schools with a density of non-native pupils below 10%: Germany (132 points lower), Sweden (67 points lower), the Netherlands (51 points lower), Austria (66 points lower) and Denmark (33 points lower).

⁸¹ E.g. Thomas, W. P. and Collier, V. P. (2001). "A National Study of School Effectiveness for Language Minority Pupils' Long-Term Academic Achievement" http://www.crede.org/research/llaa/1.1_final.html. Benson, Carol (2005). "The Importance of Mother-Tongue-Based Schooling for Educational Quality." Paper commissioned for EFA Global Monitoring Report.

⁸² Ibid.

⁸³ Ibid.

Table 1.7: Average reading scores among 15-year-old non-native pupils attending schools with different densities of non-native pupils

Country	Density of non-native pupils				Score difference (Low/high density)
	40% or more		Under 10%		
	Percentage of non-native pupils in schools with high density of non-native pupils	Average reading achievement score for non-native pupils	Percentage of non-native pupils in schools with low density of non-native pupils	Average reading achievement score for non-native pupils	
Slovakia	3.3	282	76.2	452	170
Hungary	1.0	346	98.5	484	138
Portugal	5.1	335	60.8	469	134
Germany	28.1	359	28.6	491	132
Sweden	31.7	428	27.5	495	66
United States	14.8	431	43.1	496	66
Austria	26.0	389	35.8	454	66
Netherlands	34.7	448	35.9	499	51
EU	39.7	431	37.5	472	41
Italy	6.7	391	82.0	432	41
Greece	16.	411	53.5	445	35
Belgium	15.9	399	61.1	432	34
Denmark	25.3	430	41.5	463	33
Iceland	6.2	408	80.0	432	23
Latvia	24.3	476	59.8	488	12
Norway	26.1	426	50.1	438	12
Spain	11.6	440	56.3	441	2
Turkey	3.8	467	96.2	453	-13
Finland	0.4	516	83.2	455	-61

Source: DTI, OECD(PISA 2003 dataset).

Additional notes :

Data not available for the Czech Republic, France, Ireland, HK China, Japan and Korea. The OECD average performance in PISA was fixed as 500 points in 2000. *Weighted EU averages have been calculated for PISA data because data exist for at least 15 of the 25 Member States, representing at least 60 per cent of the total EU population.*

The implication is that in this group of countries the high percentage of non-native pupils attending schools with a high density of non-native pupils may be a problem in itself, reinforcing low achievement. Consequently, thought should be given to possible initiatives for reducing the density of non-native pupils in particular schools in some countries.

1.2.5 Inequalities in education created by schools as institutions

Inequality in education caused by various family factors of pupils is compounded by the inequalities created by the schools themselves. Research suggests that the quality of the context (school and class) in which pupils are educated varies and that this has a bearing on the progress of pupils, particularly the weakest. Research also indicates that the distribution of effective contexts is not a matter of chance: in practice, working-class pupils find their way into the least effective schools/context. ⁸⁴

⁸⁴ Duru-Bellat, M. (2004). *Social inequality at school and educational policies.*

Data from PISA make it possible to analyse the impact of the learning environment and the organisation of schooling, such as school and classroom climate (teacher support plus student- and teacher-related factors affecting the school climate), learning outside the school and resources invested in education (teacher shortages, quality of the school's physical infrastructure and educational resources, approaches to school management/financing and public and private stakeholders).

As reported by the OECD,⁸⁵ although every country invests considerable resources in education, headteachers in some countries perceive considerable differences in the quality of the educational and human resources at their disposal. In many countries these appear to be associated with lower performance by pupils.

The disciplinary climate in schools also seems to be closely related to pupils' performance. In particular headteachers identified the following factors as having a negative impact on pupils' performance: absenteeism, disruptive behaviour, lack of respect for teachers and bullying. On the other hand, pupils said that the biggest obstacles were time-wasting by teachers at the beginning of lessons, noise, disorder and pupils tending not to listen to what the teacher is saying.

Homework and, in some countries, remedial teaching outside school also account for a considerable portion of the time devoted to instruction. PISA data suggest that homework and learning outside the school may widen the disparities in pupils' performance caused by their socio-economic background, in particular the amount of educational support pupils receive at home (with homework). However, there is also evidence that some countries are able to organise homework and activities outside school without this working to the disadvantage of pupils who are already at risk because of their family background.

PISA data allow estimates to be made of the proportion of the variation in pupils' performance within and between schools which is attributable to pupils' family background. Data show that over a third of the variation in pupils' performance is attributable to differences between schools. The within-school variation that can be attributed to socio-economic/family background is considerably smaller than the differences between schools.

Heyneman and Loxley⁸⁶ observed that in the least economically prosperous countries school-related factors had a greater impact on pupils' performance than family background in contrast to the situation in the richest countries where a minimum level of quality is guaranteed in all contexts (for example, class sizes and the quality of school buildings are more uniform in rich countries than in poor countries).

1.2.6 Socio-economic background and access to higher education

Socio-economic background, age and gender are also significant factors influencing access to higher education for certain sectors of the population.⁸⁷ The next section analyses access to higher education from the point of view of the educational attainment of pupils' parents.

Educational attainment level of parents and access to higher education

The educational attainment of pupils' parents is often seen as an indicator for the impact of socio-cultural and economic factors on access to higher education. Although this indicator may not

⁸⁵ OECD (2001). *Knowledge and Skills for Life. First results from PISA 2000* and OECD (2004), *Knowledge and Skills for Life. First results from PISA 2003*

⁸⁶ Heyneman, S. P. and Loxley, W.(1983).*The effect of primary school quality on academic achievements across twenty-nine high and low income countries*. American Journal of Sociology, vol.88 (May), pp.F-1162-F94, Stephen P. Heynemann (2005). *Student Background and Student Achievement: What Is the Right Question?* American Journal of Education, vol. 112 (2005), pp.1–9

⁸⁷ The gender dimension of participation in tertiary education is analysed in Chapter 7 on higher education.

encapsulate all socio-economic factors, it can be used to assess the effect of parents' education on their children's education.

Table 1.8 compares the chance of entering higher education, depending on parents' education, between countries based on data from EUROSTUDENT.⁸⁸ In line with the principle of participative equity, the best measure is a chance of 1, which means that parents' education (and by extension socio-economic background) does not affect the chance of access to higher education. A measure lower than 1 means that the particular educational background decreases the chance of access. A measure higher than 1 means that the educational background has a positive effect on the chance of entry and, finally, 2 means that a prospective student with this background has twice the chance of entering higher education.

Table 1.8: Odds of entering higher education depending on parental educational attainment⁸⁹

Country	With high education background	With low education background
Ireland	1.1	0.8
Spain	1.8	0.7
Italy	1.8	0.4
Netherlands	2.0	0.9
Finland	2.4	0.6
France	2.7	0.5
Germany	2.9	0.3
Austria	3.0	0.6
Portugal	4.1	0.3

Source: Eurostudent 2005

As can be seen from the table above, prospective students with a *high education background* are at the greatest advantage in Portugal, where their chances of entering higher education are over four times higher than those of pupils whose parents have no higher education. Children of parents with higher education are at slightly less advantage as regards access to higher education in the Netherlands, Finland, France, Germany and Austria, where prospective students with a high education background have between a two- and three-fold higher chance of being enrolled in higher education than children of parents with a low level of educational attainment. In Ireland the higher parental education background of prospective students appears to make little difference to prospective Irish students' chance of entering higher education.

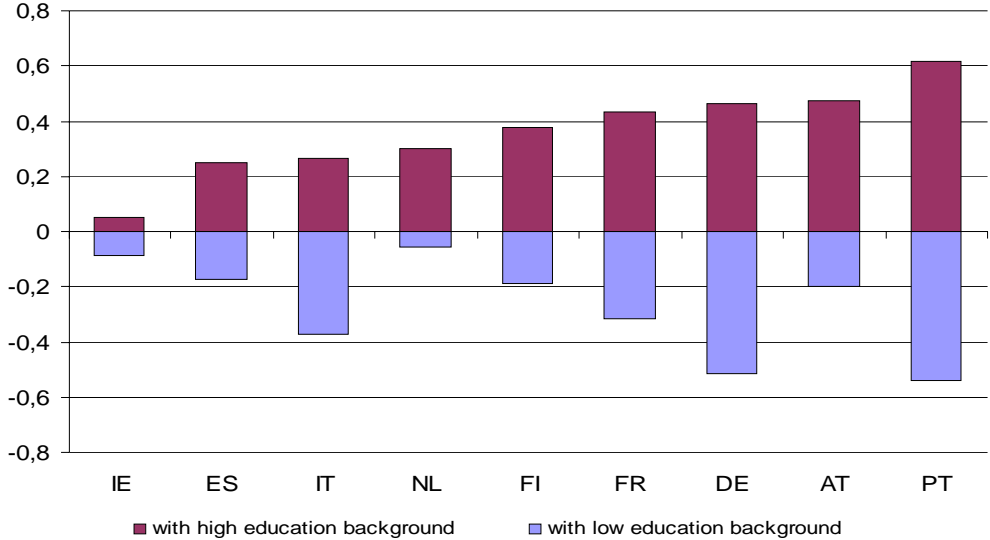
Seen from another angle, prospective students with a *low education background* have the least chance of entering higher education in Portugal and Germany, where their chance is around one third that of prospective students whose parents have a higher qualification. Prospective students from the Netherlands and Ireland are least disadvantaged by low parental education background.

⁸⁸ The EUROSTUDENT national survey includes only national students studying at ISCED level 5A (full- and part-time), except FI, NL and PT (also ISCED level 5B) and AT (also ISCED level 6). Educational attainment is classified using the ISCED coding: low education = ISCED levels 0, 1 and 2; higher education = ISCED levels 5A, 5B and 6. The corresponding group in the national population is all males aged 40-60 years, except in IT (40-64) and PT (40-59).

⁸⁹ Method of calculation of the odds ratio: The share of pupils whose parents have higher education (ISCED levels 5 and 6) is compared with the share of males (40-60 years old) in a national population who have completed higher education. The share of pupils whose parents have NOT attained higher education (ISCED levels 5 and 6) is compared with the share of males (40-60 years old) who have NOT attained higher education. The odds ratio = [with higher education]/[without higher education].

Chart 1.16 compares the impact of high and low parental education background on chances of entering higher education using logarithmic values, which reflect more symmetrically the values above and below 1 in Table 1. In this chart a value near 0 means that parents' education does not affect the chance of access to higher education. The graph shows once again the importance of a higher education background.

Chart 1.16: Relative odds of entering higher education depending on parental educational attainment



Source: Eurostudent 2005, figure 15

Chart I.16 shows that the Netherlands and Ireland have been able to minimise the disadvantage of coming from such a socio-economic background. Austria is an example of a country where prospective students with a high parental education background have a significantly better chance of access, but the disadvantage of a low parental education background is not as great as in comparable countries (Germany and Portugal).

In cases where the advantage of the high parental education group is not proportional to the disadvantage of the low group, the disadvantage may be shared between the low education and intermediate groups. This recognition would be particularly important for policy design in the Netherlands, Austria and Finland, where programmes to reduce socio-economic disadvantage might be extended to include intermediate disadvantaged (i.e. between a low and high parental education background).

Differences between individual countries demonstrate that the education and training systems of some Member States have been better able to limit the negative impact of a less favourable family background than others. Of course, access to higher education is conditional on performance at lower levels of education and training, starting with pre-primary education, as mentioned at the beginning of this chapter. However, it depends, in particular, on the performance of the system and on pupils' achievement in compulsory and upper secondary education which prepare them for further studies in higher education.

2. PROMOTING EFFICIENCY IN EDUCATION AND TRAINING

Main messages

- Total public expenditure on education as a percentage of GDP increased in the EU between 2000 and 2003, but then decreased from 5.17% in 2003 to 5.09% in 2004. However, in eight Member States it still increased, notably in Greece (by nearly 0.3% of GDP) and Bulgaria (by over 0.3% of GDP).
- Expenditure on educational institutions from private sources as a percentage of GDP remained stable in EU-27 in 2004 at about 0.6%. However, private spending on education as a percentage of GDP is nearly twice as high in Japan (1.2%) and more than three times higher in the USA (2.3%). In EU27 only the UK, Germany, Slovenia, Latvia and Cyprus have levels of private spending close to or above 1% of GDP.
- Private expenditure on tertiary institutions (including both education and research) as a percentage of GDP is seven times higher in the USA than in the EU. In 2004 expenditure per full-time equivalent tertiary student in the USA was more than twice the EU average.

Introduction

This chapter mainly looks at investment in education, i.e. the financial input to education and training, while the efficiency aspects (ratio between input and output) are dealt with at the end of the chapter where the results of some initial calculations using different approaches are presented.

Investment in human capital through education and training is the key to strengthening Europe's position in the knowledge economy and to increasing social cohesion in the 21st century. The European Council of March 2000 in Lisbon acknowledged this by calling for "a substantial annual increase in per capita investment in human resources."⁹⁰

Building on the Lisbon Council's call for increased and improved investment in human resources, the "Education and Training 2010" work programme for Europe is organised around quality, efficiency, access and openness of education and training systems and includes a specific objective investigating "Making the best use of resources".³ In March 2003 the European Council stated that "investing in human capital is a prerequisite for the promotion of European competitiveness, for achieving high rates of growth and employment and moving to a knowledge-based economy." The Council also approved the use of "benchmarks to identify best practice and to ensure efficient and effective investment in human resources."⁹¹ The Joint Interim Report (January 2004) identified concentration of reforms and investment in certain key areas as one of the three levers for success.⁹² More and better investment in human capital is also a key priority in the Employment Guidelines 2005-2008.⁹³ Stressing that lifelong learning is central to achieving the Lisbon objectives, the 2005 spring European Council confirmed that investing more and better in human capital is at the heart of the Lisbon

⁹⁰ Presidency Conclusions European Council, Lisbon, 2000, paragraph 26.

⁹¹ Presidency Conclusions European Council, Brussels, 2003, paragraph 40.

⁹² Joint Interim Report of the Council and the Commission (2004) "Education and Training 2010," p. 22. The reports of the Commission Working Groups on Education and Training 2010 provided input for this report. See "Making best use of resources," Working Group Progress Report, November 2003.

⁹³ See also Integrated Guidelines for Jobs and Growth (2005-2008), COM(2005) 141 final of 12 April 2005.

strategy.⁹⁴ Then the 2006 spring European Council outlined the twin challenges of ensuring equity and efficiency which Europe's education and training systems face.⁹⁵

The Communication from the Commission of 8 September 2006 on "Efficiency and equity in European education and training systems" underlined that reforms must be stepped up to ensure high quality educational and training systems that are both efficient and equitable and that education and training systems are efficient if the inputs used produce the maximum output.⁹⁶ This is also one of the messages of the 2006 Joint Progress Report of the Council and the Commission on implementation of the Education and Training 2010 programme.⁹⁷

Research points to a very positive relationship between investment in education and actual economic growth (e.g. Krueger and Lindahl 2001; de la Fuente and Doménech 2006). Education also produces substantial returns to the individual in terms of earnings (cf. the surveys by Card 1999 and Harmon et al. 2003) and employability (e.g. OECD 2000, 2005). Ample evidence shows that the quantity and especially the quality of schooling, in terms of student performance in cognitive achievement tests, yield substantial payoffs for productivity and earnings in the labour market for the individual and society alike (cf. Barro 2001 and Wößmann 2002). Given that primary and lower secondary education are compulsory in European countries and that there is hence no possibility to increase the output in terms of learners, implementing policies that increase the quality of schooling in terms of pupils' skills may bring considerable benefits.

2.1 Indicators for monitoring performance and progress

Investment efficiency was mentioned in the Council conclusions of 24 May 2005 as one of the areas for which new indicators must be developed. Measuring efficiency via indicators implicitly requires data on (financial) inputs and on (educational) outputs, since the concept of efficiency is often understood as linked to the ratio of outputs to inputs. Identifying the most appropriate indicators for measuring investment efficiency remains a challenge, however. The availability of variables in the form of a set of inputs and outputs/outcomes that can be used to measure investment efficiency has evolved over the past few years mainly due to the increased availability of harmonised output data (gathered mainly through large-scale international surveys). Some of the options (and the consequent limitations) when translating the existing statistical information into different categories of indicators for measuring investment efficiency in education are discussed below.

Inputs

Two main types of input can be distinguished. The first covers factors under the control of the education system. This includes the resources used in education, such as teacher-student ratios, average instruction time per teacher, etc. The second covers "non-discretionary" factors which are not under the control of education providers but are important determinants of educational outputs, like pupils' socio-economic background. When measuring cost efficiency, data on financial inputs are needed. Since competence builds up over the school life of a pupil, it is better to use cumulative spending over the typical or average duration of studies. Ideally, the cumulative spending should be based on constant monetary units in order to filter out the effect of different price levels (and exchange rate fluctuations). Data should be converted into equivalent monetary units through deflators (usually GDP household final consumption). Use of purchasing power parities filters out differences in price levels between countries but not differences in salary levels (which are related to differences in

⁹⁴ Presidency Conclusions, European Council 22-23 March 2005, paragraph 33.

⁹⁵ Presidency Conclusions, European Council 23-24 March 2006, paragraph 20.

⁹⁶ Communication COM (2006) 481 of 8 September 2006 on efficiency and equity in European education and training systems.

⁹⁷ Modernising Education and Training: a Vital Contribution to Prosperity and Social Cohesion in Europe, Official Journal of the European Union C79 of 1.4.2006 : http://eurlex.europa.eu/LexUriServ/site/en/oj/2006/c_079/c_07920060401en00010019.pdf

productivity and per capita income). One way of filtering out these structural differences is to relate the resources spent on education to GDP, in order to obtain data on spending as a percentage of GDP. This approach still does not take the age structure of the population into consideration and it is also important to consider private spending. To correct for this, one option is to use data on public and private spending per student relative to GDP per capita; this indicator filters out many of the structural and economic differences between countries but this unit is less straightforward and harder to understand. Although no financial measure can eliminate all the possible bias, some are better proxies than others.

Outputs

Educational output has basically two aspects: its quantity, which is easy to measure, and its quality, on which in many cases data are not available. The quantitative outputs can be measured very broadly (in terms of educational attainment of the population) or more narrowly (in terms of completion rates or length of study). From this perspective, completion rates can be used as a proxy for educational outputs as they are an indicator of the current production of higher-level knowledge by each country's education system. Rising demands for skills in countries have made upper secondary qualifications the foundation for further learning and training opportunities and, as a result, young people who leave without an upper secondary qualification tend to find it extremely difficult to enter the labour market.⁹⁸ The OECD PISA study provides information on the quality of the output of education at the end of compulsory education (age 15) in terms of reading, mathematics and science literacy. However, data on output quality at other levels are much more limited (examples include the IEA PIRLS study for primary education and the TIMSS advanced survey for upper secondary education from which the latest results are for 1999).

Outcomes

Educational output has an impact both at individual level (employability, earnings, health, etc.) and at aggregate level, where economic dimensions (unemployment rates and economic growth) and social dimensions (social cohesion) can be differentiated. Data on economic outcomes are normally more readily available at aggregate (country) level than at individual level.

2.2 Performance and progress on investment in human resources (the financial input side)

Quality and availability of data and indicators

When analysing and comparing data for different countries, a number of factors which affect comparability have to be taken into consideration. These include demographics (the proportion of young people differs between countries), differences in teacher salaries compared with GDP per capita (around 70% of total education expenditure is on salaries), incomplete coverage of private investment and the difference between gross domestic product (all income before adjustment for net factor income flows in and out of a country) and gross national product (all income after adjustment for net factor income flows), especially in smaller open economies. Furthermore, expenditure reported for the tertiary level is on all activities performed, i.e. both education and research.

Improving the collection and quality of data on private expenditure on education and training is a priority in the follow-up to the Lisbon process and the Commission Communication on "Investing efficiently in education and training." One important point to note is that educational spending is usually treated as "current expenditure" in financial statistics on national accounts.⁹⁹ Since education

⁹⁸ It should also be noted that, for the EU countries, Eurostat has defined educational output as the "quantity of teaching received by the students, adjusted to allow for the quality of the services provided for each type of education." EU Member States are required to introduce direct measures of output for certain government services (including health care and education) with the dissemination of the 2006 national accounts.

⁹⁹ Goods and services that have a lifetime of less than one year are statistically normally considered as current expenditure and those with a lifetime of more than one year as investment. Using this definition, over 90% of education spending can be classified as current expenditure and less than 10% as capital expenditure.

and training yield returns in the future, spending in this sector could be considered a form of investment, with the corollary that people and their skills are a form of human capital and an asset. In the analysis set out below, all spending on education and training, from public or private sources, is therefore considered investment in human capital.

2.2.1 Public expenditure on education and training - total spending

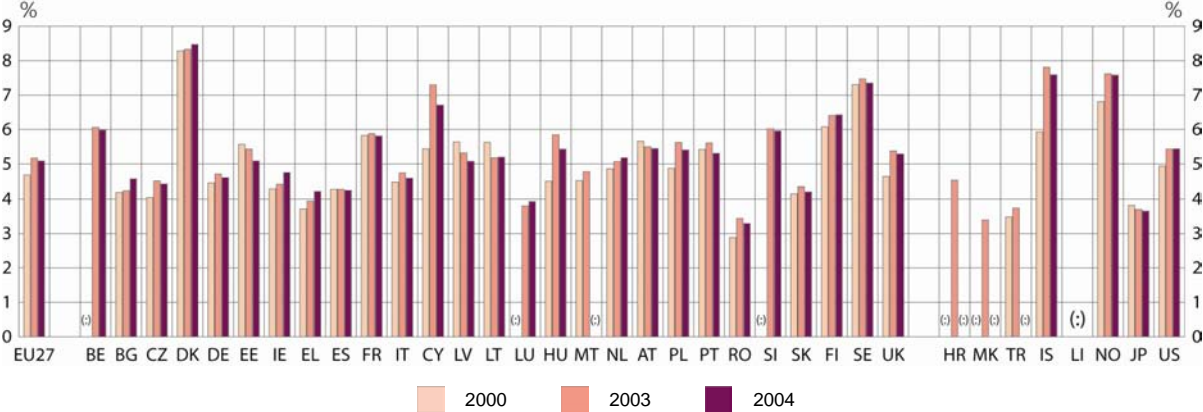
Investment in education and training can benefit society in the form of lower unemployment rates, higher labour force participation rates (thus allowing savings in social welfare expenditure, which currently accounts for about 40% of total public expenditure in EU-27)¹⁰⁰ and higher productivity. Investment in education is thus a major spending item in public budgets. In 2002, 10.9% of public budgets in the EU went to education¹⁰¹, compared with 10.7% in 2000.¹⁰²

There were considerable variations between countries in their levels of total *public expenditure on education and training as a percentage of GDP* in 2004 (see Chart 4.1; the data only partially cover spending on non-formal education). Denmark continues to allocate over 8% of GDP to education, the highest percentage among the Member States, followed by Sweden (7.4%) and Cyprus (6.7%). The percentage of GDP allocated to education (public spending) was between 4% and 5% in eight Member States. Only in Romania and Luxembourg was public spending on education below 4% of GDP in 2004.¹⁰³ Adequate spending levels are especially important for low-income countries, since investment in human resources is a key prerequisite for economic growth and there is a danger of a vicious circle of low investment in human capital and low economic growth.

In 2004 total public expenditure on education as a percentage of GDP increased in only eight EU countries compared with 2003, while decreasing in 18 Member States. Greece and Bulgaria made the biggest effort to increase public spending on education and training, showing increases of about 0.3 percentage points of GDP.

At European level public spending on education stood at 5.09%, down from 5.17% of GDP in 2003, but still up on 2000. It therefore totalled over €500 billion in 2004, a real increase of more than 16% over 2000 (based on constant 1995 prices).

Chart 2.1: Total public expenditure on education as a percentage of GDP



Data source : Eurostat

¹⁰⁰ European Commission, “Public Finances in the EMU”, 2004, p. 173.
¹⁰¹ As regards vocational training only vocational training following formal education programmes is included in the public spending data of this chapter
¹⁰² The public sector finances the education system, either directly, by bearing the current and capital costs of educational institutions (direct expenditure on educational institutions), or in the form of financial support for students and their families with scholarships and public loans and transferring public subsidies for educational activities to private firms or non-profit organisations (transfers to private households and firms). Both types of transaction are recorded under total public expenditure on education.
¹⁰³ The data for Luxembourg relate only to primary and secondary education. For the two levels combined spending in % of GDP is above the EU average. As a result of high per capita GDP, spending per pupil is relatively high in Luxembourg.

In the period 2000-2003 there was an overall increase in spending of about 0.5 percentage points of GDP in the EU, corresponding to real growth of about 15% in total public expenditure on education, while at the same time the population increased only slightly. Over this period it can therefore be concluded that the EU made progress towards the Lisbon objective of ensuring “a substantial annual increase in per capita investment in human resources.” The decline in 2004 is, however, a change in trend, which, if it persists, would make it impossible to achieve the goal. Nevertheless, due to more robust economic growth than in previous years in real terms, spending still increased by about 1%.

Table 2.1: Spending on education as a percentage of GDP, 2000-2004

	Expenditure as a percentage of GDP					
	Total public expenditure (Total)			Private expenditure (on educational institutions)		
	2000	2003	2004	2000	2003	2004
EU-27	4.68	5.17	5.09	0.57	0.63	0.64
Belgium	:	6.06	5.99	0.43	0.35	0.34
Bulgaria	4.19	4.24	4.57	0.77	0.67	0.65
Czech Republic	4.04	4.51	4.42	0.43	0.37	0.61
Denmark	8.28	8.33	8.47	0.27	0.32	0.32
Germany	4.45	4.71	4.60	0.97	0.92	0.91
Estonia	5.57	5.43	5.09	:	:	:
Ireland	4.29	4.41	4.75	0.42	0.31	0.32
Greece	3.71	3.94	4.22	0.24	0.22	0.20
Spain	4.28	4.28	4.25	0.60	0.54	0.61
France	5.83	5.88	5.81	0.48	0.60	0.54
Italy	4.47	4.74	4.59	0.44	0.40	0.46
Cyprus	5.44	7.30	6.71	1.72	1.35	1.17
Latvia	5.64	5.32	5.08	0.63	0.83	0.82
Lithuania	5.63	5.18	5.20	:	0.46	0.48
Luxembourg	:	3.80	3.93	:	:	:
Hungary	4.50	5.85	5.43	0.58	0.56	0.52
Malta	4.52	4.78	4.99	0.47	1.42	0.46
Netherlands	4.86	5.12	5.18	0.45	0.48	0.50
Austria	5.66	5.50	5.45	0.33	0.30	0.39
Poland	4.87	5.62	5.41	:	0.66	0.59
Portugal	5.42	5.61	5.31	0.08	0.09	0.13
Romania	2.88	3.44	3.29	0.25	:	:
Slovenia	:	6.02	5.96	:	0.86	0.86
Slovakia	4.15	4.34	4.21	0.15	0.46	0.76
Finland	6.08	6.41	6.43	0.12	0.13	0.13
Sweden	7.31	7.47	7.35	0.20	0.19	0.20
United Kingdom	4.64	5.38	5.29	0.78	0.97	0.95
Croatia	:	4.53	4.50	:	:	:
FYR Macedonia	:	3.39	:	:	:	:
Turkey	3.48	3.74	:	0.05	0.05	:
Iceland	5.93	7.81	7.59	0.56	0.71	0.75
Norway	6.81	7.62	7.58	0.08	0.10	0.05
Japan	3.82	3.70	3.65	1.23	1.25	1.23
United States	4.94	5.43	5.12	2.23	2.08	2.37

Source: Eurostat (UOE). EU results for 2003 and 2004 are estimates. EU result for 2000: estimate by DG EAC.

Additional notes:

The data do not include spending on non-formal education and do not cover most adult education.

DK: Expenditure on post-secondary non-tertiary levels of education not available.

EL, LU, PT: Imputed retirement expenditure not available.

CY: Including financial aid to students studying abroad.

PL, SK, NO: Including child care expenditure at pre-primary level.

FR: Without French Overseas Departments.

HR: Expenditure on educational institutions from public sources.

LU: Expenditure at tertiary level not included.

PT: Expenditure at local level of government not included.

UK, JP, US: Adjustment of GDP to the financial year, which differs from the calendar year.

TR, IS: Expenditure at pre-primary level not included.

TR: Expenditure at regional and local levels of government not included.

US: Expenditure on educational institutions from public sources.

2.2.2 Public expenditure on education and training by level

Table 2.2 shows public expenditure by level of education. Nearly half of public spending on education goes to secondary schools (ISCED levels 2 and 3; ISCED level 4 post-secondary non-tertiary education is also included in the data; the 2001 data are shown instead of 2000 because they are more complete).

Table 2.2: Public expenditure on education as a percentage of GDP by ISCED level

ISCED level	0 (pre-primary)		1 (primary)		2-4 (secondary)		5-6 (tertiary)	
	2001	2004	2001	2004	2001	2004	2001	2004
	EU-27	0.49	0.49	1.16	1.16	2.27	2.31	1.05
Belgium	0.69	0.70	1.37	1.42	2.60	2.58	1.34	1.29
Bulgaria	0.64	0.79	0.73	0.87	1.59	2.10	0.82	0.81
Czech Republic	0.53	0.51	0.69	0.67	2.09	2.29	0.79	0.95
Denmark	0.98	1.05	1.88	1.94	2.87	2.96	2.71	2.53
Germany	0.41	0.47	0.68	0.66	2.30	2.32	1.10	1.16
Estonia	0.35	0.36	1.55	1.31	2.35	2.53	1.03	0.88
Ireland	0.06	0.00	1.37	1.59	1.63	2.04	1.22	1.11
Greece	0.27	0.12	1.03	1.17	1.38	1.47	1.17	1.46
Spain	0.39	0.48	1.10	1.11	1.77	1.69	0.97	0.97
France	0.69	0.68	1.13	1.11	2.79	2.81	0.99	1.21
Italy	0.48	0.45	1.17	1.18	2.42	2.17	0.80	0.78
Cyprus	0.32	0.33	1.71	1.85	2.76	3.05	1.14	1.48
Latvia	0.68	0.66	1.09	0.83	2.97	2.91	0.89	0.68
Lithuania	0.82	0.66	:	0.74	3.73	2.73	1.34	1.06
Luxembourg	0.50	:	1.63	2.15	1.62	1.78	:	:
Hungary	0.85	0.93	0.95	1.03	2.13	2.45	1.08	1.02
Malta	0.30	1.40	1.16	1.05	2.12	1.99	0.88	0.55
Netherlands	0.33	0.36	1.28	1.41	1.91	2.06	1.27	1.35
Austria	0.61	0.40	1.12	1.03	2.62	2.60	1.35	1.42
Poland	0.46	0.48	2.69	1.71	1.23	2.01	1.04	1.15
Portugal	0.50	0.59	1.70	1.67	2.38	2.20	1.03	0.84
Romania	0.45	0.66	1.17	1.20	0.87	0.73	0.79	0.70
Slovenia	0.65	0.49	2.74	2.73	1.84	1.39	1.45	1.35
Slovakia	0.53	0.54	0.59	0.56	2.05	2.12	0.82	0.99
Finland	0.32	0.35	1.31	1.38	2.42	2.64	1.99	2.07
Sweden	0.47	0.52	1.98	1.98	2.76	2.76	2.03	2.09
United Kingdom	0.44	0.35	1.17	1.39	2.26	2.53	0.81	1.02
Croatia	:	0.57	:	2.09	:	1.03	:	0.82
FYR Macedonia	:	:	:	:	:	:	:	:
Turkey	:	:	1.77	:	0.70	:	1.17	:
Iceland	0.29	0.90	2.39	2.64	2.53	2.64	1.08	1.41
Norway	0.60	0.57	3.34	1.91	1.43	2.66	1.85	2.43
Japan	0.37	0.31	1.28	1.29	1.44	1.40	0.55	0.65
United States	0.36	0.31	1.84	1.79	1.94	1.98	1.48	1.32

Data source: Eurostat (UOE data collection). Spending on the tertiary level includes R&D spending at universities.

Additional notes:

See notes under table 2.1.

ISCED 0/na: pre-primary education and not allocated by level.

ISCED 1: primary education.

ISCED 2-4: secondary and post-secondary non-tertiary education.

ISCED 5-6: tertiary education.

Direct public expenditure does not include transfers to private entities. If public and private spending are added up, it is preferable to use direct public expenditure (instead of total expenditure) to avoid double-counting.

Data for Poland combine ISCED levels 1 and 2 and ISCED levels 3 and 4.

Pre-primary education

As a general rule, the earlier in the lifetime of a learner the investment in education, the higher the returns later in life. Investment in pre-primary education therefore yields the highest returns. It also contributes to other goals, such as equity, by mitigating the impact of socio-economic background on learning outcomes and by allowing a high employment rate for young mothers. Although the importance of pre-primary education has been recognised by education researchers and policy-makers in recent years and despite the Barcelona goal of increasing participation in pre-primary education, spending on pre-primary education as a percentage of GDP has not changed in recent years. However, it has to be borne in mind that the figures shown in the table for ISCED level 0 (pre-primary) also

include spending not allocated by level and that in some countries private spending plays an important role in pre-primary education. Countries with a high level of public spending on pre-primary education (over 0.65% of GDP) include Belgium, Bulgaria, Denmark, France, Latvia, Lithuania, Hungary, Malta and Romania. Low levels of spending can be found in Ireland and Greece.

Primary education

Spending on primary education is affected by demographic factors more than spending on the other levels, since the participation rate is nearly 100%. Countries with a relatively high birth rate therefore tend to spend relatively high proportions on primary education. However, time lags have to be considered. If the number of births changes, the size of the student age-group cohort does not change until some years later (the higher the level, the later). Moreover, the education system typically reacts to changes in cohort size with additional time lags, since infrastructure and staffing cannot always be adapted proportionally in the short term. Slovenia and Luxembourg show the highest levels of spending on primary education. Germany, the Czech Republic and Slovakia show relatively low levels.

Secondary education

The number of pupils in secondary education has increased slightly in recent years as a result of the rising participation rate. This is one of the reasons why the share of GDP spent on secondary education climbed between 2001 and 2004. Countries with a high level of spending on secondary education (around 3% of GDP) include Denmark and Cyprus. Relatively low levels are found in Greece, Spain and, especially, Romania.

Tertiary education

Spending on tertiary education is more strongly affected by participation rates than compulsory education. Table 2.2 shows total expenditure on tertiary education institutions as a percentage of GDP in 2004 (for all activities, including both education and research). Total public investment in higher education in 2004 was around 1.13% of GDP in EU-27. In Denmark, Sweden and Finland total public spending alone already surpasses the goal proposed by the Commission of investing 2% of GDP (from all sources) in higher education. On the other hand the share is below 1% in Bulgaria, the Czech Republic, Spain, Italy, Latvia, Malta, Romania and Slovakia. Public spending on higher education, as a percentage of GDP, in EU-27 increased by 0.08 percentage points between 2001 and 2004. Total public expenditure on higher education as a percentage of GDP increased in 12 EU countries while decreasing in 13. The biggest increases were in Greece and Cyprus. Public investment accounts for more than 85% of the amount spent on tertiary education institutions in Europe. Cyprus and Latvia are the two EU-27 countries with the lowest share of public funding: up to 60% of the amount invested in higher education institutions there comes from private sources. Conversely, in Estonia, Lithuania, Denmark and Greece higher education institutions are entirely funded by public resources.

While public spending on tertiary-level education in EU-27 is only slightly below the level in the USA and nearly twice as high as in Japan, private spending on higher education is much higher in both the USA and Japan. As a result, total spending on higher education institutions in Europe (for all activities, including both education and research) is far below the level in the United States (2.80%).

2.2.3 Private expenditure on education and training

According to data from Eurostat (UOE data collection), private expenditure on educational institutions as a percentage of GDP (see Table 2.1) increased slightly in 2004 to 0.64% (equivalent to about €60 billion at current prices). However, this proportion of GDP compares unfavourably with the corresponding figures of about 1.23% in Japan and 2.37% in the USA. While private spending on pre-primary, primary and secondary educational institutions as a share of GDP is broadly similar in the USA and the EU, private spending on tertiary educational institutions in the USA, as a percentage of GDP, is seven times the European level.

In Japan private spending on compulsory education is slightly higher than in Europe, but private spending on the tertiary level (including both education and research) is nearly three times the EU figure.¹⁰⁴ Only in Cyprus did private spending on educational institutions add up to more than 1% of GDP. In the “new” Member States the figure was on average similar to that for the “old” EU-15.

Private spending on higher education institutions is equivalent to about 0.2% of GDP in Europe. The data available probably understate spending since the coverage is incomplete. The highest figures are found in some of the new Member States (Latvia, Cyprus and Poland). While the level of direct public expenditure is quite similar between the United States and EU-27, there are big differences in private spending and in total expenditure on tertiary education.

Another point which must be taken into consideration is that private investment is likely to be underestimated in many countries because of incomplete reporting of data. Not every country can provide data on private schools, private household expenditure on educational materials and services, business expenditure on initial training in dual-type systems, etc.

Another source of data on private spending (though not always comparable with the data shown in Table 2.1) are household budget surveys. Data from the Eurostat harmonised Household Budget Survey for 1999 confirm the high level of private spending on education in Cyprus (nearly 1000 EUR PPS per household, equivalent to about 2% of GDP), but also show high spending for Greece (over €500 per household or about 1.5% of GDP).

The question of private investment in education and training is politically sensitive. Private investment can help increase the availability of resources and, by changing the incentive and reward structure (for example, by shortening overlong studies or increasing learner motivation), can contribute to more efficient spending. The high private returns on non-compulsory education could also justify private contributions, even from the perspective of social equity. Nevertheless, it is uncertain how much can be demanded of the individual in terms of a private financial contribution to education without creating a disincentive to attainment or compromising general social principles like equal access and equity.

2.2.4 Spending per student by level

The indicator *annual expenditure on public and private educational institutions per pupil/student in EUR PPS* attempts to address the European Council’s call for a substantial annual increase in per capita investment in human resources (see Table 2.3).

Total expenditure per pupil/student at primary, secondary and tertiary level measures how much each level of government, firms, non-profit organisations and private households spend on education in public and private institutions. It includes expenditure on personnel and other current and capital expenditure and covers expenditure on educational core services, ancillary services (e.g. meals, dormitories, sports, etc.) and R&D activities. It is expressed here in purchasing power standards (PPS) in order to filter out differences in price levels between countries. A euro-based PPS unit buys the same amount of goods and services in each country. In general, expenditure increases with the level of education. This has to do with, *inter alia*, student-teacher ratios, differences in salaries of teaching staff between levels, the cost of equipment and spending on research at tertiary level, etc. In 2004, in EU-27 an average of 4 400 EUR PPS was spent per primary-level pupil and 5 700 EUR PPS per secondary-level pupil, while at tertiary level average spending per student in the EU was about 8 000 EUR PPS. Countries with a relatively large disparity in spending between primary and tertiary levels include Slovakia, where spending on tertiary-level education is more than three times the level on primary education, and the Netherlands and Sweden, which show the widest absolute gap between the two levels (over € 500).

¹⁰⁴ OECD, *Education at a Glance 2004*, p. 229.

Spending per tertiary student in Japan is higher than in the EU. However, in the USA spending per tertiary student in 2004 stood at 19 100 EUR PPS, more than twice the EU level. Denmark, Germany, the Netherlands, Austria, Finland and Sweden spend more than 10 000 EUR PPS per student at tertiary level. Among the new Member States, only Cyprus spent more than 7 000 EUR PPS per student in 2003, while Latvia had the lowest spending of the current EU Member States at only around 3 000 EUR PPS per year.

Table 2.3: Spending per student in 2004

	Total expenditure on public and private educational institutions per student in 2004					
	In 1000 EUR PPS			Expenditure per student/GDP per capita compared with EU average (EU-27 = 100)		
	ISCED 1	ISCED 2-4	ISCED 5-6	ISCED 1	ISCED 2-4	ISCED 5-6
EU-27	4.4	5.7	8.0	100	100	100
Belgium	5.6	6.5	10.0	105	95	103
Bulgaria	1.4	1.4	3.6	95	78	141
Czech Republic	2.3	3.9	5.7	72	95	97
Denmark	6.8	7.5	12.8	127	109	133
Germany	4.2	6.1	10.2	84	96	113
Estonia	:	:	:	:	:	:
Ireland	4.6	6.0	8.6	75	77	78
Greece	3.2	4.4	4.7	87	95	72
Spain	4.2	5.7	7.9	97	102	101
France	4.3	7.3	9.0	89	119	103
Italy	5.9	6.5	6.5	128	109	78
Cyprus	4.7	7.6	7.5	119	151	106
Latvia	2.1	2.3	2.9	108	92	83
Lithuania	1.6	2.2	3.8	73	78	95
Luxembourg	:	:	:	:	:	:
Hungary	3.2	3.2	5.6	116	91	114
Malta	2.5	3.5	5.8	80	85	101
Netherlands	5.2	6.4	11.7	94	89	116
Austria	6.4	8.1	12.0	115	115	120
Poland	2.6	2.3	3.7	119	83	95
Portugal	3.6	4.8	4.7	113	117	81
Romania	:	:	:	:	:	:
Slovenia	6.1	4.2	6.3	172	91	97
Slovakia	1.7	2.3	5.5	72	74	125
Finland	4.7	6.3	10.5	95	99	118
Sweden	6.3	6.7	13.7	122	102	147
United Kingdom	5.0	5.9	9.6	97	90	103
Croatia	:	:	:	:	:	:
FYR Macedonia	:	:	:	:	:	:
Turkey	:	:	:	:	:	:
Iceland	7.0	7.0	7.7	127	99	77
Liechtenstein	:	:	:	:	:	:
Norway	7.2	7.1	12.6	103	79	101
Japan	5.5	6.2	10.4	118	105	124
United States	7.5	8.4	19.1	114	101	161

Data source: Eurostat (UOE data collection). Spending on the tertiary level includes R&D spending at universities.

Additional notes

See Chart 4.1.

ISCED 0, na = pre-primary education and not allocated by level.

ISCED 1: primary education.

ISCED 2-4: secondary and post-secondary non-tertiary education.

ISCED 5-6: tertiary education.

Direct public expenditure does not include transfers to private entities. If public and private spending are added up, it is preferable to use direct public expenditure (instead of total expenditure) to avoid double-counting.

Data for Poland combine ISCED levels 1 and 2 and ISCED levels 3 and 4.

While use of purchasing power standards filters out differences in price levels between countries, it takes no account of different levels of GDP per capita. Consequently, relating expenditure per pupil/student to GDP per capita gives a clearer indication of the real effort which countries are making on providing resources for education. In addition, for each level of education the EU average has been set at 100 to allow comparison between the spending level in a specific country and in EU-27.

The highest spending levels, compared with the EU average, can be found in Denmark and Sweden, while Slovenia stands out with high spending on primary education, Cyprus on secondary education and Bulgaria on tertiary education.

2.3 Further development of indicators

The indicators analysed above relate mainly to the financial input to education and do not fully cover the question of efficiency of spending, which concerns the relation between outputs and inputs.

However, methods are available to assess efficiency based on the data available using non-parametric approaches, such as data envelopment analysis (DEA) or free disposable hull (FDH). Both methods were originally developed for companies that convert inputs into outputs but can be extended to generate efficiency rankings for countries.

Both DEA and FDH imply identifying an efficiency frontier (i.e. the highest possible level of output/outcome for a given level of input) drawing on the information on the observed input-output combinations. In FDH it is possible to rank efficiency by comparing each individual performance with a production possibility frontier. Using FDH it is also possible to determine the lowest level of input needed to obtain a certain level of output/outcome. The method allows identification of “inefficient” producers, in terms of both input and output/outcome.

Non-parametric approaches have some drawbacks. The estimates of efficiency are particularly sensitive to measurement error, statistical noise and outliers, the small-sample bias may lead to underestimation of the degree of inefficiency (as the number of inputs and outputs rises) and the estimates of inefficiency could be affected by irrelevant inputs and outputs.

The model

The model shown below uses quantity measures in which the inputs are transformed (e.g. average instruction time expressed in minimum recommended number of teaching hours, ratio of teachers to pupils, etc.) and are linked to learning outcomes, such as knowledge, skills and competences.¹⁰⁵

Efficiency scores relating to individual learning outcomes

Here a one-stage approach is applied to calculate the efficiency estimates, using the EMS (efficiency measurement system) software which provides a means of correcting the efficiency scores for non-discretionary inputs.

In Table 2.4 the efficiency scores calculated for different combinations of inputs and outputs for the end of compulsory education (proxy by pupils aged 15) show how much less input a country could use to achieve the same level of output. Countries with an input efficiency score of 100% are located on the **theoretical production possibility frontier**, which means that no other country analysed reports higher output using the same or less input than them. Finland and Sweden came out as efficient, since

¹⁰⁵ Authors such as Barro and Lee (2001) or Hanushek and Luque (2002) have applied the “education production function approach” coming up with the following form of the function:

$$y = G(r, f) + e$$

where:

- y = the educational outcome;
- r = the resources allocated to education;
- f = the family factors that may affect the educational output (e.g. parents’ income or level of education);
- e = other unmeasured factors with an influence on the outcome.

The function G is assumed to be linear and is estimated by the least squares method.

they scored above average in PISA and below average on annual average teaching hours and number of teachers per 100 pupils. Taking into account the notion of “peers” (i.e. the country with efficient production for each unit) gives further information on the relative position of each country. Belgium, for example, is outperformed by its “peer” Sweden, where, on average, fewer hours per year are spent in school and there is a lower number of teachers per 100 pupils and which performed better in PISA. The main advantage of this model is that it uses quantity measures instead of financial measures as inputs, which provides a better balance in the relative importance of the inputs used by each country. However, results should be treated with care due to the relatively small number of countries for which data are available and the limited number of output indicators considered.

Table 2.4: Efficiency for compulsory education in selected European countries (quantity inputs)

Country	FDH %	Peers	DEA VRS %	Peers
Belgium	87.3	Sweden	87.2	Sweden
Bulgaria	94.7	Slovakia	87.7	Latvia
Czech Repub.	100	-	92.3	Latvia
Germany	91.8	Finland	88.5	Finland
Greece	94.3	Finland	97.3	Finland
Spain	81.4	Finland	77.7	Finland
France	91.9	Finland	85.9	Finland, Latvia
Italy	84.5	Sweden	80.9	Latvia
Latvia	100	-	100	-
Luxembourg	82.3	Sweden	81.7	Latvia
Hungary	83.4	Czech Republic	74.6	Latvia
Poland	98.8	Finland	88.9	Latvia
Romania	100	-	97.1	Latvia
Slovakia	100	-	95.0	Latvia
Finland	100	-	100	-
Sweden	100	-	100	-

Source: CRELL computations based on Eurostat (UOE) and OECD PISA data

Additional notes:

Factors considered in the model: Average number of teaching hours, Teachers per 100 pupils/PISA reading scores, Equity of scores

FDH: Full disposable hull. DEA: Data envelopment analysis. VRS: Variable returns to scale.

It is possible to estimate cost efficiency at national level (though for a smaller number of countries), complementing the estimates of technical efficiency. The financial indicators differ somewhat more between European countries than physical inputs. When comparing spending data across countries and constructing the relevant indicators of spending, particular care must be taken in measuring the inputs. The cost-efficiency estimates in this paper use the same baseline and specification as for technical efficiency, but the teacher-student variable is replaced by the cumulative spending over the theoretical duration of primary and lower secondary studies (adjusted by GDP per capita) and by the ratio of private to public expenditure. This approach uses estimates of cumulative education spending per full-time equivalent student based on the OECD’s *Education at a Glance* data (which are expressed in equivalent US\$ converted using the PPPs for GDP household final consumption). The results of the calculations based on financial inputs (see Table 2.5) show the potential gains of removing spending inefficiencies. The calculations show potential savings of between 15% and 20% in some countries. In addition to the efficient performers identified in Table 2.4, Poland comes out as an efficient performer too because it uses comparatively fewer or cheaper resources per unit of output.

Table 2.5: Efficiency for compulsory education in some European countries (financial inputs)

Country	FDH, %	Peers	DEA VRS %	Peers
Czech Republic	100		98.9	Netherlands
Denmark	81.4		78.4	Finland
Germany	85.1	Finland	82.6	Netherlands, Slovakia
Ireland	100	Netherlands	100	-
France	85.0		83.3	Netherlands
Italy	92.9	Netherlands	88.4	Finland
Hungary	95.2	Finland	90.9	Ireland, Netherlands
Netherlands	100	Ireland	100	-
Austria	98.1	-	92.7	Finland
Poland	100	Finland	100	-
Portugal	86.3	Finland	78.8	Ireland
Slovakia	100	-	100	-
Finland	100	-	100	-
Sweden	100	-	100	-

Source: CRELL computations based on Eurostat (UOE) and OECD PISA data

Additional notes

Factors considered in the model: Cumulative expenditure to GDP, Private to public expenditure/PISA scores, Equity scores.

FDH: Full disposable hull. DEA: Data envelopment analysis. VRS: Variable returns to scale.

Research shows that there is no clear, systematic relationship between student achievement and the amount of resources spent on schools while the results for teacher education and experience and for endowment with instructional material are more mixed (see Hanushek 2003 for an overview; Wößmann 2005¹⁰⁶ and Wößmann 2003 for cross-country evidence; and Gundlach et al. 2001 for evidence from several European countries over time). Therefore, no substantial gain in measured test scores is likely with the increase in spending unless changes are also made to the institutional structures of the national school systems. In a cross-country analysis Wößmann (2003, 2005) provided evidence of strong complementarity between efficiency and equity policies in that public funding of schools combines very well with private operation. Public funding is likely to improve efficiency, presumably because it allows additional choice and, thus, competition for families who otherwise could not choose because they are credit constrained. Public money going to privately operated schools is the combination most conducive to efficiency. Education systems where the state finances the system and the private sector runs the schools seem to outperform other systems. Along the same lines, Schütz et al.¹⁰⁷ (2005) found that public funding improves equity and that combining private operation with public funding may, hence, be conducive to both efficiency and equity.

¹⁰⁶ Wößmann, L. Educational Production in Europe. *Economic Policy* 20 (43): pages 445-504

¹⁰⁷ Schütz, G., Ursprung, H.W., Wößmann, L (2005), *Education Policy and Equality of Opportunity*. CESifo Working Paper 1518. Munich

3. MAKING LIFELONG LEARNING A REALITY

Main messages

Upper secondary attainment

- The European benchmark that by 2010 at least 85% of 22-year-olds in the European Union should complete at least upper secondary education still poses a significant challenge for the majority of Member States. The present average in the Union is 77.8% (2006) and has improved by only about 1.2 percentage points since 2000.
- Seven Member States are at present achieving completion rates above the benchmark of 85%, among which three (the Czech Republic, Poland and Slovakia) are even recording rates of over 90%.

Participation of adults in education

- In 2006 an average of 9.6% of Europeans aged 25-64 participated in education and training activities during a “four-week period” (the present definition of participation in lifelong learning), which is even slightly less than in 2005. On average women participated in education more than men.
- The best performing countries in 2006 were Denmark, the UK and Finland, followed by the Netherlands, Slovenia and Austria (Sweden performed best in 2005, but no data were available for that country for 2006 at the time of writing). All the other EU countries still have rates below the European average of 12.5%.
- Of the group of adults who participated in education, two out of ten were enrolled in formal education and seven out of ten attended non-formal courses. Adults with high education participate more in lifelong learning. Participation also decreases as age increases.

ICT skills of adults

- Within the EU, nearly 40% of the population aged 16 to 74 have no computer skills and more than 30% have never used a computer. However, big differences exist between Member States (one in ten in Denmark, Sweden and Norway (about 8%) have never used a computer but almost two out of three (65%) in Greece).

Introduction

Lifelong learning is crucial, not only for competitiveness, employability and economic prosperity, but also for social inclusion, active citizenship and the personal fulfilment of people living and working in the knowledge-based economy.¹⁰⁸

Participation in education and training takes place in a variety of environments and through a variety of means, including ICT. Completion of at least upper secondary education is considered indispensable for a professional career and for full participation in lifelong learning.

Taking the foregoing into account, back in 2003 the Council adopted the benchmark that at least 85% of young people should complete upper secondary education plus another that 12.5% of adults aged 25-64 should participate in lifelong learning, both of which were to be achieved by 2010.¹⁰⁹

To highlight the essential contribution made by adult learning to employability, mobility and personal development, in 2006 the European Commission adopted a Communication entitled “It is never too late to learn.”¹¹⁰ The overall message is that Member States can no longer afford to be without an efficient adult learning system, integrated into their lifelong learning strategy, providing participants with greater access to the labour market, better social integration and preparing them for active aging.

The Communication on “A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training” proposed the following core indicators for monitoring progress in this area:

- *Upper secondary completion rates of young people;*
- *Participation of adults in lifelong learning;*
- *Adult skills.*¹¹¹

3.1 Completion of upper secondary education – EU benchmark

The European benchmark that by 2010 at least 85% of 22-year-olds in the European Union should have completed at least upper secondary education still poses a significant challenge for the EU.

European benchmark
By 2010 at least 85% of 22-year-olds in the European Union should have completed upper secondary education.¹¹²

¹⁰⁸ Presidency Conclusions, Lisbon, 23-24 March 2000.

¹⁰⁹ Council conclusions of 5-6 May 2003 on Reference Levels of European Average Performance in Education and Training (Benchmarks) (2003/C 134/02).
http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/c_134/c_13420030607en00030004.pdf

¹¹⁰ Communication from the Commission “It is never too late to learn”, COM(2006) 614.

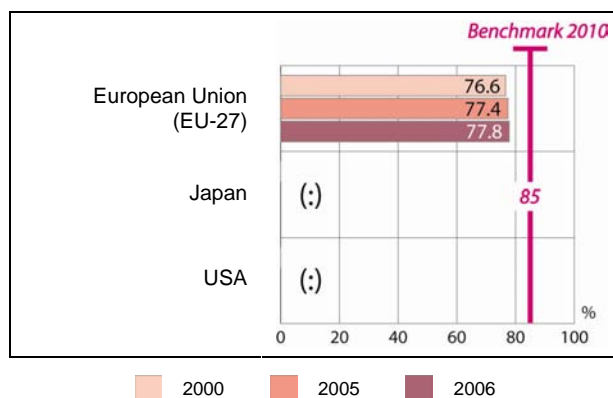
¹¹¹ Communication from the Commission “A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training”, COM(2007) 61.

¹¹² Indicator: *Percentage of those aged 22 who have successfully completed at least upper secondary education (ISCED level 3)*. For statistical reasons (the sample size in the Labour Force Survey for a one-year cohort is too small to produce reliable results) the following proxy indicator is used in the analysis: *Percentage of those aged 20-24 who have successfully completed at least upper secondary education (ISCED level 3)*.

The present (2006) EU average for the population aged 20-24 is 77.8%. This target has also been part of the European Employment Strategy since 2003 and several Member States have set national targets in this area.^{113 114}

Chart 3.1: Completion of upper secondary education by young people aged 20-24

Indicator: Percentage of 20- to 24-year-olds who have successfully completed at least upper secondary education (ISCED level 3)

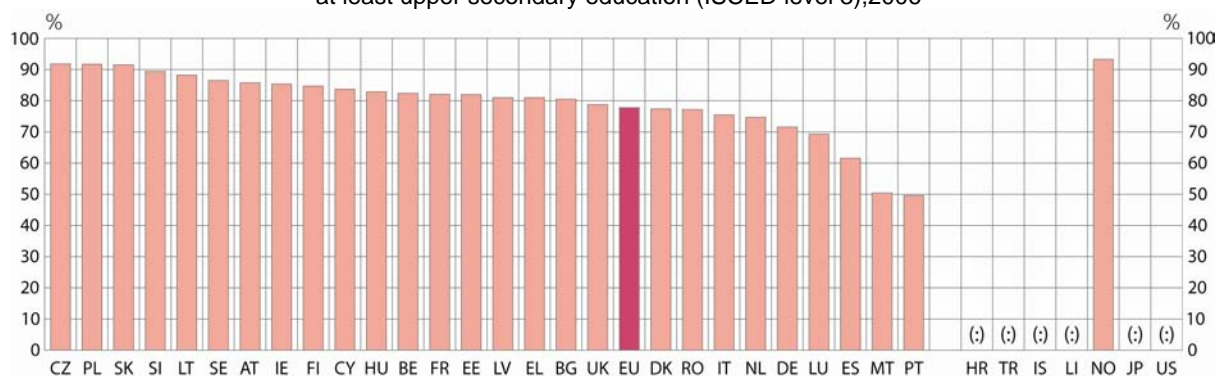


Data source: Eurostat (EU-Labour Force Survey)

Between 2000 and 2006 the upper secondary completion rate in the EU improved only slightly (it increased by only 1.2 percentage points). The benchmark of 85% of 22-year-olds completing at least upper secondary education will be difficult to achieve given the slow progress since 2000.

Chart 3.2: Completion of upper secondary education by young people aged 20-24, 2006

Indicator: Percentage of 20- to 24-year-olds who have successfully completed at least upper secondary education (ISCED level 3), 2006



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
2000	76.6	81.7	75.2	91.2	72.0	74.7	79.0	82.6	79.2	66.0	81.6	69.4	79.0	76.5	78.9	77.5	83.5
2005	77.4	81.8	76.5	91.2	77.1	71.5	82.6	85.8	84.1	61.8	82.6	73.6	80.4	79.9	87.8	71.1	83.4
2006	77.8	82.4	80.5	91.8	77.4	71.6	82.0	85.4	81.0	61.6	82.1	75.5	83.7	81.0	88.2	69.3	82.9

	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	TR	IS	LI	NO	JP	US
2000	40.9	71.9	85.1	88.8	43.2	76.1	88.0	94.8	87.7	85.2	76.6	:	38.6	46.1	:	95.0	:	:
2005	53.7	75.6	85.9	91.1	49.0	76.0	90.5	91.8	83.4	87.5	78.2	93.8	44.0	50.8	:	96.2	:	:
2006	50.4	74.7	85.8	91.7	49.6	77.2	89.4	91.5	84.7	86.5	78.8	:	:	:	:	93.3	:	:

Data source: Eurostat (EU-Labour Force Survey)

¹¹³ See Joint Employment Report 2005/2006, Annex, Table 3. National targets: MT, PT: 65%; ES: 80%; BE, EE, NL: 85%; UK: 90% by 2015; DK: 95% by 2015.

¹¹⁴ Upper secondary attainment includes both certificates that give access to further tertiary studies and formal qualifications that can be used only on the labour market. The latter are relatively common in France, Poland, Slovenia and the UK.

Additional notes:

From 27 October 2006 on this indicator is based on the annual averages of the quarterly data instead of just a single reference quarter (spring). Due to changes in the survey, the data are not comparable with previous years in the cases of SE and BG (from 2001), LV and LT (from 2002), DK and HU (from 2003), AT (from second quarter of 2003; from 2004 on, continuous survey covering every week of the reference quarter) and FI (from first quarter of 2003).

IE, LU, MT, FI, HR, IS (2005), IE, IS (2004): Provisional data.

CY: Pupils usually living in the country but studying abroad are not yet covered by the survey.

EU: Aggregate results based on provisional UK data (all GSCE levels excluded until new definition of ISCED level 3C implemented in 2005).

In cases where data for a given country are missing, the EU aggregates are calculated using the figures for the closest available year.

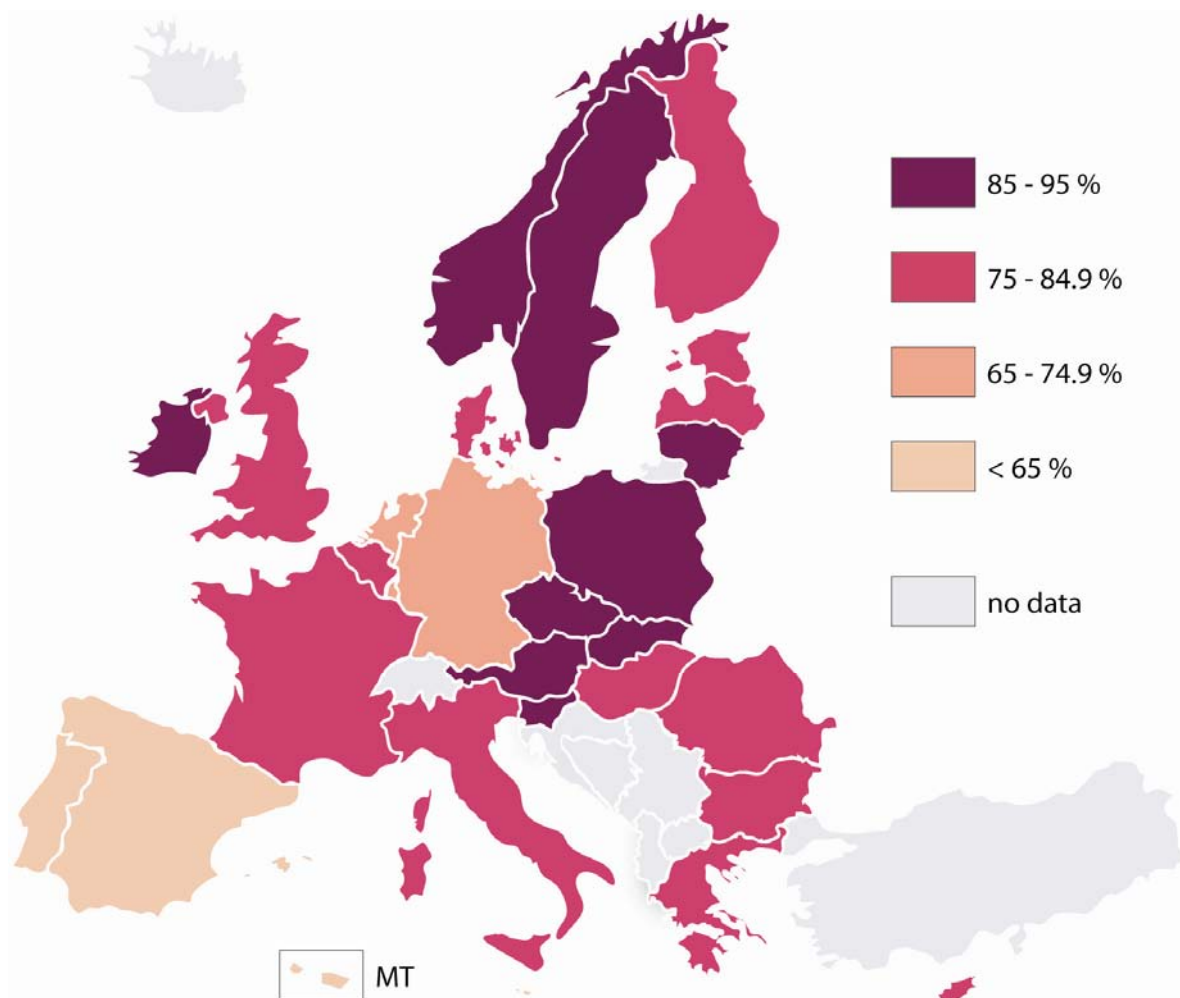
No comparable data available for US and JP.

Since the 5 December 2005 release, Eurostat has been applying a refined definition of the "upper secondary" educational attainment level in order to improve the comparability of results in the EU. For the 1998 data onwards ISCED level 3c programmes shorter than two years no longer fall under the "upper secondary" level but come under "lower secondary". This change implies revision of the results in DK (from 2001), ES, CY and IS. However, the definition cannot yet be implemented in EL, IE and AT, where all ISCED 3c levels are still included.

As shown on the map below (Chart 3.3), seven Member States are at present achieving completion rates above 85%, three of which (the Czech Republic, Poland and Slovakia) have rates of 90% and over.

Portugal, Malta (about 50%) and Spain (about 60%) have the lowest completion rates in the EU, but Malta and Portugal have made substantial progress in recent years in improving their youth educational attainment level. In Malta the completion rate increased by nearly 10 percentage points between 2000 and 2006.

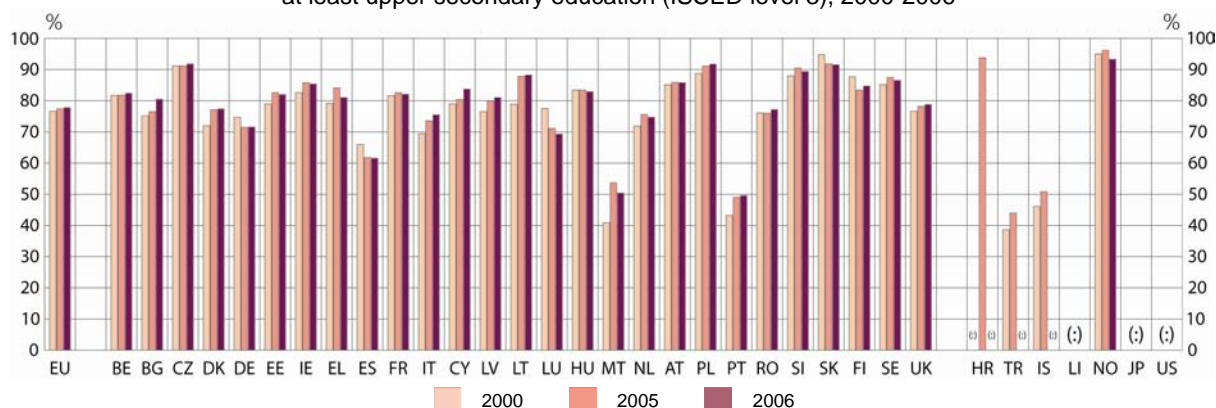
Chart 3.3: Percentage of the population (20-24) having completed at least upper secondary education by group of countries, 2006



Most of the other Member States, however, have made little progress since 2000, and in some countries (Luxembourg and Spain) the youth upper secondary attainment levels have even decreased.

Chart 3.4: Completion of upper secondary education by young people aged 20-24, 2000-2006

Indicator: Percentage of 20- to 24-year-olds who have successfully completed at least upper secondary education (ISCED level 3), 2000-2006



Data source : Eurostat

3.1.1 Completion of upper secondary education by gender

Women have closed the gender gap in recent years and are now recording higher participation rates and attainment levels in education than men. Table 3.1 shows that women now have, on average, a lead of about 5 percentage points in completion of upper secondary education among young people aged 20-24 in EU-27. Women have more than a 10 percentage point lead over men in Estonia, Greece, Spain, Cyprus, Latvia, Luxembourg and Portugal. There is a better balance between males and females in Bulgaria, the Czech Republic, Austria, Hungary, Slovakia, Romania and Sweden.

Further efforts need to be made in several countries to address the issue and improve attainment levels by boys in upper secondary education.

Table 3.1: Completion of upper secondary education by young people aged 20-24, by gender, 2006

	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU
Males	74.8	79.1	80.0	91.1	73.4	69.8	74.1	81.8	75.5	54.6	80.0	71.7	76.1	75.9	85.3	64.0
Females	80.7	85.6	81.1	92.4	81.5	73.5	89.8	89.1	86.6	69.0	84.3	79.4	90.7	86.2	91.2	74.5

	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	TR	IS	LI	NO
Males	81.2	48.1	69.9	84.9	89.6	40.8	76.6	87.7	91.2	82.3	84.5	77.3	:	:	:	:	91.2
Females	84.7	52.8	79.6	86.7	93.8	58.6	77.8	91.4	91.7	87.0	88.6	80.3	:	:	:	:	95.4

Data source: Eurostat (EU-Labour Force Survey)

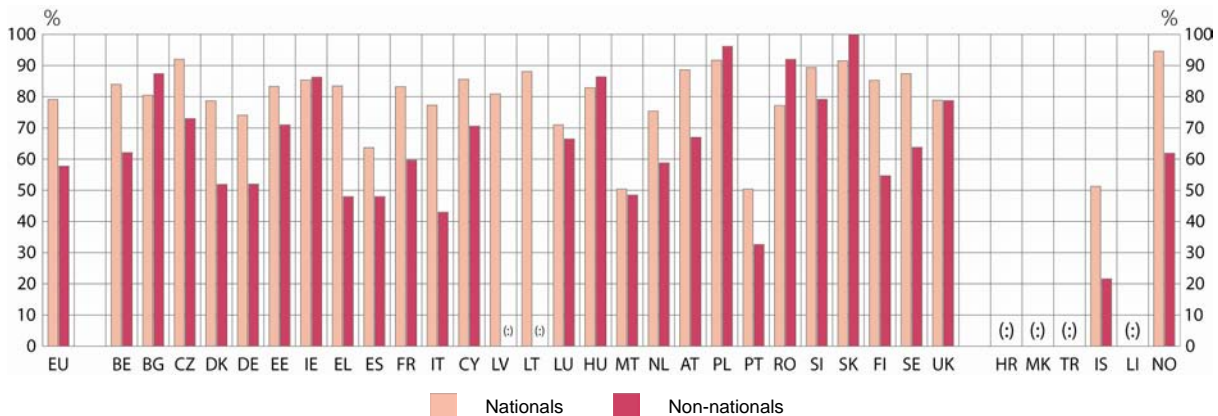
Additional notes:

BG, EL, IT, CY, MT, RO, FI, NO : Provisional data.
See additional notes on Chart 3.2.

3.1.2 Completion of upper secondary education by persons with a migrant background

Migrants tend to have lower completion rates for upper secondary education. In 2006 the gap between the upper secondary attainment levels of nationals and non-nationals in the EU was 21 percentage points (compared with 19 percentage points in 2005), with gaps larger than 30 percentage points in Greece, Finland and Norway and larger than 20 percentage points in France, Austria and Sweden. In some countries (for example, Poland, Hungary and Ireland), non-nationals seem to achieve higher attainment levels than nationals, but the quality of data in small countries or in countries with a low proportion of non-nationals is affected by the small sample size.

Chart 3.5: Completion of upper secondary education by young people aged 20-24 by nationals and non-nationals, 2006



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
Nationals	79.1	84.0	80.5	92.0	78.7	74.1	83.3	85.4	83.5	63.7	83.2	77.3	85.6	80.9	88.1	71.0	82.9
Non-nat.	57.7	62.1	87.4	73.0	51.9	52.0	71.0	86.3	48.0	48.0	59.7	43.0	70.6	:	:	66.5	86.4

	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO
Nationals	50.4	75.4	88.6	91.7	50.4	77.2	89.4	91.5	85.3	87.4	78.9	:	:	:	51.3	:	94.6
Non-nat.	48.5	58.8	67.0	96.2	32.6	92.0	79.2	100.0	54.7	63.8	78.8	:	:	:	21.6	:	61.9

Data source: Eurostat (EU-Labour Force Survey, annual data)

Additional notes:

Data in italics: Quality affected by small sample size.

CY: Pupils usually living in the country but studying abroad are not yet covered by the survey.

EU: Aggregate results based on provisional UK data (all GCSE levels excluded until new definition of ISCED level 3C implemented in 2005).

3.2 Access for older learners to tertiary education

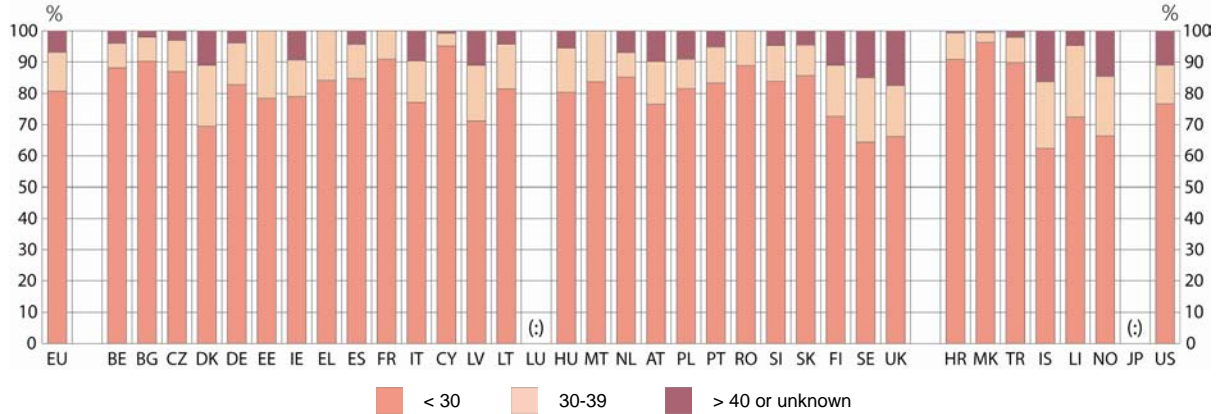
The European concept of lifelong learning is based on the necessity to learn and to update knowledge and competences throughout the whole life-span, regardless of age. Access for the middle-aged and older population to all kinds of lifelong learning is even more important in view of the ageing of the European population.

As regards access for mature learners (over 30 years of age) to tertiary education, in 2005 this group accounted for nearly 20% of all students enrolled in tertiary education in the EU compared with 23.3% in the USA. The situation in individual European countries varies widely. Very high proportions of students aged 30 years and more (more than 30%), much higher than the EU and US averages, are observed in Sweden, the UK and Denmark. By contrast, students aged over 30 are much less represented in France, Bulgaria, Belgium and Romania, all with proportions of about 10%, and, especially, in Cyprus (4.9%).

As can be seen from the table below, nearly 7% of the total student population in tertiary education in the EU are over 40 years old. However, there are more than twice as many students over 40 in Sweden, the UK, Iceland and Norway, while the share of students over 40 is also above the EU average in Denmark, Ireland, Italy, Latvia, Austria, Poland and Finland.

Chart 3.6: Age distribution of tertiary students

(Percentage of tertiary students (ISCED levels 5-6) in the under-30, 30-39 and over-40 age groups. 2005)



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU	MT
<30	80.9	88.3	90.3	87.1	69.5	82.8	78.5	79.1	84.3	84.8	90.9	77.2	95.1	71.1	81.6	:	80.4	83.8
30-39	12.3	7.7	7.8	9.8	19.6	13.2	21.5	11.5	15.7	10.7	9.1	13.1	4.1	17.9	14.2	:	14.1	16.2
>40 or unkn.	6.9	4.0	2.0	3.1	10.9	3.9	0.0	9.4	0.0	4.4	0.0	9.7	0.8	10.9	4.3	:	5.5	0.0

	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO	JP	US
<30	85.2	76.6	81.6	83.4	89.0	83.9	85.9	72.7	64.4	66.2	90.8	96.3	89.8	62.4	72.5	66.3	:	76.6
30-39	7.7	13.5	9.3	11.4	11.0	11.4	9.6	16.4	20.7	16.4	8.5	3.2	8.1	21.4	22.8	19.1	:	12.5
>40 or unkn.	7.0	9.9	9.1	5.2	0.0	4.7	4.6	10.9	14.9	17.4	0.7	0.5	2.1	16.2	4.7	14.5	:	10.8

Data source: Eurostat (UOE Data collection)

Additional notes:

* Total number of students irrespective of age, as percentage of 20- to 24-year-olds.

BE: Data exclude independent private institutions, but only a very limited number of students attend such institutions.

DE, SI: Data exclude ISCED level 6.

LU: Most tertiary students study abroad and are not included.

CY: Most tertiary students study abroad and are not included in the enrolment data, but are included in the corresponding population data. The participation rates are therefore underestimated.

LU, JP: Data by age not available

IT, PL: Data by age for ISCED level 6 not available. All ISCED level 6 included in over-24-year-olds.

3.3 Participation by adults in lifelong learning

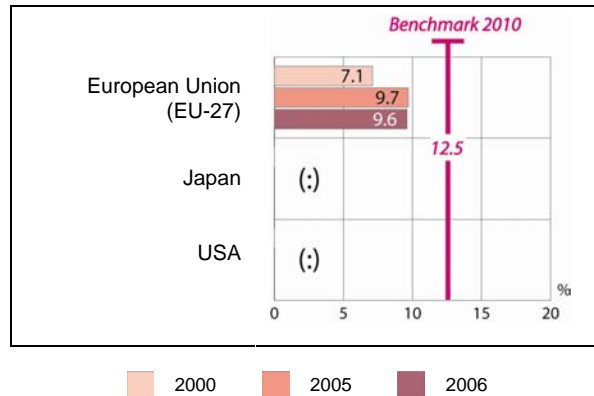
Europe's knowledge-based economy needs a highly trained and flexible labour force, updating its knowledge and skills when necessary. However, participation by adults in lifelong learning still remains an area where much more effort is needed from various stakeholders.

3.3.1 Participation by adults in lifelong learning – EU benchmark

Because of its crucial importance for achieving the Lisbon goals, in 2003 lifelong learning was identified by the Education Council as one area where progress in the European Union should be monitored against a European reference level (benchmark). Moreover, the same target of increasing participation by adults in lifelong learning to 12.5% of the 25-64 age group by 2010 has also been part of the European Employment Strategy since 2003.

Chart 3.7: Lifelong learning – benchmark for 2010

(Percentage of population aged 25-64 participating in education and training in the four weeks prior to the survey, 2000, 2005 and 2006)



Source: DG Education and Culture. Data source: Eurostat (EU-Labour Force Survey).

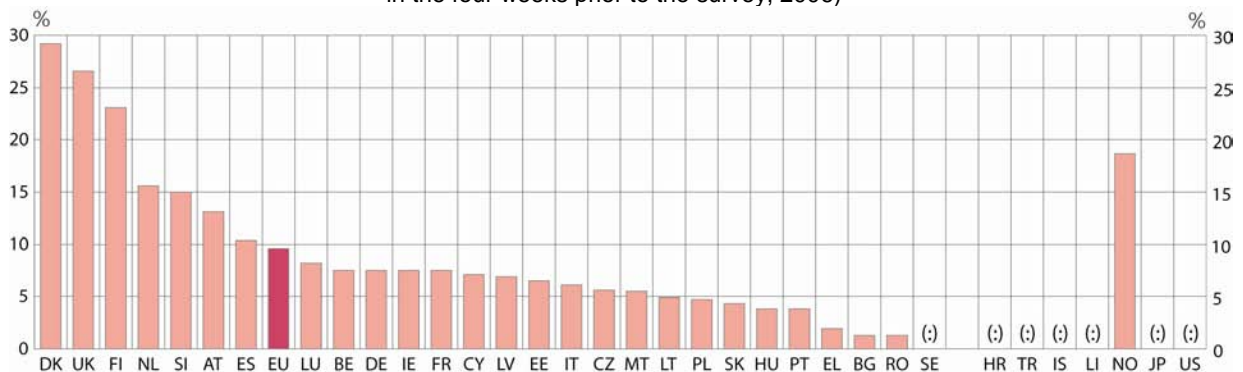
In 2006 an average of 9.6% of Europeans aged 25-64 participated in education and training activities over a period of four weeks (see Chart 3.6) which is even slightly less than in 2005 (9.7%).

The best performing countries are Denmark, the UK and Finland, followed closely by the Netherlands, Slovenia and Austria. All the other EU countries still have rates below the European average of 12.5%. Italy, Greece, Lithuania, Poland, Portugal, Slovakia and Hungary had participation rates of only 5% or lower. Among the new Member States, participation rates in Bulgaria and Romania were at the extremely low level of less than 2%.

In most countries women participated more in training and education than men.

Chart 3.8: Participation by adults in lifelong learning

(Percentage of population aged 25-64 participating in education and training in the four weeks prior to the survey, 2006)



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU	
2006	9.6	7.5	1.3	5.6	29.2	7.5	6.5	7.5	1.9	10.4	7.5	6.1	7.1	6.9	4.9	8.2	3.8	
	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	TR	IS	LI	NO	JP	US
2006	5.5	15.6	13.1	4.7	3.8	1.3	15.0	4.3	23.1	:	26.6	:	:	:	:	18.7	:	:

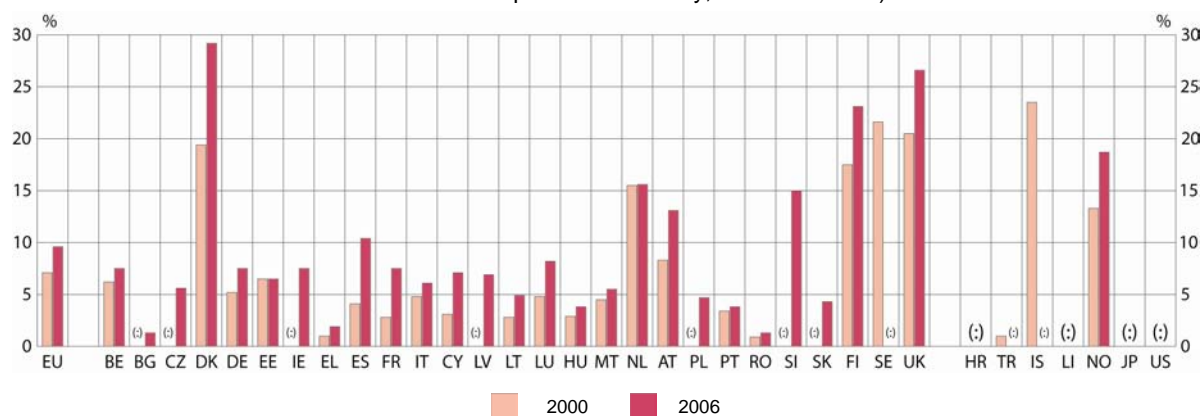
Data source: Eurostat (EU-Labour Force Survey) From 2006, this indicator is based on the annual averages of the quarterly data.

Additional notes:

- Due to introduction of harmonised concepts and definitions in the survey, there are breaks in the time series for: CZ, DK, EL, FR, IE, CY, LU, HU, AT, SI, SK, FI, SE, IS, NO (2003), BE, LT, MT, PI, PT, RO (2004) and ES (2005).
- BE, LT, LT, PT, UK: Provisional data.

When examining progress since 2000 on participation by adults in lifelong learning it must be borne in mind that there were breaks in the time series in many EU countries, especially between 2002 and 2003, but also in 2004, 2005 and 2006, which generally resulted in higher figures than in the years before (notably in France, Sweden and Spain).¹¹⁵ However, the quality of data on participation in lifelong learning is higher since Eurostat introduced annual data in 2007 instead of spring quarter data, as was the case before.

Chart 3.9: Participation by adults in lifelong learning
(Percentage of population aged 25-64 participating in education and training in the four weeks prior to the survey, 2000 and 2006)



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
2000	7.1	6.2	:	:	19.4	5.2	6.5	:	1.0	4.1	2.8	4.8	3.1	:	2.8	4.8	2.9
<i>Females</i>	7.5	5.7	:	:	21.8	4.8	8.2	:	1.0	4.5	3.1	4.8	3.2	:	3.6	3.9	3.3
<i>Males</i>	6.7	6.7	:	:	17.1	5.6	4.5	:	1.0	3.7	2.6	4.8	3.1	:	1.9	5.7	2.4
2006	9.6	7.5	1.3	5.6	29.2	7.5	6.5	7.5	1.9	10.4	7.5	6.1	7.1	6.9	4.9	8.2	3.8
<i>Females</i>	10.4	1.3	1.3	5.9	33.8	7.3	8.6	8.9	1.8	11.5	7.8	6.5	7.8	9.3	6.6	8.7	4.4
<i>Males</i>	8.8	7.4	1.3	5.4	24.6	7.8	4.2	6.1	2.0	9.3	7.2	5.7	6.5	4.1	2.9	7.6	3.1

	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	TR	IS	LI	NO	JP	US
2000	4.5	15.5	8.3	:	3.4	0.9	:	:	17.5	21.6	20.5	:	1	23.5	:	13.3	:	:
<i>Females</i>	3.5	14.7	7.4	:	3.5	0.8	:	:	19.6	24.1	23.6	:	1.2	26.7	:	13.8	:	:
<i>Males</i>	5.6	16.3	9.2	:	3.2	0.9	:	:	15.5	19.2	17.5	:	0.8	20.4	:	12.8	:	:
2006	5.5	15.6	13.1	4.7	3.8	1.3	15.0	4.3	23.1	:	26.6	:	:	:	:	18.7	:	:
<i>Females</i>	5.6	15.9	14.0	5.1	4.0	1.3	16.3	4.6	27.0	:	31.2	:	:	:	:	20.2	:	:
<i>Males</i>	5.5	15.3	12.2	4.3	3.7	1.3	13.8	4.0	19.3	:	22.0	:	:	:	:	17.2	:	:

Data source: Eurostat (EU-Labour Force Survey)

Additional notes:

Due to introduction of harmonised concepts and definitions in the survey, the information on education and training is not comparable with previous years:

- from 2003 in the cases of CZ, DK, EL, IE, CY, HU, NL, AT, SI, FI, SE and NO, from 2004 in the cases of BE, LT, IT, IS, MT, PL, PT, UK and RO and from 2005 in the case of ES due to wider coverage of the activities taught;
- from 2003 in SK due to restrictions for self-learning;
- 2000 in PT due to changes in the reference period (formerly one week preceding the survey);
- DE: 2004 data used for 2005.

Due to changes in the survey, data are not comparable with previous years in the cases of FI (from 2000), SE and BG (from 2001), IE, LV and LT (from 2002), HU (from 2003), LU (2003: annual average), DK, EL, FI and SE (first quarter from 2003), AT (second quarter from 2003; from 2004 continuous survey covering every week of the reference quarter).

The EU aggregates are provided from 1999, using the figures for the closest available year in cases where data for a given country are missing.

To achieve greater progress, eight Member States (Belgium, Estonia, Finland, Latvia, Malta, the Netherlands, Portugal and Spain) have set quantified national targets on participation in lifelong learning in their 2005 Lisbon National Reform Programmes.

¹¹⁵ Breaks in time series were due to changes in the definitions and operating methods for the surveys.

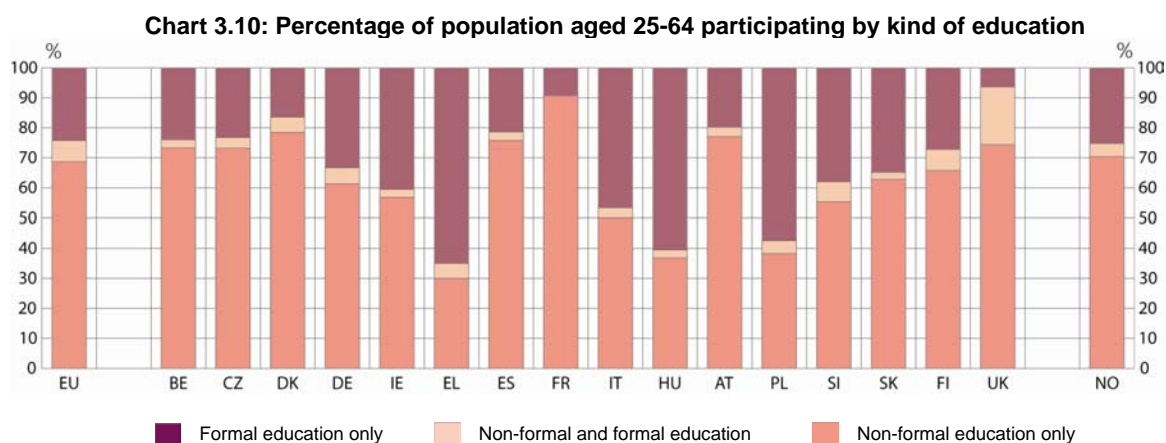
3.3.2 Participation by adults by kind of education (formal or non-formal)

Recent data from the LFS make it possible to analyse participation by the European population aged 25-64 by kind of education.

As shown in Chart 3.10, in 2006 some 2.3% of Europeans aged 25-64 participated in formal education, while 6.4% participated in non-formal education. Under 1% of persons aged 25-64 participated in both formal and non-formal education.

The highest rates, from 4.8% to 6.5%, for enrolment in **formal education** were in Denmark, the Netherlands, Slovenia and Finland, followed by about 3% in Estonia, Ireland, Latvia and Lithuania. On the other hand, the lowest rates for participation by this age group in formal education (about 1% and lower) were observed in the Czech Republic, Bulgaria, France, Cyprus, Luxembourg, Malta and Romania.

Participation in **non-formal education** is more typical of this age group. The highest rates (from about 10% to slightly over 20%) for participation by 25- to 64-year-olds in this kind of education were reported in Denmark, Austria, Finland and the UK. Under 1% of adults aged 25-64 were enrolled in non-formal courses in Bulgaria, Greece and Romania.



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
Formal education only	2.3	1.8	1.0	1.3	4.8	2.5	3.2	3.0	1.3	2.2	0.7	2.8	1.2	3.0	3.0	1.1	2.3
Non-formal and formal education	0.7	0.2	:	0.2	1.5	0.4	:	0.2	0.1	0.3	0.0*	0.2	:	:	:	:	0.1*
Non-formal education only	6.4	5.5	0.3*	4.1	22.9	4.6	3.0	4.2	0.6	7.8	6.8	3	5.8	3.5	1.7	7.1	1.4

	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO
Formal education only	1.1*	6.5	2.6	2.7	2.5	1.2	5.7	1.5	6.3	:	1.6	:	:	:	:	:	4.7
Non-formal and formal education	:	:	0.4	0.2	:	:	1	0.1*	1.6	:	4.8	:	:	:	:	:	0.8
Non-formal education only	4.1	9.0	10.1	1.8	1.2	0.1	8.3	2.7	15.2	:	18.6	:	:	:	:	:	13.1

Data source: Eurostat (EU-Labour Force Survey)

Additional notes:

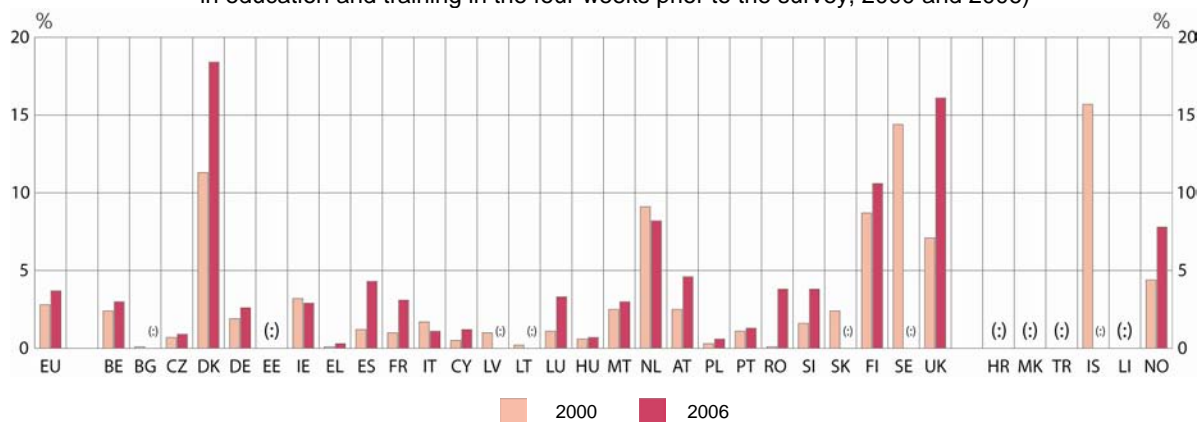
* Data lack reliability due to the small sample size.

3.3.3 Participation in lifelong learning by adults with low educational attainment

Participation in education and training tends to be proportional to the level of prior education (see Chart 3.10). In 2006 only 3.7% of the population aged 25-64 with less than upper secondary education participated in education and training in the four weeks prior to the survey, which is less than one third of the average over all levels of education and less than one seventh of the figure for those with high educational attainment. Typically, people with higher levels of education are more easily reached by, and more receptive to, measures to encourage participation in education and training. The fact that

many initiatives do not reach people with a low initial level of education is a key challenge for policy-makers.

Chart 3.11: Participation in lifelong learning by adults with less than upper secondary education
(Percentage of population aged 25-64 with less than upper secondary education (ISCED levels 0-2) participating in education and training in the four weeks prior to the survey, 2000 and 2006)



	EU27	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
2000	2.8	2.4	0.1	0.7	11.3	1.9	:	3.2	0.1	1.2	1.0	1.7	0.5	1.0	0.2	1.1	0.6
2006	3.7	3.0	:	0.9	18.4	2.6	:	2.9	0.3	4.3	3.1	1.1	1.2	:	:	3.3	0.7

	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO
2000	2.5	9.1	2.5	0.3	1.1	0.1	1.6	2.4	8.7	14.4	7.1	:	:	:	15.7	:	4.4
2006	3.0	8.2	4.6	(0.6)	1.3	(3.8)	(3.8)	:	10.6	:	16.1	:	:	:	:	:	7.8

Data source: Eurostat (EU-Labour Force Survey)

Additional notes:

Due to introduction of harmonised concepts and definitions in the survey, the information on education and training is not comparable with previous years:

- from 2003 in the cases of CZ, DK, EL, IE, CY, HU, NL, AT, SI, FI, SE and NO, from 2004 in the cases of BE, LT, IT, IS, MT, PL, PT, UK and RO and from 2005 in the case of ES due to wider coverage of the activities taught;
- from 2003 in SK due to restrictions for self-learning;
- 2000 in PT due to changes in the reference period (formerly one week preceding the survey);
- DE: 2004 data used for 2005.

Due to changes in the survey, data are not comparable with previous years in the cases of FI (from 2000), SE and BG (from 2001), IE, LV and LT (from 2002), HU (from 2003), LU (2003: annual average), DK, EL, FI and SE (first quarter from 2003), AT (second quarter from 2003; from 2004 continuous survey covering every week of the reference quarter).

The EU aggregates are provided from 1999, using the figures for the closest available year in cases where data for a given country are missing.

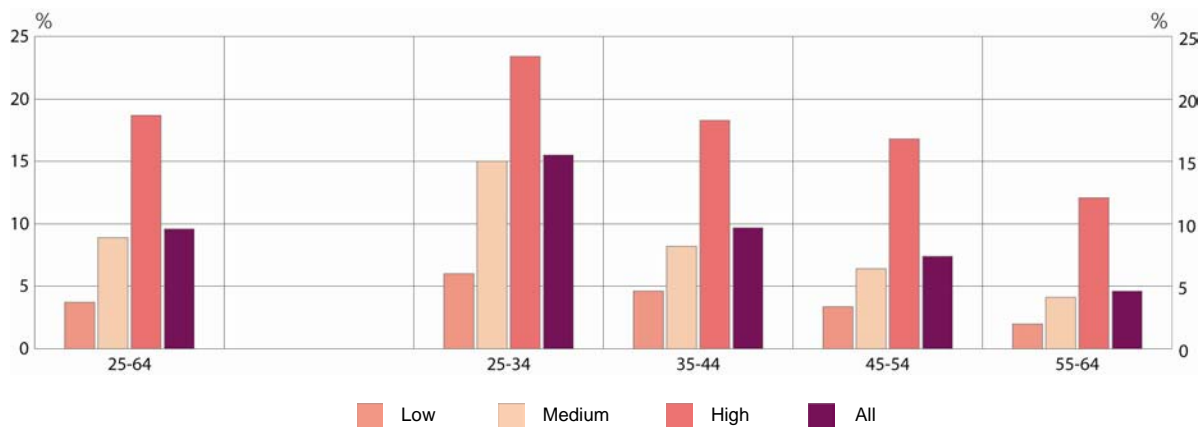
Countries with a high general participation rate in lifelong learning (Denmark, Finland and the UK) also record relatively high participation rates by people with low educational attainment. The results for these countries ranged from 10.6% in Finland to 18.4% in Denmark in 2006. Of the remaining countries, only the Netherlands, Austria and Spain, along with Norway, had a participation rate exceeding 4% in 2006.

Countries with a high general participation rate in lifelong learning have relatively narrow gaps in participation between those with high and with low prior educational attainment levels, while countries with low overall participation rates have wider gaps.

3.3.4 Participation in lifelong learning by the older population

As shown in Chart 3.12, in 2006 most 25- to 34-year-olds, regardless of their level of education, participated in lifelong learning. After 34 years, as age increases participation in lifelong learning decreases. Persons aged 55-64 years participate four times less than persons aged 25-34 years. Although the decrease is smaller, older persons with tertiary education also participate in lifelong learning half as frequently as younger age cohorts with the same level of education.

Chart 3.12: Participation in lifelong learning by age and educational attainment (EU-25), 2006



Data source: Eurostat (EU-Labour Force Survey)

3.4 Adult skills

The awareness of the strong link between education and training on the one hand and economic development and individual and social welfare on the other has created growing concern among governments and the general public about the adequacy and quality of education and training and the need to equip every citizen, including adults, with the skills needed to live and work.

As stated in the Kok report, “if Europe is to compete in the global knowledge society, it must also invest more in its most precious asset – its people”.¹¹⁶ Skills, knowledge and competences are increasingly seen as crucial prerequisites for the productivity and competitiveness of the European economy. Europeans have to be equipped with the tools they need to adapt to an evolving labour market and this applies to all positions, high- and low-skilled, in both manufacturing and services.

However, at present only limited data are available on the level and distribution of competences amongst adults at European level. The next section therefore concentrates on analysing the digital competence of adults. This was identified as one of the key competences necessary for personal fulfilment, active citizenship, social cohesion and employability in a knowledge society in the Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning.¹¹⁷ The key competences defined in the above-mentioned Recommendation have to be achieved by the end of compulsory schooling and then further developed and updated in adult life.

Digital literacy is still a problem for a large part of the European population

Digital competence is defined in the Recommendation¹¹⁸ as a sound understanding and knowledge of the nature, role and opportunities of ICT in everyday contexts: in personal and social life as well as and at work.¹¹⁹

¹¹⁶ Facing the Challenge: The Lisbon Strategy for Growth and Employment, November 2004, p. 33.

¹¹⁷ Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning (2006/962/EC).

¹¹⁸ Ibid.

¹¹⁹ Ibid. This includes main computer applications such as word processing, spreadsheets, databases, information storage and management and an understanding of the opportunities and potential risks of the Internet and communication via electronic media (e-mail and network tools) for work, leisure, information sharing and collaborative networking, learning and research. Individuals should also understand how ICT can support creativity and innovation and be aware of issues concerning the validity and reliability of the information available and the legal and ethical principles involved in interactive use of ICT.

Skills needed include the ability to search, collect and process information and to use it in a critical and systematic way, assessing its relevance and distinguishing the real from the virtual, while recognising the links. Individuals should have skills to use tools to produce, present and understand complex information and the ability to access, search and use Internet-based services. Individuals should also be able to use ICT to support critical thinking, creativity and innovation.

It must be stressed that use of ICT requires a critical and reflective attitude towards the available information and responsible use of interactive media. An interest in engaging in communities and networks for cultural, social and/or professional purposes would also support this competence.

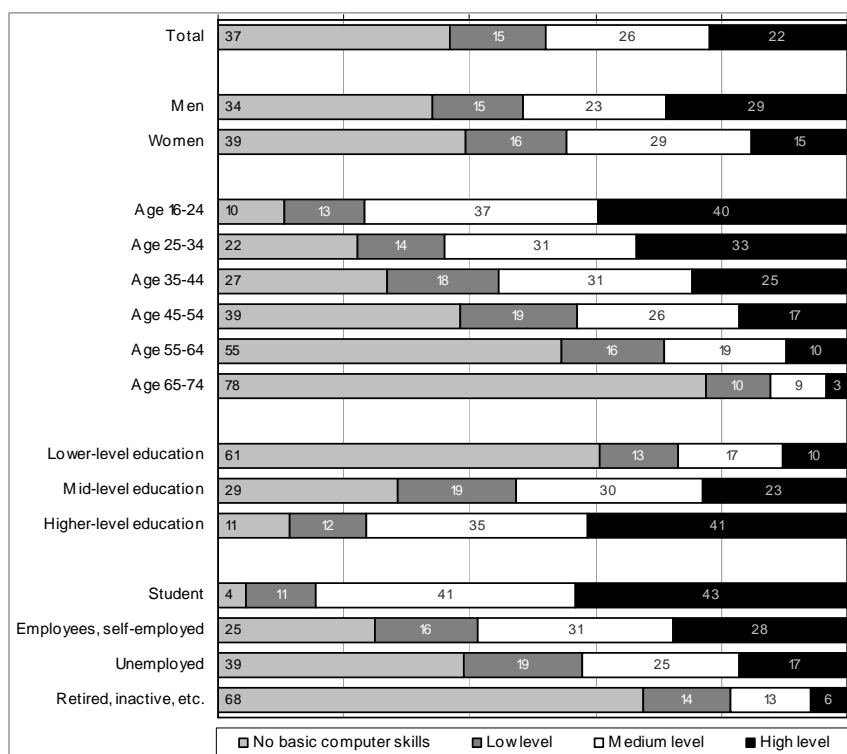
The data available for EU-25 in the charts below from the 2005 ICT survey¹²⁰ are on basic skills of adults in computer and Internet use.

Level and distribution of ICT skills within the EU

Chart 3.13 shows that:

- 37% of persons aged 16 to 74 have no computer skills whatsoever, while only 22% seem to be acquainted with a wide range of computer activities;
- level of education is an important factor: only 11% of people with higher education have no basic e-skills, compared with 60% of people with less than upper secondary education;
- as regards age, more than 3 out of every 4 people over 65 years of age have no computer skills at all, but even among young people aged 16 to 24, about 10% appear to have no basic e-skills.

Chart 3.13: Individuals' level of basic computer skills (2005), EU-25
(as a percentage of the total number of individuals aged 16 to 74)



Source: Eurostat (ICT household survey)

¹²⁰ Christopher Demunter (2006). *How skilled are Europeans in using computers and the Internet?* Statistics in Focus, 17/2006.

Gender and generational aspects of the level and distribution of ICT skills

In most countries the gender aspect of ICT skills is not very relevant, but the generational aspect plays an important role.

Digital literacy is a particular problem for the older generation (61% of people over 55 years of age have never used a computer), for people who have no upper secondary education (57% have never used a computer, compared with “only” 25% and 8% for middle and higher levels of education respectively) and for the unemployed (36%). On the other hand, the gender gap (not shown in the graph) is relatively narrow, with 37% of women having no computer experience, compared with 31% of men.

Combining age groups with level of education, the differences become even clearer, as almost 80% of people over the age of 55 with a low level of education have never used a computer.

When comparing economically prosperous regions with relatively poorer regions (where per capita GDP is below 75% of the EU average), it can be seen that in the latter the proportion of the population which has never used a computer is almost double that in the more prosperous regions.

In about half of the countries, ICT skills appear particularly rare among those aged 55 to 74 but even in the 25 to 54 age group – who are typically in the labour force – basic computer skills are a problem for many.

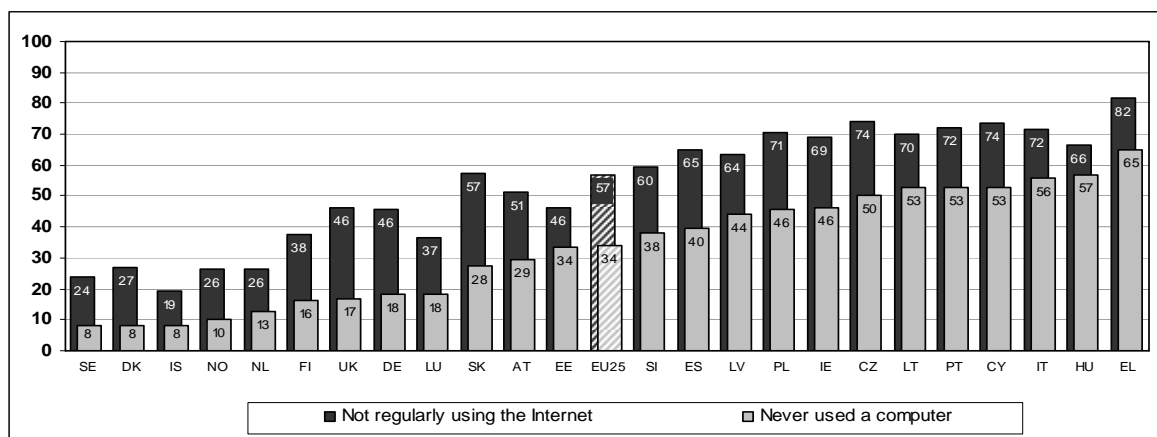
In this age group, on average 29% of Europeans lack basic skills, but in Greece, Italy, Cyprus, Lithuania and Hungary this applies to 50% or more of middle-aged people. On the other hand, this group of people is well skilled in using computers in Denmark, Luxembourg, Iceland and Norway, where more than 4 out of 10 persons can be classified in the “high level of basic computer skills” group. The highest skill levels can, of course, be found among younger people, although in Greece and Hungary also about one out of every three young people has no basic computer skills.¹²¹

More than one out of every three EU residents aged 16 to 74 years has *never* used a computer, ranging from 8% in the Nordic countries (Sweden, Denmark and Iceland) to 65% in Greece (see Chart 3.14). It is clear that their lack of e-skills will prevent these people from participating fully in the information society.

Chart 3.14 also shows that a majority (57%) of citizens do *not regularly* use the Internet. In Greece only 18% of people aged 16 to 74 are regularly online (i.e. on average at least once a week).

¹²¹ Christopher Demunter (2006). *E-skills measurement*. Paper submitted for the 10th meeting of the Working Party on Indicators for the Information Society (WPIIS), OECD, Paris, 3-4 May 2006.

Chart 3.14: Individuals not using computers or the Internet (2005), EU-25
(as a percentage of the total number of individuals aged 16 to 74)



Source: Eurostat (ICT household survey)

Additional notes:

Data on computer use not available for Belgium (percentage not regularly using the Internet: 47%); no data available for France and Malta.

Employment status and ICT skills

ICT skills levels do not vary much between employed and unemployed computer users. However, unemployed persons score much worse when considering the total group of unemployed persons, mainly because a large proportion hardly use computers. More than two out of every three unemployed persons are unskilled in computer use in Latvia, Lithuania and Hungary, but in Denmark, Germany, Sweden and Norway very few jobless people are.¹²²

Only a few people attend computer training courses

The chart below shows that more than half the population (aged 16 to 74) have never taken a course (of at least three hours) on any aspect of computer use. Only a minority (about 11%) have taken a course in the last year, and about half the 42% who have taken a course at all took it more than three years ago. Although the level of participation in computer training differs between countries – (for example, from 17% in Finland and Sweden to 4% in Italy for those who participated in a training course during the past year) which can be explained by the level of participation in computer use - the pattern is not very different when comparing countries.

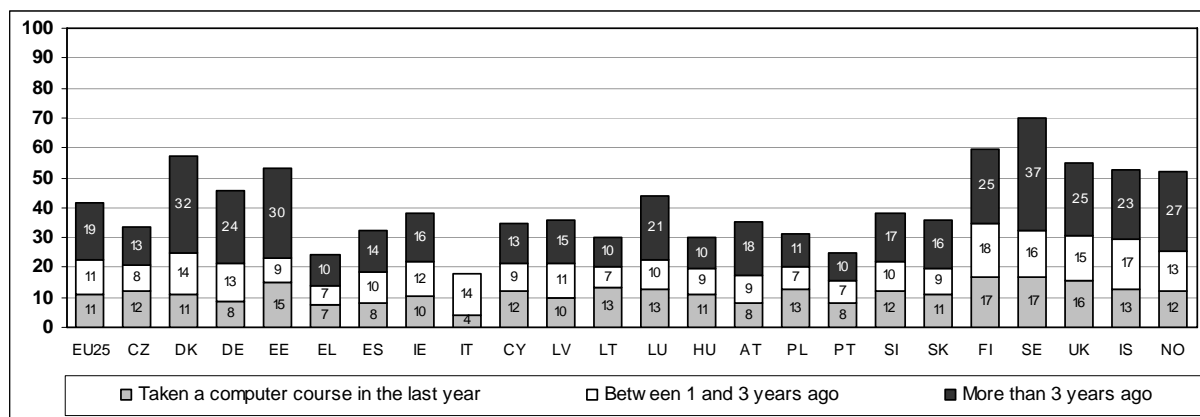
Participation appears to be highest amongst those with higher education – who may have easier access to computer training because of the nature of their jobs – and amongst young people aged 16 to 24.¹²³

¹²² Ibid.

¹²³ Ibid.

Chart 3.15: Participation by adults aged 16 to 74 in a training course (of at least 3 hours) on computer use (2005), EU-25

(as a percentage of the total number of individuals aged 16 to 74)



Source: Eurostat (ICT household survey)

Additional notes:

(i) EU-25 excluding BE, FR, IT, MT and NL.

(ii) Italy (IT): "Between 1 and 3 years ago" includes "More than 3 years ago" (not available separately).

However, computer training is only one way of improving digital literacy. Informal methods such as assistance from colleagues or self-study have to be taken into account when analysing participation in non-formal training.

3.5 Further development of indicators

Three core indicators are proposed to monitor progress towards "Making lifelong learning a reality". For two of them – "Upper secondary completion rates of young people" and "Participation of adults in lifelong learning", European reference levels (benchmarks) have been set which are to be achieved by 2010. Progress in these two areas is monitored on the basis of data from the Labour Force Survey collected within the European Statistical System.

At present, the third core indicator on adult skills is not precisely defined and no data are available which would allow more comprehensive and accurate analysis of the real competences of adults. The information from the ICT survey published in this report is limited to the ICT skills of adults based on self-reporting. Some data on language and ICT skills will be provided by the Adult Education Survey now being conducted in Member States under the supervision of Eurostat. The Adult Education Survey will also provide more detailed information on participation by adults in lifelong learning (formal education, non-formal education and informal learning) and the conditions under which they participate, including barriers to education and training.

The task of developing an indicator on adult skills was set by the Council conclusions of May 2005 on new indicators in education and training.¹²⁴ In these conclusions the Council also requested the Commission to cooperate with the OECD to see if the EU's data needs on adult skills can be satisfied within the new survey on adult skills being prepared by the OECD (PIAAC). This task was confirmed by the Council conclusions of 25 May 2007¹²⁵. In 2007 the Council also invited the European Commission to report back on indicators on adult skills in due course, in particular on participation by EU Member States and coverage of the EU's data needs.

¹²⁴ Council conclusions of 24 May 2005 on new indicators in education and training (2005/C 141/04).

¹²⁵ Council conclusions on a coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training (2007/C 1083/07)

The EU's data needs on adult skills were identified with the cooperation of the expert group on adult skills set up by the Commission in 2005. Already in 2005 this expert group concluded that it would be both policy-relevant and feasible to assess literacy, numeracy, ICT skills and certain job-related generic skills of adults.

The expert group also recommended examining the interrelationship between literacy, numeracy, problem-solving and ICT literacy because they might be conceptually and empirically related. At the same time, it was recognised that for some adult skills identified as EU policy-relevant, such as learning to learn, interpersonal and civic competences, cultural awareness and entrepreneurship, more effort needs to be put into developing suitable methods and instruments. Therefore it does not seem feasible to assess them all in the short term. However, the possibility of focusing on some of these skills in the second round of a survey should be examined.

After recent OECD work focusing on development of a strategy for PIAAC and basic survey instruments, it is assumed that PIAAC will provide data on literacy, numeracy and ICT skills based on direct measurement/testing plus data on skills used at the workplace (module on "job-related assessment"). Job-related assessment will concentrate on self-reporting on cognitive skills (such as reading, writing, mathematics, problem-solving and computing), social skills (such as interaction, self-direction, team working and client interaction), physical skills and learning to learn skills. Data are expected to be available in 2011.

At its meeting on 19 January 2007 the expert group on adult skills discussed the PIAAC strategy and came to the conclusion that the PIAAC survey could meet the EU's data needs on adult skills.

4. KEY COMPETENCES AMONG YOUNG PEOPLE

Main messages

Literacy in reading, mathematics and science

- No significant progress was made on the European benchmark for the percentage of low achievers in reading literacy over the period 2000-2003. The average in the 16 EU countries for which comparable data are available was 19.4% in 2000 and 19.8% in 2003.
- In 2003 Finland had the lowest proportion of low achievers in reading literacy (5.7%), followed by Ireland, the Netherlands and Sweden. EU countries with a high proportion of low achievers included Greece, Slovakia, Italy, Luxembourg, Germany, Portugal and Spain. The USA and Japan had similar levels of low achievers to the EU. In Japan the proportion was significantly higher than in 2000.

ICT skills

- The level of ICT equipment in schools has progressed. In 2006 there were on average 11 computers per 100 pupils in schools in EU. 96% of EU schools had Internet access and 67% had broadband access.

Civics skills

- Based on data from the European Social Survey, in 2002 a composite indicator was developed combining four dimensions: civil society, community life, political life and values. Active citizenship therefore ranges from cultural and political to environmental activities, at local, regional, national, European and international levels.

Language learning

- In relation to the general objective of teaching at least two foreign languages from an early age, good progress was made from 2000 to 2005. In 2005 pupils in upper secondary education learned, on average, 1.5 foreign languages, up from 1.2 in 2000.
- Preparatory work for a survey on competence in foreign languages in Europe was recently launched. The survey will produce results on pupils' skills in reading comprehension, listening comprehension and writing in five languages – English, French, German, Spanish and Italian.

Further development of the coherent framework

- The Commission continues to develop indicators on civic skills, learning to learn skills, and professional development of teachers and trainers.
- The Commission is launching a survey on language competences.

Introduction

In 2000 the Lisbon European Council concluded that a European framework should define the new basic skills as a key measure in Europe's response to globalisation and the shift to knowledge-based economies. The Barcelona European Council¹²⁶ in 2002 underlined the need to improve the mastery of basic skills. In 2002 the Council adopted a Resolution on Lifelong Learning and "the new basic skills"¹²⁷.

Acknowledging the importance of acquiring basic skills, the Council adopted a specific benchmark in this field, namely to decrease the percentage of low-achieving 15-year-olds in reading literacy in the European Union by at least 20% by 2010, compared to the year 2000.

The Commission report "*Progress towards the Lisbon Objectives in education and training*" noted that: "*The area of 'key competencies' will clearly be one of the central areas where new indicators need to be developed*"¹²⁸. This was emphasised again in the 2005 and 2006 progress reports¹²⁹.

A Recommendation of the European Parliament and the Council on key competences for Lifelong learning was published in December 2006. In this recommendation it was stressed that "*As globalisation continues to confront the European Union with new challenges, each citizen will need a wide range of key competences to adapt flexibility to a rapidly changing and highly interconnected world.*"¹³⁰

4.1 Which are the key competences?

The recommendation of the European Parliament and the Council defined a reference framework with a combination of knowledge, skills and attitudes which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment. The reference framework consists of eight competences: *Communication in the mother tongue, communication in foreign languages, mathematical competence and basic competence in science and technology, digital competence, learning to learn, social and civic knowledge, sense of initiative and entrepreneurship, cultural awareness and expression*. The eight competences are considered as equally important. The Key Competences Framework, prepared by experts from 31 countries and European level stakeholders, will help policy makers, education and training providers, employers and learners themselves in reforming education and training systems to respond to these challenges.

¹²⁶ Presidency Conclusions, Barcelona 15/16 March 2002, http://ue.eu.int/ueDocs/cms_Data/docs/pressData/en/ec/71025.pdf

¹²⁷ Council Resolution on lifelong learning of 27 June 2002, Official Journal C163/01 of 9.7.2002

¹²⁸ *Commission Staff Working Paper - Progress Towards the common objectives in Education and Training Indicators and Benchmarks*. European Commission 2004, p. 37

¹²⁹ - *Commission Staff Working Paper - Progress Towards the common objectives in Education and Training Indicators and Benchmarks*. European Commission, 2005
- *Commission Staff Working Paper - Progress Towards the common objectives in Education and Training Indicators and Benchmarks*. European Commission, 2006

¹³⁰ Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning (2006/962/EC)

In the Communication on a coherent framework of indicators and benchmarks¹³¹ the Commission proposes to include core indicators that cover five key competences:

- literacy in reading, mathematics and science;
- language skills;
- ICT skills;
- civics skills and
- learning to learn skills.

In some of the areas data is already available, while for others surveys will have to be launched in order to collect data to feed the indicators.

Several competences that are defined in the Framework of key competences, like social, and civic competences, entrepreneurship, learning to learn, and cultural expression are not only learned in the traditional education at school, but require new approaches in organising learning. Teachers need to work together with each other, with the local community and deal with heterogeneous groups. Obviously, teachers also need new competences and continuous learning in order to respond to these new challenges.

In their recommendation, the European parliament and the Council underline that entrepreneurship is an important area that refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives¹³². At the moment there are no indicators developed in this area. The broad definition of entrepreneurship poses challenges to find indicators to measure progress concerning knowledge and attitudes. Entrepreneurship is not part of the coherent framework but is an important part of the area of employability.

4.2 Developing key competences

Data are already available for some of the core indicators defined as key competences in the coherent framework, while for others surveys will have to be launched in order to collect data to feed the indicators. Future rounds of existing surveys, like the PISA survey, will yield updated data for indicators on pupils' skills in reading, mathematics and science. This chapter will focus on the core indicators defined as key competences in the coherent framework, referring to the data available and describing the new surveys being developed in areas where no data exist as yet.

4.2.1 Literacy in reading, mathematics and science

At present, the OECD PISA 2003 survey makes it possible to identify the proportion of pupils who have a low level of foundation skills in reading, mathematics and science and are therefore inadequately prepared for the challenges of the knowledge society and for lifelong learning.

In response to such considerations, in May 2003 the Ministers for Education adopted a specific benchmark targeting low performance in reading literacy.

European benchmark:
By 2010 the percentage of low-achieving 15-year-olds in reading literacy in the European Union should have decreased by at least 20% compared with 2000.

¹³¹ A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training. COM (2007) 61 final.

¹³² Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning.

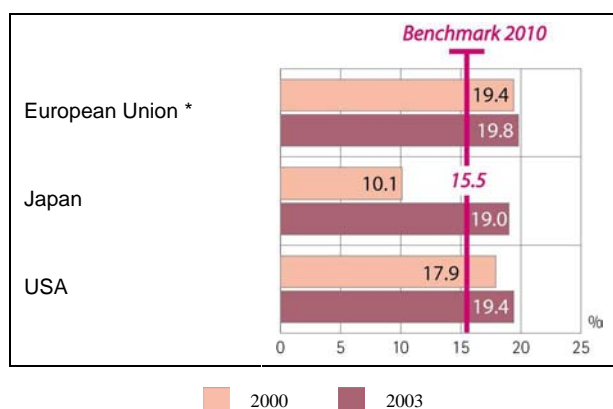
Indicators for monitoring performance and progress in this area have used the results from the 2000 and 2003 PISA surveys. A set of four indicators have been chosen for measuring the skills of 15-year-old pupils:

- Percentage of pupils with reading literacy proficiency level 1 and lower on the PISA reading literacy scale;
- Distribution and mean performance of pupils per country on the PISA reading literacy scale;
- Distribution and mean performance of pupils per country on the PISA mathematical literacy scale;
- Distribution and mean performance of pupils per country on the PISA scientific literacy scale.

The results from the 2003 PISA survey were analysed in depth in the 2006 Progress Report.¹³³ A new round of the PISA survey was conducted in 2006 and the results will be available at the end of 2007.¹³⁴ The figure below shows the progress made on the benchmark on low achievers in reading literacy. The number of low achievers in the EU was slightly higher in 2003 than in 2000. Both the USA and, especially, Japan showed a significant increase in low achievers over the same period.

Chart 4.1: Low achievers in reading on the PISA reading literacy scale

Indicator: Percentage of pupils with reading literacy proficiency level 1 and lower on the PISA reading literacy scale



Data source: OECD, PISA 2003 and 2000 database.

Explanatory note

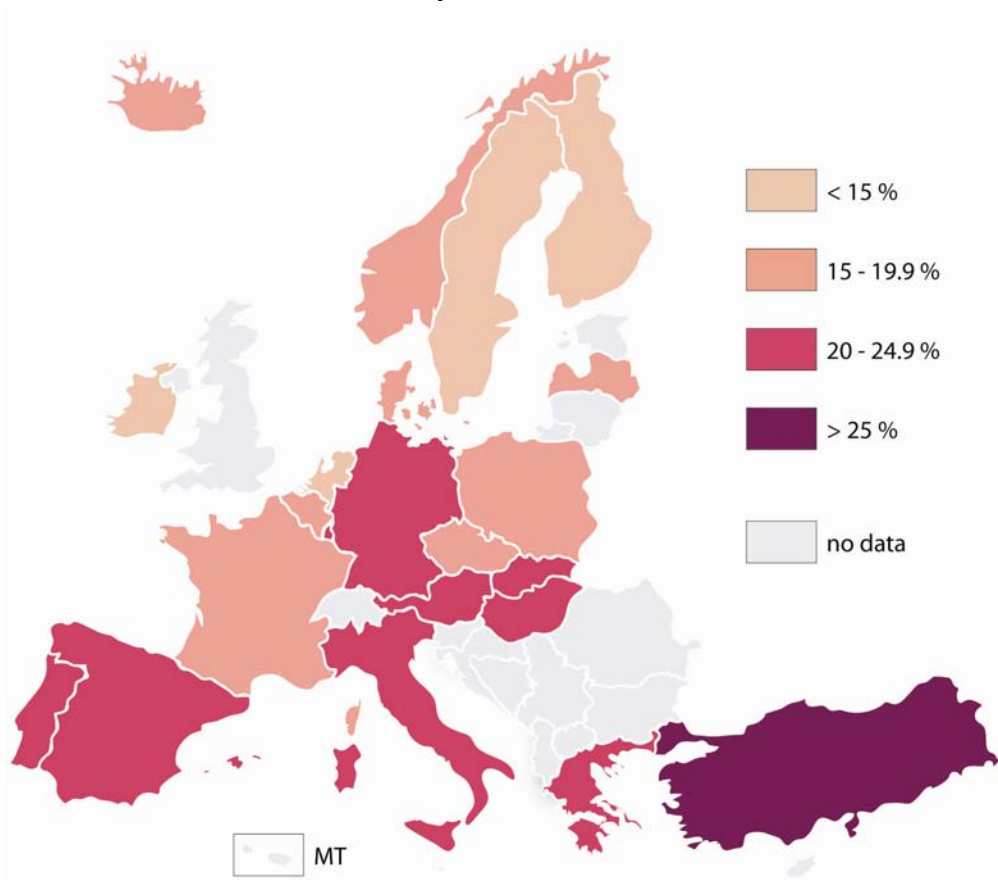
* In 2000 in the 16 EU countries for which comparable data were available for both 2000 and 2003 the proportion of 15-year-olds in level 1 or below was 19.4%. This implies a benchmark of 15.5% (-20%).

Finland has the lowest proportion of low achievers in reading literacy, followed by Ireland, the Netherlands and Sweden. EU countries with a high proportion of low achievers (more than 21%) include Greece, Slovakia, Italy, Luxembourg, Germany, Portugal and Spain. The USA and Japan have the same percentage of low achievers as the EU average, but in the USA and, especially, Japan the proportion has increased significantly compared with 2000.

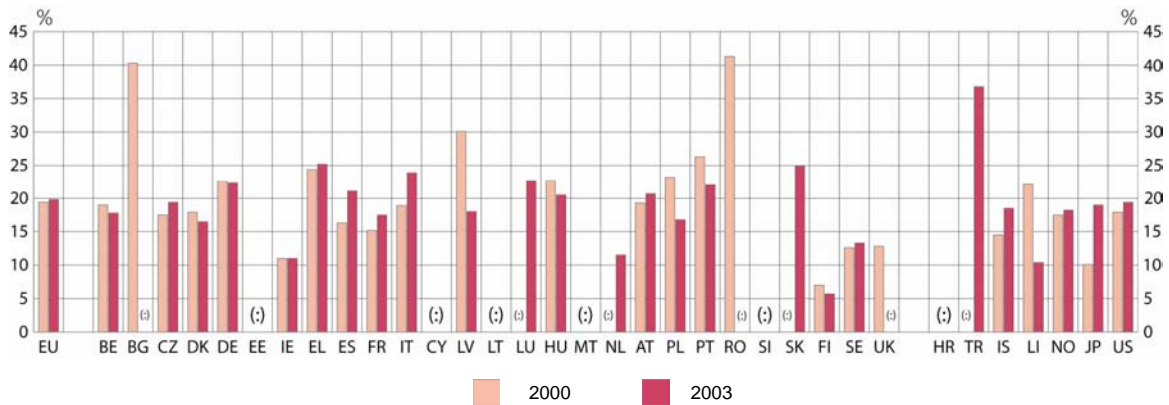
¹³³ European Commission: *Commission Staff Working Paper - Progress Towards the Common Objectives in Education and Training - Indicators and Benchmarks*. Brussels: European Commission 2006.

¹³⁴ A forthcoming OECD secondary study (in 2008) on the possible complementarities between the PISA and TIMSS (IEA) surveys should help to allow a better understanding of the relationships between curricula and learning.

Chart 4.2: Percentage of pupils with reading literacy proficiency level 1 and lower on the PISA reading literacy scale, 2000-2003



(2003)



	EU	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
2000	19.4	19.0	40.3	17.5	17.9	22.6	:	11.0	24.4	16.3	15.2	18.9	:	30.1	:	(35.1)	22.7
2003	19.8	17.8	:	19.4	16.5	22.3	:	11.0	25.2	21.1	17.5	23.9	:	18.0	:	22.7	20.5

	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	TR	IS	LI	NO	JP	US
2000	:	(9.5)	19.3	23.2	26.3	40.3	:	:	7.0	12.6	12.8	:	:	14.5	22.1	17.5	10.1	17.9
2003	:	11.5	20.7	16.8	22.0	:	:	24.9	5.7	13.3	:	:	36.8	18.5	10.4	18.2	19.0	19.4

Source: OECD PISA database

Additional note:

EU figure: weighted average based on number of pupils enrolled and data for 16 countries (NL and LU not representative in 2000, UK in 2003; SK did not participate in 2000).

The proportion of low achievers is significantly higher for boys than for girls. On average the difference is more than 11 percentage points. Girls have, on average, already reached the benchmark level.¹³⁵

In mathematics Finland is the best performing EU country, followed by the Netherlands. Results for Japan are on a par with the leading countries in Europe, while the USA is below the EU average. Compared with 2000, the EU results have improved, while the results for the USA and Japan have remained stable. The greatest progress was made in Latvia and Poland, with significant progress in the Czech Republic, Germany, Belgium, Portugal, Hungary, Finland and Spain too.

Finland achieved the best results in science subjects in 2003, followed by the Netherlands and the Czech Republic. The results of US pupils are below the EU average, while Japan is level with Finland. The EU average improved slightly over 2000. The strongest improvements were in Latvia, Greece, Poland and Germany. Boys performed better than girls in mathematics and science, but the gender gap is narrower in science than in mathematics.

Many developed countries are struggling to help children of immigrant families integrate into society through education. According to the PISA report on “*Where immigrant students succeed - A comparative review of performance and engagement in PISA 2003*”, immigrant children in some OECD countries lag more than two years behind their native counterparts in school performance, and often a sizeable gap remains even after accounting for socio-economic factors.¹³⁶

4.2.2 ICT skills

The Lisbon European Council¹³⁷ stressed that every citizen should be equipped with the skills needed to live and work in the information society. Member States should ensure that all schools have access to the Internet and multimedia resources and that all the teachers needed are skilled in the use of multimedia resources. This call was based on the assumption that the shift to a knowledge-based economy would be a powerful driving force for growth, competitiveness and jobs and that, consequently, citizens should be equipped with the skills needed to live and work in the information society.

Underlining the importance of ICT in education, the report on the “*Concrete future objectives of education and training systems*” stated that “the developing use of ICT within society has meant a revolution in the way schools, training institutions and other learning centres could work, as indeed it has changed the way people in Europe work. ICT is of increasing importance in open virtual teaching.”¹³⁸ The European Parliament and Council recommendation¹³⁹ defined digital competence as confident and critical use of information society technology (IST) for work, leisure and communication. This is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information and to communicate and participate in collaborative networks via the Internet.

¹³⁵ For more detailed figures see *Commission Staff Working Paper - Progress Towards the Common Objectives in Education and Training - Indicators and Benchmarks*.(2006)

¹³⁶ See Chapter 1 for further details.

¹³⁷ Presidency Conclusions, Lisbon, 2000, paragraph 9.

¹³⁸ Education Council report to the European Council on the “*Concrete future objectives of education and training systems*”, 2001.

¹³⁹ Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning.

Use of ICT in education and training has been a priority in most European countries over the last decade, but progress has been patchy. There are considerable differences in e-maturity, both within and between countries and between schools in the same country.¹⁴⁰

Indicators for monitoring performance and progress

The international data available are mainly limited to input-based indicators. The following indicators have been used for monitoring performance and progress on ICT among young people:

- Ratio of computers to pupils;
- Average percentage of computers in schools connected to the Internet.

The data on access to and use of computers among pupils were described in great detail in the 2006 Progress Report,¹⁴¹ based on data from the 2000 and 2003 PISA surveys. New data for the same indicators from the 2006 PISA survey will become available by the end of 2007. The OECD PISA survey shows that in the 14 EU countries for which data are available over 90% of 15-year-old pupils have access to a computer at school; however, fewer than half of them use a computer at school frequently. For pupils older than 15 the Eurostat ICT household survey shows that, in 2005, 70% of pupils (16 years and older) used a computer at their place of education and over 60% used the Internet at the same place.

A recent Europe-wide Commission survey carried out by *empirica* on “Benchmarking Access and Use of ICT in European Schools 2006”¹⁴² provides the most recent data available on several indicators, such as number of pupils per computer, number of schools with Internet access, levels of ICT equipment in schools, ICT use and teachers’ attitudes to ICT. The report underlines that use of computers in schools in Europe has reached almost 100% in every Member State, with hardly any deviations between different types of school.

The average number of computers per 100 pupils in the European Union is 11¹⁴³. There are large variations between countries. Denmark, Norway, the Netherlands, the UK and Luxembourg have 20 or more computers per 100 pupils, while most of the new Member States are lagging behind. The number of computers is higher in upper secondary schools (12.5) than in lower secondary (10.8) and primary schools (9.4). The number of computers is higher in vocational programmes (15.6) than in general programmes. Almost every school in Europe has Internet access. In most countries the penetration rate is 100% or slightly below and the European average is 96%. However, there are significant differences in the type of Internet access with a European average of 67% of schools having broadband access. In the Nordic countries, the Netherlands, Estonia and Malta more than 90% have broadband access, while Poland, Cyprus, Lithuania and Slovakia show low figures ranging from 28% to 40%.

ICT use by teachers

According to the *empirica* study, teachers appear highly familiar with computers, using them for work and other activities. Over 90% of classroom teachers use computers to prepare lessons and 74% also use them as a teaching aid, even if there are differences between countries, from the UK (96%) and Denmark (95%) to Greece (36%) and Latvia (35%). Primary school teachers consider themselves less competent than upper secondary and vocational teachers. Teachers mention lack of computers (50%) and that the subject does not lend itself to being taught with computers (24%) as the main reasons for not using computers. One important point to note is that the questions in the survey addressed competences in terms of general ICT usage and not specific pedagogical use; generalisation between the two aspects is therefore difficult.

¹⁴⁰ The ICT Impact Report. A review of studies of ICT impact on schools in Europe (2006).

¹⁴¹ European Commission (2006) op. cit.

¹⁴² *Empirica* (2006) “Benchmarking Access and Use of ICT in European Schools 2006” (http://europa.eu.int/information_society/eeurope/i2010/benchmarking/index_en.htm).

¹⁴³ Data for 25 EU countries.

The *empirica* study provides data on perception of the impact on teachers' motivation: 86% of teachers think that “*pupils are more motivated and attentive when computers and the Internet are used in class*” and 80% see advantages in using ICT in school, in particular for “*letting pupils do exercises and practice*”. On the other hand, in the view of one fifth of the teachers surveyed use of computers in class “*does not have significant learning benefits for pupils.*”

Use of ICT and learning outcomes

Considerable evidence on the impact of ICT use on learning and learners is building up, providing a basis for a number of preliminary conclusions. The 2003 PISA survey shows that, on average, pupils with access to a computer at school perform better than pupils without. The weighted average performance difference for the 14 EU countries for which data are available is 14 points on the mathematics scale. Pupil's performance in mathematics and reading peaks at medium levels of computer use and is lower if computers are used at school rarely or if they are used more frequently.

The review carried out by European Schoolnet¹⁴⁴ groups the conclusions emerging from existing impact studies into two clusters. The first includes more quantitative-based findings from analysis of the links between ICT use and pupils' outcomes in exams or tests. The second consists of more qualitative-based statements drawn mainly from the opinions of teachers, pupils and parents. The main conclusions in terms of quantitative outcomes are that ICT has a positive impact on educational performance in primary schools, particularly in mother tongue (English in the studies reviewed), but less impact on science and none on mathematics. Schools with higher levels of e-maturity demonstrate a more rapid increase in performance scores than those with lower levels, while broadband access in classrooms produces significant improvements in pupils' performance in nationwide tests taken at the age of 16. Regarding the more qualitative evidence, the review highlights that pupils, teachers and parents consider that ICT has a positive impact on pupils' learning: according to teachers, pupils' subject-related performance and basic skills improve with ICT.

The E-learning Nordic 2006¹⁴⁵ study aimed to discover and document the impact of ICT on education in the four Nordic countries in three key areas: pupils' performance, teaching and learning processes and knowledge-sharing, communication and home-school cooperation. The results show that pupils, teachers and parents consider that ICT has a positive impact on improving pupils' learning. Teachers consider that ICT has the strongest impact on subject-related performance and is a valuable tool to support differentiation. The study indicates that girls and pupils with other mother tongues are more dependent on learning ICT at school, that pupils are more often consumers than producers when using ICT and that pupils tend to work individually more often than together.

A study by Punie, Zinnbauer and Cabrera¹⁴⁶ on the impact of ICT on learning reported that ICT generally has a positive impact on learning. However, it has not in any way revolutionised the learning processes in schools and use of ICT organisationally has not yet fully matured. The authors stress that the preconditions for using ICT for knowledge-sharing, communication and home-school cooperation are almost in place, although as yet the positive impact has been only moderate.

4.2.3 Civics skills

Active citizenship is a key component of the Lisbon strategy to create social cohesion, putting the spotlight on democratic and European values, participation in democracy and civil society.

¹⁴⁴ The ICT Impact Report. A review of studies of ICT impact on schools in Europe (2006). European Schoolnet. <http://ec.europa.eu/education/doc/reports/doc/ictimpact.pdf>.

¹⁴⁵ E-learning Nordic 2006. Raboll Management, Denmark.

¹⁴⁶ Punie, Y., Zinnbauer, D., Cabrera, M. (2006) “A Review of the Impact of ICT on Learning. Working Paper prepared for DG EAC.” Institute for Prospective Technological Studies, DG JRC.

The data available on education and active citizenship are limited in terms of scope, content, frequency and freshness. In the past one important source was the 1999 IEA CIVED survey, but the corresponding data are now too old to be used for monitoring.

The Commission is supporting the development of new surveys in order to have data available by 2010. They will cover topics relevant to this area and be both up to date and, where possible, comparable over time. The Commission is cooperating with Member States, within a group of national experts, to identify the data needs and prepare a European module in the forthcoming International Civics and Citizenship Education Study (ICCS), which will be carried out in 2008/09, to cover the needs for indicators on education and training for active citizenship.

As the data on education for active citizenship are limited, up until now development of indicators has focused on active citizenship itself. Education is not the only factor in the development of active citizenship and the relationship between education and this outcome is a complex matter which needs further research. One important source of data is the European Social Survey and its 2002 module on active citizenship. The European Social Survey (ESS) is a study carried out by a network of European research institutions every two years in about 20 European countries. The survey and its module on citizenship are considered a reliable source of data on Europeans aged 15 years and above in the countries participating.

The research project on “Active Citizenship for Democracy”, run by the Centre for Research on Lifelong Learning (CRELL)¹⁴⁷ in conjunction with a network of researchers across Europe,¹⁴⁸ has completed exploratory research to measure the concept of active citizenship by creating a composite indicator based on a list of 63 basic indicators for which data were drawn from the 2002 ESS. The purpose of developing this composite indicator is to initiate useful discussions which, in turn, will support the longer term development of indicators in this field. Further research and refinement is expected to be required to improve this composite indicator; nevertheless, it is interesting to start these debates now. The active citizenship composite indicator (ACCI) has been calculated for 19 European countries (18 EU countries plus Norway) for which data were available from the ESS.

The working definition of active citizenship in this project was *participation in civil society, community and/or political life, characterised by mutual respect and non-violence and in accordance with human rights and democracy.*¹⁴⁹

Consequently, active citizenship does not focus solely on the political aspect. It ranges from cultural and political to environmental activities, at local, regional, national, European and international levels.

Active citizenship was broken down into four dimensions: civil society, community life, political life and values. Indicators were chosen from the limited data available on this topic. A full list of indicators is set out in Table A 4.1 in the annex. The civil society dimension was defined as participation in non-governmental action directed towards social change and holding governments accountable for their action and is covered by 18 indicators.

“Community life” means community action or support and includes 25 basic indicators on unorganised help and participation in various organisations. “Political life” covers the activities of conventional representative democracy and uses 9 indicators on participation in voting, representation of women in the national parliament and regular party work.

¹⁴⁷ Crell report: Measuring Active Citizenship in Europe (2006).

¹⁴⁸ The CRELL project Active Citizenship for Democracy which began in September 2005 in cooperation with the Council of Europe is running a research network of interdisciplinary eminent researchers from across Europe on this topic, including international data providers.

¹⁴⁹ Hoskins (2006), Framework for the development of indicators on active citizenship.

“Values” means human rights, democracy and intercultural understanding (intercultural understanding was added after it was declared a priority by the European Commission’s expert group on active citizenship). This dimension incorporates 11 indicators on questions such as how important it is to vote and whether there should be laws against discrimination.

The limitations of the underlying data naturally have an impact on the indicators calculated. Firstly, the ESS focuses predominantly on formal and structured participation and includes only one question on informal participation and no data on new forms of participation. This is especially relevant to the data gaps on new ICT-based forms of participation, which are growing in importance, such as web blogging, participation in Internet fora or “smart mobs” organised via SMS or e-mail. The results also cover only two thirds of the current EU Member States and the data are now five years old. With a large number of indicators on formal and structured participation (reflecting data availability), it could be claimed that the ACCI reflects a northern and western European approach to active citizenship and might not fully reflect other types of experience or less organised activities. Consequently, the intercultural validity of the ACCI could be improved as new data are added. This could be achieved in future surveys by including wider forms of participatory practices in the questionnaires. Finally, there is no benchmark for an “ideal” level of active citizenship.

The composite indicator is therefore only a first step towards measuring this field and will continue to be revised in line with further conceptual development and with the advent of more and better data. The results of the first round of calculations are summed up below.

On civil society the Nordic countries, where NGOs thrive, have high scores, followed by western European countries. The lower-scoring countries are from eastern and southern Europe. The main driver behind this result is the sub-dimension of *protest*.

The community life dimension shows a slightly different picture. Here high scores are achieved by the Netherlands and the United Kingdom along with the Nordic countries. Participation and membership in *sports and cultural activities* are the driving force behind this result. For southern Europe, the variable *non-organised help* probably does not sufficiently reflect the informal networks and family support that typify this region. *Community participation* scores low in Eastern Europe. However, lack of data prevents further analysis.

The pattern of results for the political life dimension differs slightly from that on civil society and community participation. In this case, Austria and Belgium achieve high scores along with the Nordic countries. Austria’s high score is partly due to the very high numbers involved in political parties. Belgium ranks high on this dimension as a result of its policy of compulsory voting. France and the UK perform less well on this dimension than on the previous two. Eastern European and some southern European countries have lower scores. Overall the countries that perform better are not those with the highest voting rates for national or European parliaments but those where participation in politics is higher.

Values show a significantly different pattern from the previous three dimensions, with some countries demonstrating different behaviour but, overall, fewer regional distinctions. Poland scores quite well on this index and is in the top five. Portugal also scores well in sixth place. Belgium’s position reflects its relatively low scores for the indicators on *human rights* and *voting*. About two thirds of Belgian respondents said that they would give the same rights to immigrants and about the same number considered approval of laws against discrimination in the workplace or against racial hatred important.

The indices for the four dimensions of active citizenship have been combined into one composite indicator (see Table 4.1).

Table 4.1: Scores of 19 European countries based on the preliminary active citizenship composite indicator and its components (2002 results)

Country	Composite	Component			
		Values	Political life	Community life	Civil society
Austria	632	515	764	611	641
Belgium	557	208	662	706	654
Denmark	641	634	514	666	753
Finland	452	744	321	289	457
France	371	374	229	391	490
Germany	533	506	478	635	514
Greece	205	333	336	96	55
Hungary	171	314	141	182	47
Ireland	559	641	438	676	483
Italy	260	449	270	94	227
Luxembourg	543	802	498	393	480
Netherlands	555	500	418	748	556
Poland	226	705	127	47	26
Portugal	266	647	204	134	79
Slovenia	347	375	299	438	277
Spain	298	439	319	191	245
Sweden	755	888	615	741	778
United Kingdom	483	439	234	739	521
Norway	766	752	746	774	792

Source: CRELL (2006). Op. cit.

Overall, it can be seen that the Nordic countries score highest. The exception seems to be Finland, which lies in the middle of the table for all four dimensions except values. Among the western European countries high scores are recorded by Austria and the Benelux countries, although with different profiles; whereas the Netherlands and Luxembourg have consistent performances on all four dimensions considered, Belgium compensates for low scores on values with an outstanding performance on political life. Generally, eastern and southern European countries come lower in the rankings. Not surprisingly, the overall ranking has a strong correlation with the results on the civil society dimension. Therefore, countries with an active civil society generally appear to have the most active citizens. Table 4.1 shows the score for the countries on the four indicators and on the composite indicator.

In order to improve data availability on active citizenship, the European Commission is supporting development of new surveys in this field. As mentioned earlier, this includes support for the IEA International Citizenship and Civic Education Survey (ICCS) that will be carried out in 2008/09.

In order to monitor development of active citizenship amongst young people (13 to 30 years old), which is a priority in the Open Method of Coordination on Youth, in November 2006 the Member States adopted a Resolution in which they agreed to work together to develop assessment tools for participation by and information for young people. In this context, the model on active citizenship developed by CRELL could be taken as a basis, but adapted and further developed in order to cover issues relevant to young people. This could be an opportunity to revise the model, not only for youth, but for all age groups in preparation for the analysis of the future ICCS survey.

4.2.4 Language learning

The modern information society is premised on efficient communication, and in such a diverse linguistic and cultural landscape as Europe it is important for European citizens to acquire each other's

languages. Learning languages provides people with better career opportunities, gives them a deeper understanding of their own and others' cultures and increases their mobility. Improving language skills in Europe is an important objective as part of the Lisbon growth and jobs strategy.

The 2002 Barcelona European Council showed express interest in the issue of language learning when it called for "the mastery of basic skills, in particular by teaching at least two foreign languages from a very early age."¹⁵⁰ As a consequence, knowledge of foreign languages is now recognised as one of the key competences that should be intensively cultivated within lifelong learning.

The Commission and the Member States are undertaking a range of activities aimed at promoting good policy approaches for language learning within the Education and Training 2010 strategy. A significant part of the 2005 Communication from the Commission entitled "A New Framework Strategy for Multilingualism" is devoted to citizens' language skills.

In a recent study CILT (2007)¹⁵¹ estimated the cost to EU businesses of not having sufficient foreign language skills. The findings suggest that there is enormous potential for small businesses in Europe to increase their total exports if they invest more in languages and develop coherent language strategies. Recent research shows that companies that enhance their language skills are better equipped to seize the business opportunities on the EU's internal market, which, with nearly half a billion people, is the largest in the world.

The European Parliament and Council recommendation¹⁵² defined communication in foreign languages as the "ability to understand, express and interpret concepts, thoughts, feelings, facts and opinions in both oral and written form (listening, speaking, reading and writing) in an appropriate range of societal contexts – work, home, leisure, education and training - according to one's wants or needs. Communication in foreign languages also calls for skills such as mediation and intercultural understanding."

Indicators for monitoring performance and progress

In almost every European country compulsory learning of a foreign language begins at primary school, and in some (Estonia, Luxembourg, Sweden and Iceland) a second foreign language is introduced before the end of primary education. In most European countries teaching of a minimum of two foreign languages for at least one year during full-time compulsory education is either compulsory or offered as an option. The general trend is towards beginning compulsory teaching of at least one foreign language earlier and continuing it longer.¹⁵³

In the case of languages, two indicators are currently used to monitor progress:

- Average number of foreign languages learned per pupils in upper secondary education;
- Distribution of pupils by number of foreign languages learned.

These indicators are useful for addressing the objective of learning two or, where appropriate, more languages in addition to the mother tongue. The data are related to language *teaching* rather than to language competences. In the absence of reliable data on the language competences of young people, these are currently the best indicators to measure progress in this field.

¹⁵⁰ Presidency Conclusions European Council, Barcelona, 2002, paragraph 44.

¹⁵¹ CILT (the UK National Centre for Languages). Effects on the European Economy of Shortages of Foreign Language Skills in Enterprise. December 2006. The data in the study are based on a sample of 2 000 small and medium-sized enterprises across Europe, correlated with information from 30 multinational companies and a group of experts from the countries involved and supplemented by a set of case studies.

¹⁵² Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning.

¹⁵³ Eurydice. Key Data on Teaching Languages at School in Europe 2005, p. 27.

Performance and progress

The *average number of languages learned per pupil* indicates the average number of foreign languages studied per pupil secondary education per school year and is therefore of direct relevance to the central objective of the Union, namely that all school pupils should master “at least two other languages in addition to the mother tongue.”

In most EU countries, more foreign languages are learned per pupil in general upper secondary education than in general lower secondary education. However, Table 4.2 illustrates that in 11 countries more languages are learned per pupil in lower secondary education. The average number of foreign languages learned per pupil in 2005 was 1.4 in lower secondary and 1.5 in general upper secondary education, up from 1.2 in upper secondary and from 1.3 in lower secondary education in 2000. Even if, on average, the number of languages learned increased in the majority of countries, in six (the Czech Republic, Spain, Cyprus, Poland, Finland and Norway) fewer foreign languages were being learned per pupil in lower secondary education in 2005 than in 2000. For upper secondary in five countries (the Czech Republic, Italy, Cyprus, Latvia and Lithuania) for which comparable figures are available, fewer foreign languages per pupil were being learned in 2005 than in 2000.

The number of languages learned per pupil in upper secondary education ranged from 0.1 per pupil in the United Kingdom and 0.7 in Portugal to two or more in thirteen countries (Luxembourg, Finland, the Netherlands, Estonia, Sweden, Denmark, Belgium, the Czech Republic, Poland, Romania, Slovenia, Slovakia and Croatia).

The proportion of pupils learning English in upper secondary education ranged from 100% in Sweden and the Netherlands to just below 50% in Portugal, 66% in Malta and 73% in Hungary in 2005. The proportion of pupils learning French was highest in Luxembourg, Romania and the Netherlands. The percentage learning German was highest in Luxembourg, the Netherlands and Slovenia.

The average number of foreign languages learned per upper secondary pupil is lower in the vocational stream of education in every country, except Portugal. The average number for the countries in the European Union is 36% lower than for the general stream of education.

Table 4.2: Average number of foreign languages learned per pupil and percentage of pupils learning English, French and German in general upper secondary education. 2005

Country	Average number of foreign languages learned per pupil in general lower and upper secondary education		Percentage of pupils in general upper secondary education learning:		
	Lower	Upper	English	French	German
EU-27	1.4	1.5	89.9	25.6	31.4
Belgium	1.2	2.2	94.4	47.8	28.4
Wallonia	0.9	1.8	90.2	:	5.9
Flanders	1.4	2.5	99.0	99.1	52.7
Bulgaria	1.3	1.8	83.1	15.4	40.3
Czech Republic	1.0	2.0	98.1	22.4	72.2
Denmark	2.0	2.2	96.4	21.9	69.3
Germany	1.2	1.4	93.8	30.0	-
Estonia	2.0	2.3	92.6	6.1	44.1
Greece	1.9	1.1	94.5	8.6	2.4
Spain	1.4	1.2	95.3	28.0	1.3
France	1.5	:	:	-	:
Ireland	1.0	0.9	-	61.7	19.1
Italy	1.4	1.1	85.1	18.1	6.5
Cyprus	1.9	1.7	89.1	34.5	3.4
Latvia	1.6	1.8	93.7	3.6	38.8
Lithuania	1.8	1.6	80.2	5.9	28.4
Luxembourg	2.5	3.0	96.7	96.7	96.7
Hungary	1.0	1.4	73.0	6.0	51.4
Malta	2.2	1.0	65.6	6.6	1.7

Country	Average number of foreign languages learned per pupil in general lower and upper secondary education		Percentage of pupils in general upper secondary education learning:		
	Lower	Upper	English	French	German
Netherlands	2.7	2.6	100.0	69.5	86.2
Austria	1.1	1.9	96.9	54.1	-
Poland	1.1	2.0	96.3	12.1	72.5
Portugal	1.9	0.7	49.9	19.1	2.5
Romania	1.9	2.0	94.2	84.2	11.9
Slovenia	1.3	2.0	98.8	10.9	78.2
Slovakia	1.1	2.0	97.3	14.4	75.2
Finland	2.2	2.8	99.7	19.3	37.9
Sweden	1.7	2.2	100.0	24.2	34.5
United Kingdom	0.7	0.1	-	6.1	2.5
Croatia	1.2	2.0	98.4	3.8	66.2
FYR Macedonia	1.5	:	:	:	:
Turkey	:	:	:	:	:
Iceland	2.1	1.9	77.2	16.4	32.4
Norway	1.5	:	94.4	47.8	28.4

Source: Eurostat, UOE data collection.

English is the language most commonly learned by pupils in lower and upper secondary education. On average, 60% of primary school pupils and 90% in lower secondary education in the EU are taught English. This compares with an average of 5.8% taught French and 6% German at primary school and 29.5% taught French and 17.2% German at lower secondary school. Regarding French and German, there are divergent patterns in the “old” and “new” Member States. French is more widely taught in the “old” EU countries, especially in southern Europe, including Malta and Cyprus. German is more popular in the Nordic and central and eastern European countries.

4.3 Further development of indicators

The Commission will further develop the coherent framework of indicators in the field of key competences and will follow this up by developing new surveys in central areas like foreign language learning, learning to learn and active citizenship. These surveys will provide important new information to policy-makers which could promote curricula modernisation and effective pedagogical practices in specific fields.

In the Communication on a coherent framework of indicators and benchmarks¹⁵⁴ the Commission proposed to include core indicators in areas where no indicators exist today, for example *learning to learn skills, language skills, ICT skills and civics skills*.

4.3.1 Learning to learn skills

Learning to learn skills is part of the coherent framework of indicators and benchmarks. It is mentioned as an indicator which is still in the process of development and where the Commission should report back to the Council before launching a new survey.¹⁵⁵

As a result of the work on key competences for lifelong learning within the European Union, in December 2006 the European Parliament and the Council adopted a recommendation containing the following definition of the concept of learning to learn:

“Learning to learn is the ability to pursue and persist in learning, to organise one’s own learning, including through effective management of time and information, both individually and in groups. This

¹⁵⁴ COM(2007) 61 final.

¹⁵⁵ Council conclusions of 25 May 2007 on a coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives.

competence includes awareness of one's learning process and needs, identifying available opportunities, and the ability to overcome obstacles in order to learn successfully. This competence means gaining, processing and assimilating new knowledge and skill as well as seeking and making use of guidance. Learning to learn engages learners to build on prior learning and life experiences in order to use and apply knowledge and skills in a variety of contexts: at home, at work, in education and training. Motivation and confidence are crucial to an individual's competence."¹⁵⁶

In 2005 the European Commission asked the *European Network of Policy-Makers for the Evaluation of Education Systems* to draft a proposal on how a pilot survey across different European countries could be carried out with a view to creating a European indicator of development of learning to learn. A group of experts from countries interested in the project was set up. In spring 2006 the group presented a final report which included a framework for measuring learning to learn skills.¹⁵⁷

The framework drawn up by the expert group was based on the assumption, made in the European Commission's definition of learning to learn (see above), that this key competence can be defined as containing two dimensions; a cognitive and an affective (or belief) part. In the framework proposed the cognitive part contains four subscales: identifying a proposition, using rules, testing rules/propositions and using mental tools. The affective dimension contains five subscales: "learning motivation, learning strategies and orientation towards change", "academic self-concept and self-esteem", "learning environment", "perceived support from significant other" and "learning relationship". These subscales were based on existing subscales in tests developed by universities in Helsinki, Bristol and Amsterdam.¹⁵⁸

Following the reception of this framework, the Commission has set up an expert group which has overseen the development of a full instrument for the testing of learning to learn skills. The instrument will be piloted in interested countries in late 2007/beginning 2008 with a view to considering whether a European survey on learning to learn skills should be proposed to the Education Council.

4.3.2 European language indicator

In its Communication "The European Indicator of Language Competence"¹⁵⁹ the Commission outlined a detailed approach to set up a European survey on language competences to collect the data necessary to construct a European language indicator. In May 2006 the Council adopted conclusions on a number of key issues concerning the indicator and stressed that a survey should be carried out as soon as possible. In April 2007 the Commission presented the Communication "Framework for the European survey on language competence"¹⁶⁰ which outlined conclusions on all the outstanding issues regarding development and implementation of the European language survey. The European survey will aim to provide Member States, policy-makers, teachers and practitioners with data on the effect of teaching young people foreign languages in the European Union. It will provide knowledge and information about the foreign language abilities of young people and on where good practice and performance can be found. Subsequent rounds will monitor progress towards the objective of improving foreign language learning.

The basic framework for developing the language indicator is as follows:

¹⁵⁶ Education Council: *Recommendation of the European Parliament and the Council of 18 December 2006 on key competences for lifelong learning*. Official Journal of the European Union, 30.12.2006, annex, paragraph 5.

¹⁵⁷ Bonnet et al.: *Final Report of the Learning to Learn Expert Group to The European Commission*. DG EAC A6. Paris/Brussels/Ispra 2006.

¹⁵⁸ Bonnet et al.

¹⁵⁹ COM(2005) 356 final.

¹⁶⁰ COM(2007) 184 final.

- In the first round, tests will be developed on three skills: *reading comprehension*, *listening comprehension* and *writing*. The Commission will take measures to develop instruments to cover the fourth skill – *speaking* – in subsequent surveys.
- The survey will cover tests in the most taught official languages of the European Union, namely *English, French, German, Spanish* and *Italian*.
- The survey should be based on measuring a continuum of increasing levels of competence, from level A1 (basic user) to level B2 (independent user) on the scale of the Common European Framework of Reference for Languages.
- A questionnaire will be developed for pupils, teachers, headteachers and governments to gather contextual information that will allow analysis of factors which might have an impact on pupils' language competences.
- Pupils enrolled in the final year of lower secondary education (ISCED 2) (or the second year of upper secondary education (ISCED 3), if a second foreign language is not taught in lower secondary education) who are taught the language being tested will be surveyed.
- Both computer-based tests, using open source software, and paper and pencil tests should be made available to countries in the survey. The test instrument should permit adaptive testing.
- Technical work was launched in March 2007 so that tests can be carried out at the beginning of 2010.

5. MODERNISING SCHOOL EDUCATION

Main messages

- The Education Council adopted professional development of teachers as the core indicators related to the area of modernising school education. Comparative data on the professional development of teachers is in the process of development within the OECD TALIS project (survey of teachers, teaching and learning). Results of the first survey cycle of TALIS will be available in 2009.
- Hence, the analysis is based on a number of more qualitative indicators that the Commission has identified as central for the “modernising school education” agenda. The four indicators identified are school management, professional development of teachers, schools as multi-purpose local learning centres and financing of schools. The chapter highlights the main concepts related to the four indicators and the related stakes. This first step will enable policy-makers to debate and exchange information on the priorities for school modernisation. Further improvement in studies and data collection should enhance possibilities for the exchange of information and experiences and the identification of good practice.
- Since very little data are available this chapter does not draw specific policy conclusions.

5.1 School management

“School management” covers a complex array of interrelated policy choices ranging from governmental level to the level of the individual school. The role of decentralisation, autonomy, institutional management,¹⁶¹ accountability, monitoring and evaluation of the schools systems¹⁶² and strengthening leadership of education and training institutions¹⁶³ are part of the modernisation agenda.

Research on school leadership and school management is gaining momentum as awareness increases that, within the school environment, the headteachers (and their leadership teams) are in charge of translating policies into everyday practice. In particular, the Conclusions of the Council on efficiency and equity in education and training (2006/C 298/03) recognise that “*the quality of school leadership ... [is one of the] key factors in achieving high quality learning outcomes.*” However, there are different interpretations of what “school leadership” means and what this profession entails, especially because the actual activities of the leader depend on the context and structural characteristics of each individual school system.

¹⁶¹ 2006 Joint Interim Report of the Council and the Commission on progress under the Education and Training 2010 work programme (2006/C 79/01), p. 3.

¹⁶² Conclusions of the Council and the Representatives of the Governments of the Member States, meeting within the Council, on efficiency and equity in European education and training systems (2006/C 298/03), p. 2.

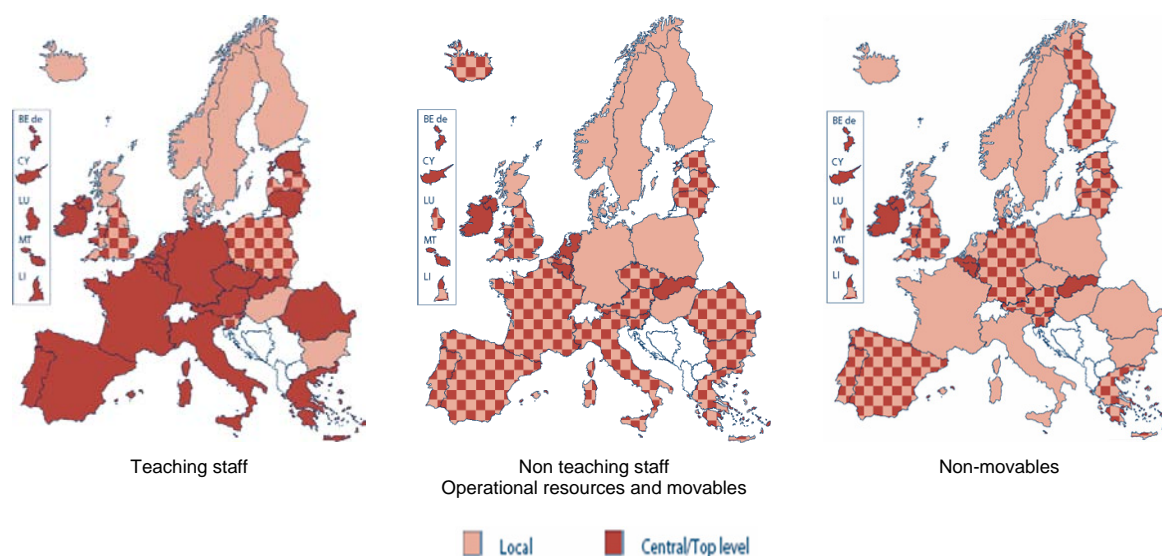
¹⁶³ - 2006 Joint Interim Report of the Council and the Commission on progress under the Education and Training 2010 work programme (2006/C 79/01), p. 8.
- Conclusions of the Council and the Representatives of the Governments of the Member States, meeting within the Council, on efficiency and equity in European education and training systems (2006/C 298/03), p. 2.

5.1.1 Level of decentralisation of education¹⁶⁴

By looking at administrative reforms of the public sector, the literature on new public management has identified the strands of activity that facilitate and characterise decentralisation (Hood, 1991; Barzelay, 2001; OECD, 1995, Paletta, 2007). Such reforms do not follow any single pattern. Moreover, the process varies greatly in intensity between countries and is more visible in some Scandinavian and Central European countries than in many Southern European countries.

The financial independence of the school and its freedom to spend the budgets allocated to it is often seen as one key characteristic of decentralisation.¹⁶⁵ In terms of school management, financial independence influences headteachers' ability to choose staff who share their vision of the school's mission. The maps below indicate the level of decision-making authority in a number of core areas and show a mixed picture in which Scandinavian countries tend to allow more autonomy at local level, while school systems in Southern Europe are still highly centralised, especially with respect to selection and payment of teaching staff.

Chart 5.1: Location of decision-making authority to determine the overall amount of public expenditure earmarked for schools providing compulsory education, public sector or equivalent, 2002/03



Source: Eurydice 2005

In itself, school autonomy does not necessarily lead to better results. However, in areas characterised by *local knowledge leads*¹⁶⁶ school autonomy can have a positive effect on pupils' results if adequate control systems are in place (Wößmann, 2003; Bishop, 1995).

5.1.2 Evaluation

In 2001 the European Parliament and Council recommended¹⁶⁷ that Member States establish transparent quality evaluation systems and encouraged them to create a framework that balances schools' self-evaluations with external evaluations, to involve all relevant players in the evaluation

¹⁶⁴ Unless otherwise specified, the figures are derived from Eurydice (2005), Key Data on Education in Europe 2005.

¹⁶⁵ For an exhaustive description of the models currently adopted in Europe please see: Atkinson, M., Lamont, E., Gulliver, C., White, R. and Kinder, K. (2005). School Funding: a Review of Existing Models in European and OECD Countries (LGA Research Report 3/05). Slough: NFER.

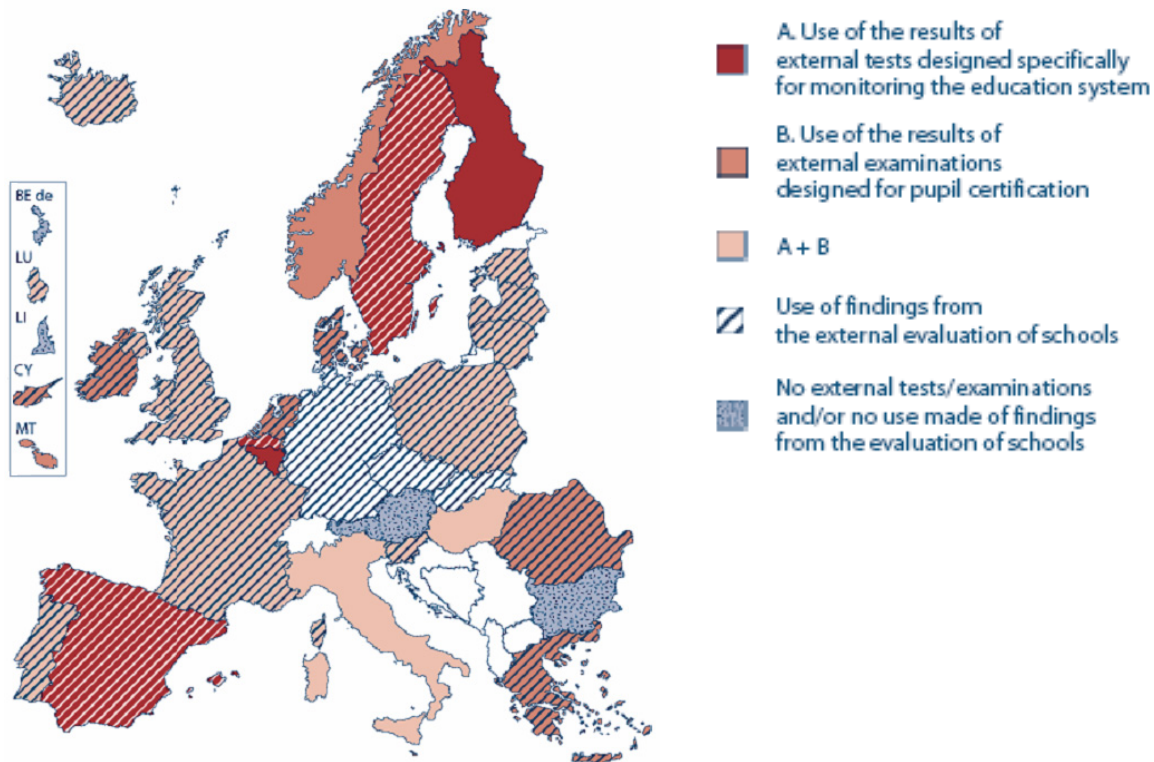
¹⁶⁶ I.e. the knowledge available at local level is relevant and substantially different from the information available at centralised level.

¹⁶⁷ Recommendation of the European Parliament and of the Council of 12 February 2001 on European cooperation in quality evaluation in school education (2001/166/EC).

process and to disseminate good practice and lessons learned. Moreover, the Communication on efficiency and equity in European education and training systems¹⁶⁸ exhorted Member States to develop a “culture of evaluation” because “effective long-term policies must be based on solid evidence.”

Many European countries have introduced some form of centralised monitoring of results (see Chart 5.2). In line with Wössmann’s and Bishop’s research findings, the good average results of EU countries in international comparisons such as PISA or TIMSS also appear to be related to this feature of their school systems.

Chart 5.2: Use made of findings from the evaluation of pupils and schools for monitoring education systems at primary and secondary level, 2002/03



Source: Eurydice 2005

5.1.3 School leadership

As pointed out earlier, “school leadership” may have very different meanings, depending on the characteristics of the educational system. Research has sought to identify individual characteristics of school leadership and to model leadership behaviour in different contexts. Various taxonomies have been produced to cover the different possibilities.¹⁶⁹

These taxonomies emphasise that the focus of headteachers is not directly on the pupils, but more on the organisational aspects of institutions. The TIMSS 2003 survey investigated how headteachers spend their time and identified a number of areas of activity, ranging from administration to leadership, direct teaching, contact with families and the community and supervision.

Still, as only to be expected, no consistent relationship emerges between the average behaviour of headteachers in the different countries and the constraints imposed by the system architecture sketched in the previous country profiles. In fact, the variables that determine headteachers’ time allocation are

¹⁶⁸ SEC(2006) 1096.

¹⁶⁹ See Paletta & Vidoni 2006, partly derived from Bush, 2000.

too numerous and too different to allow any macro-level consideration. Such variability has often made it impossible to quantify the actual influence of school leadership on student achievement. Some new insights come from the CRELL project on “School leadership and student achievement in Europe” which, by looking at TIMSS 2003 data, has shown that headteacher specialisation, either in management (organisational and administrative activities) or leadership (knowledge and support of the educational process) activities, reduces the impact of family socioeconomic status (SES) on student achievement.¹⁷⁰

5.2 Professional development of teachers and trainers

Teachers form one of the most important interfaces between society and individuals. The quality of their work is a key determinant in the educational success of pupils and students. The quality of the teaching staff has implications for Europe’s economic and social development.

Economic and social changes in Europe are making increasingly complex demands on the teaching profession. Teachers are expected to teach effectively in classes that are culturally and linguistically heterogeneous, to adapt their teaching to the needs of each individual, to be sensitive to culture and gender issues, to promote tolerance and social cohesion, to respond effectively to disadvantaged pupils and pupils with learning or behavioural problems, to use new technologies and to keep pace with rapidly developing fields of knowledge and approaches to student assessment.

In a recent OECD survey,¹⁷¹ almost every country reported a shortfall in teaching skills and difficulties in updating teachers’ skills, especially lack of competence to deal with new developments in education (including individualised learning, preparing pupils for autonomous learning, dealing with heterogeneous classrooms, preparing learners to make the most of ICT and so on).

Improving the quality of initial teacher education and ensuring that all practising teachers take part in continuous professional development have therefore been identified as key factors in securing the quality of school education.¹⁷²

Eurydice has examined¹⁷³ how professional development is organised for teachers in lower secondary education and noted that in-service training for teachers is growing in importance: in about half the European countries it is compulsory. Eurydice also noted (2003) that ICT skills seem to be a priority in in-service training. However, no information is available on teachers’ actual participation in professional development.

The OECD (2004) collected information on teachers’ participation in professional development. On average, only 48% of the teachers in upper secondary education in the countries surveyed had participated in some type of professional development. The highest participation rate was in Sweden and the lowest in France and Hungary. Examples of professional development given in the study

¹⁷⁰ The construct socioeconomic status (SES) is defined as the relative position of a family or individual in a hierarchical social structure, based on their access to, or control over, wealth, prestige and power (Mueller & Parcel, 1981). In many education and health surveys, it is operationalised as a composite measure built on the level of education of the parents, their income and occupational prestige (Dutton & Levine, 1989). The aspect of family SES under analysis is the cultural capital which depends mostly on the highest level of education pursued within the family. The report on the project can be downloaded from: <http://crell.jrc.ec.europa.eu>.

¹⁷¹ Teachers Matter, OECD, 2005.

¹⁷² - Common European Principles for Teacher Competences and Qualifications: http://ec.europa.eu/education/policies/2010/doc/principles_en.pdf.
- 2006 Joint Interim Report of the Council and the Commission on progress under the Education and Training 2010 work programme (2006/C 79/01), p. 8.
- Conclusions of the Council and the Representatives of the Governments of the Member States, meeting within the Council, on efficiency and equity in European education and training systems (2006/C 298/03), p. 2.

¹⁷³ Initial training and transition to working life (2002); Working conditions and pay (2003).

included observation visits to other schools, mentoring, peer observations, participation in professional networks, participation in degree programmes (Masters and PhD), conferences to discuss research, visits to companies, collaborative research, regular collaboration between colleagues, courses and workshops.

Table 5.1: Teacher participation in professional development, excluding ICT-related activities (2001)

Country	Percentage of teachers who participated in professional development (excluding ICT-related activities)		
	Mean	S.D	S.E
Belgium (Flanders)	48	24.2	(1.72)
Denmark	66	29.9	(2.57)
Finland	69	27.2	(1.76)
France	32	22.6	(1.35)
Hungary	30	23.8	(1.39)
Ireland	40	31.4	(2.26)
Italy	36	28.0	(1.57)
Norway	56	32.4	(2.63)
Portugal	37	25.1	(1.98)
Spain	40	29.2	(1.83)
Sweden	84	24.2	(1.83)
Netherlands*	57	32.1	(3.15)

* Country did not meet international sampling requirements. The data reported are not weighted.

Source: OECD (2004). *Completing the Foundation for Lifelong Learning – An OECD Survey of Upper Secondary Schools*

Table 5.2: Teacher participation in ICT-related professional development activities (2001)

Country	Percentage of teachers who participated in ICT-related professional development activities		
	Mean	S.D	S.E
Belgium (Flanders)	30	22.6	(1.59)
Denmark	52	28.4	(2.47)
Finland	43	31.6	(2.11)
France	20	17.3	(1.03)
Hungary	19	22.8	(1.33)
Ireland	29	24.3	(1.73)
Italy	23	18.7	(1.08)
Norway	44	31.6	(2.54)
Portugal	26	19.9	(1.55)
Spain	29	25.3	(1.55)
Sweden	37	27.5	(2.16)
Netherlands*	45	32.4	(3.21)

* Country did not meet international sampling requirements. The data reported are not weighted.

Source: OECD (2004). *Completing the Foundation for Lifelong Learning – An OECD Survey of Upper Secondary Schools*

Development of new indicators

The European Commission is cooperating with EU Member States taking part in the OECD's new survey – TALIS (Teachers, Teaching and Learning) – to ensure that information on teacher education and professional development is collected. The survey will cover three main areas: 1) recognition, feedback, reward and evaluation of teachers, 2) school leadership and 3) teaching practices, beliefs and attitudes. The main study will take place in the 2007-08 school year and the first report from the survey is scheduled for 2009. A thematic report on the professional development of teachers will address teachers' participation in professional development comprehensively.

5.3 Schools as multi-purpose local learning centres

The conclusions of the Lisbon European Council stated that "Schools and training centres, all linked to the Internet, should be developed into multi-purpose local learning centres accessible to all, using the most appropriate methods to address a wide range of target groups; learning partnerships should be established between schools, training centres, firms and research facilities for their mutual benefit."¹⁷⁴

¹⁷⁴ Presidency Conclusions, Lisbon European Council, 23-24 March 2000, p. 9.

The 2006 Joint Report also reflects this trend: “Priority should be given to improving governance through learning partnerships, especially at regional and local levels, as a means of sharing responsibilities and costs between the relevant actors (institutions, public authorities, social partners, enterprises, sectoral organisations, community organisations, etc.).”¹⁷⁵

The concept of school as a multi-purpose learning centre is central to the idea of turning lifelong learning into reality. Education is no longer confined to the early years of life, but is a necessary constant process spread across the entire life-span. Learning takes different forms and occurs in different settings, and educational institutions have to acknowledge the plurality of formal, non-formal and informal learning activities.

As mentioned in Chapter 4, the skills and competences needed for the knowledge economy cannot rely on traditional subject matter alone. It is important that schools provide other types of skills, such as learning to learn, interpersonal and civic competences, entrepreneurship, etc. In order to do so, schools need to change their traditional *modus operandi* and become a more flexible adaptable place to meet the demands of a constantly changing society.

Despite the interest and the political will to promote schools as multi-purpose local learning centres, there is no clear understanding of what the term encompasses. Learning centres have appeared in the context of adult education, as places for non-formal education, mainly related to “second chance” activities (where adults take courses to obtain a primary or secondary school qualification). They have been relatively successful in developing countries, focusing mainly on providing Internet access and computer literacy skills.

5.4 Financial aspect of the modernisation agenda

Financing has been identified as a central aspect of modernising school education. The last Joint Report pointed out that “the necessary reforms cannot be accomplished within current levels and patterns of investment.”¹⁷⁶ The challenge facing Member States is “to identify those priorities for education investments that will impact most efficiently on the quality and equity of learning outcomes.”¹⁷⁷

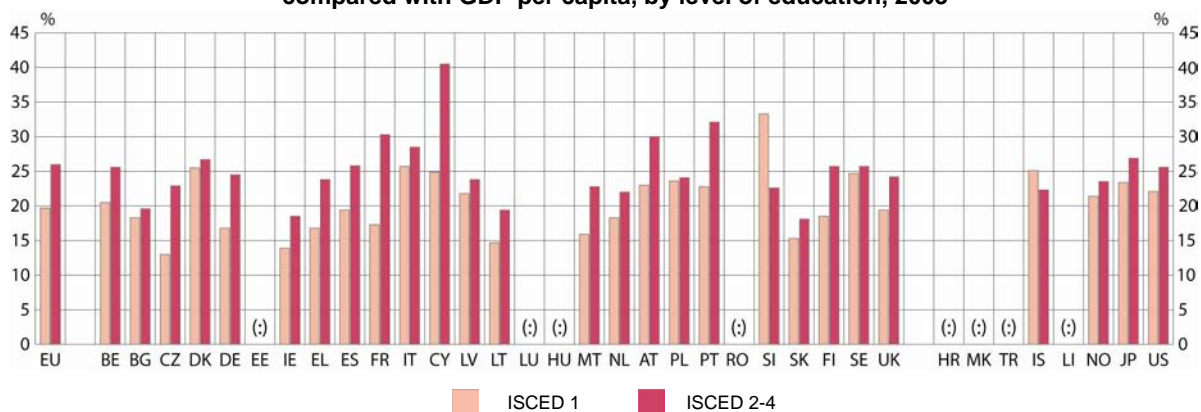
The indicator *annual expenditure on public and private educational institutions per pupil compared with GDP per capita* shows the actual efforts made by countries in funding the educational sector.

¹⁷⁵ 2006 Joint Interim Report of the Council and the Commission on progress under the Education and Training 2010 work programme (2006/C 79/01), p. 9.

¹⁷⁶ 2006 Joint Interim Report of the Council and the Commission on progress under the Education and Training 2010 work programme (2006/C 79/01), p. 2.

¹⁷⁷ Conclusions of the Council and the Representatives of the Governments of the Member States, meeting within the Council, on efficiency and equity in European education and training systems (2006/C 298/03), p. 2.

Chart 5.5: Annual expenditure on private and public educational institutions per pupil compared with GDP per capita, by level of education, 2003



	EU	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU	MT
ISCED 1	19.7	20.5	18.3	13.0	25.5	16.8	:	13.9	16.8	19.4	17.3	25.7	24.9	21.8	14.7	:	:	15.9
ISCED 2-4	26.0	25.6	19.6	22.9	26.7	24.5	:	18.5	23.8	25.8	30.3	28.5	40.5	23.8	19.4	:	:	22.8

	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	MK	TR	IS	LI	NO	JP	US
ISCED 1	18.3	23.0	23.6	22.8	:	33.3	15.3	18.5	24.7	19.4	:	:	:	25.1	:	21.4	23.4	22.1
ISCED 2-4	22.5	30.0	24.1	32.1	:	22.6	18.1	25.7	25.7	24.2	:	:	:	22.3	:	23.5	26.9	25.6

Data source: Eurostat (UOE data collection).

In terms of primary education, Denmark, Italy and Slovenia show the highest spending levels on 25% or more of GDP per capita in 2003. Cyprus, Portugal, France and Austria stand out at secondary level, with expenditure of 30% or more of GDP per capita on education. While relative spending levels for secondary education are similar in the USA and Japan, the differences between primary and secondary level are smaller in these two countries.

The difference between investment in primary and secondary levels are bigger in the Czech Republic, France, Cyprus and Portugal. Slovenia is the only Member State to have a bigger level of investment in primary education than secondary education.

In 2003, at primary level, there was a slight increase in relative spending per pupil compared with 2002 (19.3%). This is probably related to the decline in the number of pupils in primary education between 2001 and 2002 (EU-25 had 28.0 million primary pupils in 2001 and 27.6 million in 2002). Over the same period the number of pupils in secondary education decreased slightly, as did spending per student between 2002 and 2003.

Modernising school education will require investment. Different priorities have been identified in the previous sections: investing in teachers and trainers; ensuring ICT resources in all schools; implementing organisational changes; supporting training of school staff and headteachers; ensuring good quality assessment systems; and implementing learning partnerships. Measures ensuring inclusive education would also need more and targeted funding, such as investment in pre-primary education and early intervention programmes or measures supporting pupils with special educational needs (providing specially trained teaching and guidance staff and welfare services).

6. MODERNISING VET

Main messages

- In the EU the average increase in enrolment in vocational programmes at upper secondary level was 5.3% from 2000 to 2004 compared with 4.8% in upper secondary enrolments generally. In many European countries, there has been a shift in participation, away from lower level vocational programmes to programmes that give access to studies at the next programme level.
- The proportion of upper secondary pupils enrolled in a vocational stream remained constant over the EU countries over the past years with an average of 56% in 2004. However, there are sizeable differences between countries, ranging from less than 10% in Ireland and Portugal to almost 80% in the Czech Republic. More than two thirds of pupils were enrolled in a vocational stream in the Czech Republic, Austria, the UK, The Netherlands, Slovakia, Slovenia and Belgium. The participation rates in vocational programmes in upper secondary education have increased, reaching 39% for the age group 15-19 in 2004.
- There are wide variations between countries in their levels of total public expenditure on secondary VET programmes as a percentage of GDP. In 2003, Finland had the highest relative spending at 1.1% of GDP, followed by the Czech Republic, Hungary, the Netherlands and Slovakia, all of which allocated 1% of their GDP to VET.

Introduction

The Copenhagen process for enhanced European co-operation in vocational education and training (VET) suggests that reform and investment should be focused on improving the image and attractiveness of the vocational route for employers, increasing participation in VET, and improving quality and flexibility of initial VET. As a result of data gathering practises identifying the most appropriate indicators for VET based on the information available in the statistical frameworks remains a difficult exercise. However, availability and quality of statistics in the area of VET have improved the last couple of years. The Maastricht Communiqué underlined the importance of improving the scope, precision and reliability of VET statistics. This was again enhanced in the Helsinki Communiqué¹⁷⁸ on the future priorities of enhanced European cooperation in vocational education and training that states ‘adequate and consistent data and indicators are the key to understanding what is happening in VET, to strengthening mutual learning, to supporting research and to laying the foundations for evidence-based training policy’.¹⁷⁹

6.1 Indicators for monitoring performance and progress at the EU level

The education and training landscape in the European Union has evolved in past decades and the distinctions between educational pathways of general-higher-vocational training have become blurred as a result of changing social, economic and political priorities. Vocational programmes differ from academic ones with regard to their curriculum, and that they generally prepare pupils for specific types of occupations and, for direct entry into the labour market. VET comprises all more or less organised or structured activities that aim to provide people with the knowledge, skills and competences necessary to perform a job or a set of jobs, whether or not they lead to a formal qualification. VET is

¹⁷⁸ http://ec.europa.eu/education/policies/2010/doc/helsinkicom_en.pdf

¹⁷⁹ For further details on the policy overview, see table A6.1 in the Annex

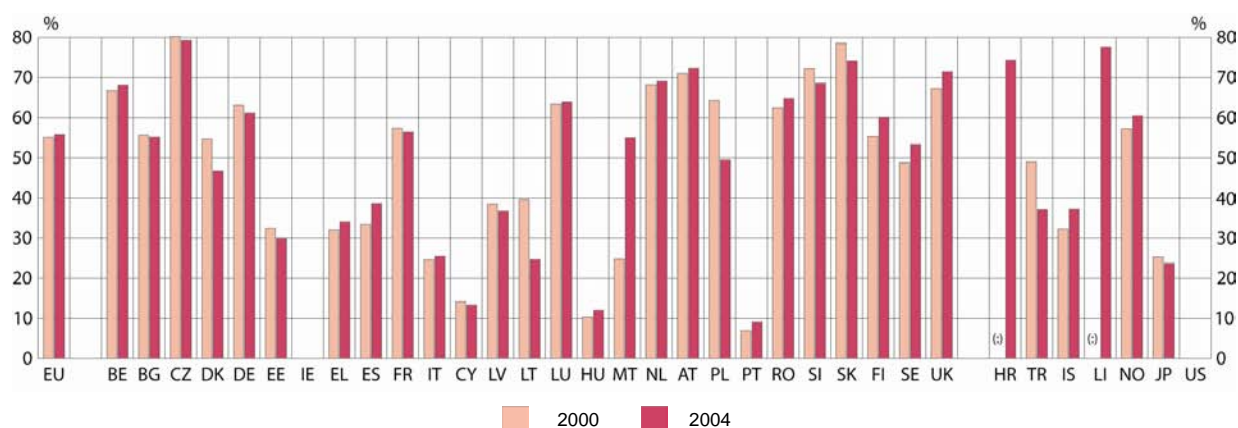
independent of venue, age or other characteristics of participants and previous level of qualifications. VET may be job-specific or directed at a broader range of occupations. It may also include elements of general education. The major importance of VET for individuals, enterprises and society is widely acknowledged, and is perceived as a key element of lifelong learning. VET takes a variety of forms in different countries and also within a given country. It can be organised as prevocational training to prepare young people for transition to a VET programme at upper secondary level. Initial VET normally leads to a certificate at upper secondary level. It can be school-based, enterprise-based, or a combination of both (as in the dual system). Completion of initial VET qualifies for access to a skilled job, and gives access to post-secondary, and sometimes higher education. VET at post-secondary level provides access to higher skilled jobs (e.g. master or technician) and can also open the way to higher education. Continuing vocational training (CVT) takes multiple forms, ranging from short training courses to participation in advanced and longer programmes. CVT can be organised by companies or networks of companies, social partner organisations, and local, regional and state bodies. Participants include employees, unemployed people or those returning to the labour market.¹⁸⁰

The core indicator used by the Commission for monitoring purposes and included in the coherent framework¹⁸¹ is: *upper secondary completion rates of young people* (broken down by the vocational stream). A context indicator on participation in continuing vocational education and training (CVET) will allow for the analysis of the role of enterprises as regards the participation of their employees in CVET and its financing. The Continuing vocational training survey (CVTS) will give valuable data about CVET when available by the end of 2007.

6.2 Participation and progression in initial VET

More than 55% of the pupils in upper secondary education in the union are enrolled in vocational programmes. However, there are sizeable differences between countries, ranging from under 10% in Ireland and Portugal to almost 80% in the Czech Republic. The proportion of pupils enrolled in vocational programmes exceeds 50% in more than half the Member States and exceeds 70% in the Czech Republic, Austria, the UK and Slovakia.

Chart 6.1: Pupils in vocational programmes at upper secondary education (ISCED level 3) as a percentage of all upper secondary education pupils. 2004



Data source : Eurostat

¹⁸⁰ Manfred Tessaring, Jennifer Wannan. Vocational education and training – key to the future; Cedefop synthesis of the Maastricht Study; Luxembourg: Office for Official Publications of the European Communities, 2004.

¹⁸¹ COM(2007) 61 final: A coherent framework of indicators and benchmarks for monitoring progress towards the Lisbon objectives in education and training
<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0061:FIN:EN:PDF>

	EU27		BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
2000	55.1		66.8	55.7	80.2	54.7	63.2	32.5	0	32.1	33.5	57.4	24.6	14.2	38.6	39.6	63.5	10.3
2004	55.8		68.2	55.2	79.3	46.8	61.2	29.9	0	34.0	38.7	56.5	25.5	13.4	36.8	24.7	63.9	12.1

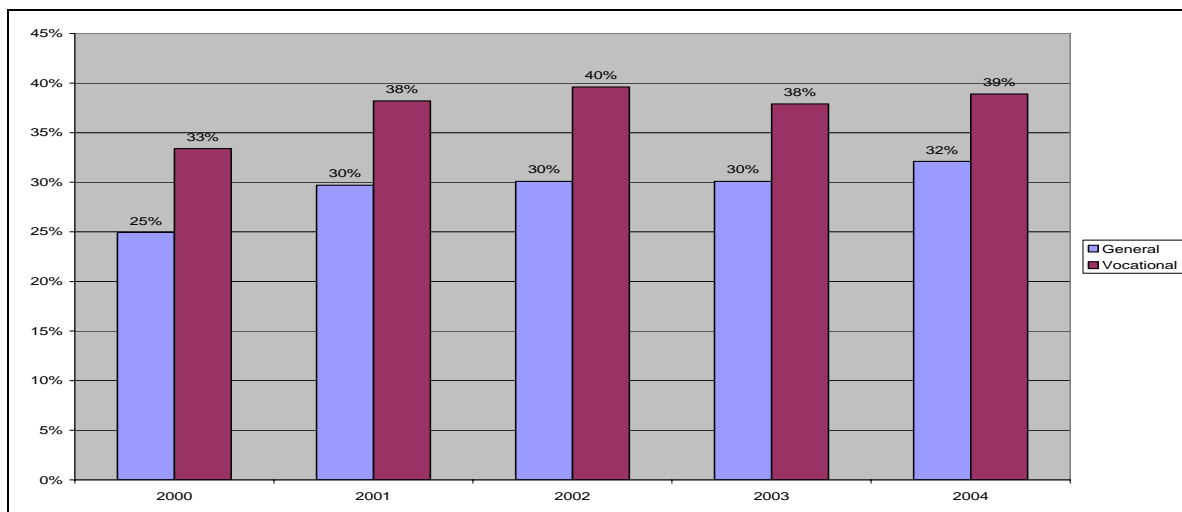
	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	TR	IS	LI	NO	JP	US
2000	24.8	68.3	71.1	64.3	7.0	62.5	72.3	78.6	55.3	48.8	67.3	:	49.0	32.3	:	57.3	25.3	0
2004	55.0	69.1	72.4	49.5	9.1	64.8	68.6	74.1	60.1	53.4	71.5	74.3	37.2	37.3	77.7	60.5	23.8	0

Data source: UOE, Eurostat

Over the past few years participation rates in VET have remained relatively stable. In most of the new Member States, however, the VET participation rate has been decreasing and the trend has been towards general and academic education. The structural differences in the educational systems need to be further investigated in order to see whether the data provide any evidence that particular structures promote higher levels of quality and/or equity in pupils outcomes.

The secondary and tertiary levels of education are reflecting the growing need to enhance human capital by raising skill levels among the population. Changing labour market and economic conditions have generated clear demand for more and better VET in most European countries. Total enrolments in upper secondary education (ISCED level 3) increased in 2004 compared with 2000 in nearly all European countries, with the exception of Ireland, Greece, Spain, France, Poland, Portugal and Sweden. The total number of full-time equivalent (FTE) pupils enrolled in vocational programmes at ISCED level 3 increased by 14% from 2000 to 2004. The participation rates in vocational programmes at ISCED level 3 have increased since 2000, climbing to 39% (for the typical 15-19 age group) in 2004 (see Chart 6.2).¹⁸²

Chart 6.2: Participation patterns in VET at ISCED level 3 for 15- to 19-year-olds (Total FTE pupils as percentage of population in the typical 15-19 age group). EU-25, 2000-2004.



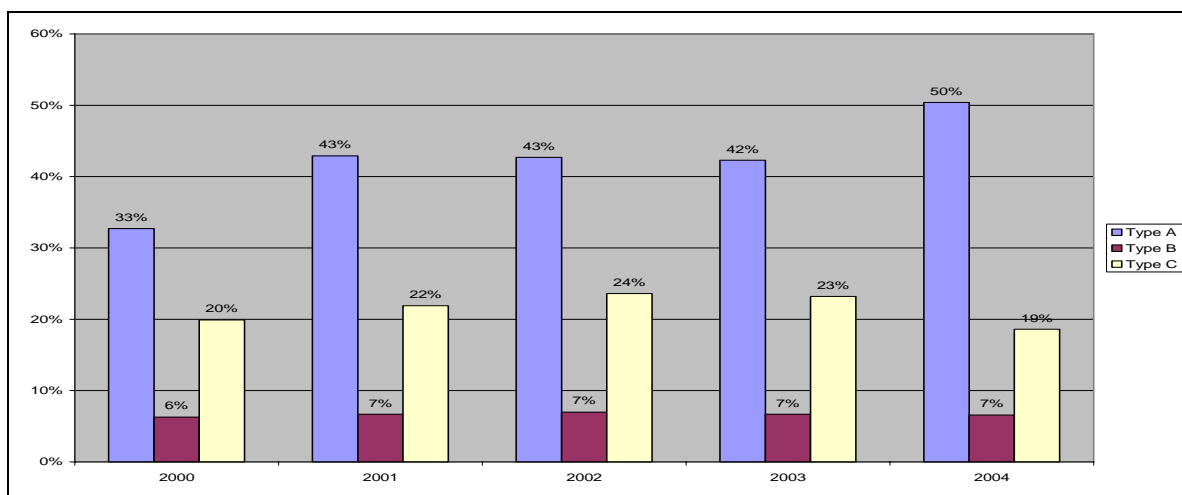
Source: DG EAC calculations based on UOE data

In several European countries there has been a shift in provision and participation, away from vocational programmes giving access only to the labour market or other programmes at the same level (ISCED level 3C) to programmes that also give access to studies at the next level (ISCED levels 3A and 3B, see Chart 6.3). Participation rates in type A upper secondary education programmes have

¹⁸² ISCED 3 corresponds to the final stage of secondary education in most EU countries. The entrance age to this level is typically 15 or 16 years. The duration of ISCED level 3 programmes range from 2 to 5 years of schooling. ISCED level 3 programmes are sub-classified according to the destination for which the programmes have been designed to prepare pupils. 3A programmes designed to provide direct access to ISCED 5A; 3B programmes designed to provide direct access to ISCED 5C; 3C programmes designed to prepare pupils for direct entry to the labour market, or to ISCED 4 or other ISCED 3 programmes. (Source OECD 2004)

increased, reaching 50% in the typical 15-19 age group in 2004. The number of pupils enrolled in type B programmes remained stable from 2000 to 2004.

Chart 6.3: Participation patterns in VET at upper secondary level for 15- to 19-year-olds, in type A, B and C programmes. (Total FTE pupils as percentage of population in the typical 15-19 age group). EU-25, 2000-2004.



Source: DG EAC calculations based on UOE data

The percentage of pupils in ISCED type C programmes (programmes that do not give access to 5A or 5B) increased from 2000 to 2002 before falling back again to 19% for the 15-19 age group in 2004.

Rising demands for skills have made upper secondary qualifications the foundation for further learning and training opportunities and, as a result, young people who leave school without an upper secondary qualification tend to find it extremely difficult to enter the labour market. The majority of pupils complete upper secondary programmes that are designed to provide access to further tertiary education and most pupils obtain upper secondary qualifications giving them access to university-level studies (ISCED level 5A) and attempts have been made in every Member State to raise the image and attractiveness of initial VET by increasing access to higher levels of education.¹⁸³ In some European countries the change in the total number of new entrants at ISCED level 5B (more occupation-oriented tertiary programmes) has been sizeable. There were 30% more new entrants in Spain, twice as many in Cyprus and Slovenia and five times more in Hungary. A significant proportion of pupils broaden their knowledge at post-secondary, non-tertiary level after completing their first upper secondary programme. In the Czech Republic, Hungary and Ireland 20% or more of the typical age cohort complete a post-secondary, non-tertiary programme and this proportion remained stable from 2000 to 2004.

National figures suggest that in some countries dropout rates are higher in vocational programmes than in general ones.¹⁸⁴ However, school dropout is often difficult to measure as so many situations can be interpreted as “dropout”.¹⁸⁵ The LFS indicator on early school leaving (18- to 24-year-olds with at most a lower secondary education qualification and not in further education and training) gives an overall picture of school dropout, but no breakdowns by type of programme (general v. vocational) are

¹⁸³ European Commission, Directorate-General for Education and Culture (2005). “Achieving the Lisbon goals. The contribution of VET”.

¹⁸⁴ For example, in Norway 84% of the cohort that started upper secondary education in 2000 completed their education within five years. The corresponding figure for pupils and apprenticeships in VET was 55%.

¹⁸⁵ Leaving a programme before the end; taking time off during a programme; transferring to another programme (whether “better” or “worse”); transferring to another institution (whether to the same programme or not); finishing the programme but failing the final examinations; passing the final examinations but not entering the next level of education, etc.

possible. High dropout rates could indicate that the education system is not meeting the needs of pupils. Pupils may find that the educational programmes offered fail to meet their expectations or the demands on the labour market. They may also consider that programmes take longer than they can justify being outside the labour market.

6.3 Structural differences in VET systems

Growing diversity in vocational educational provision has been one of the policy responses to the increasing variation in demands for skills on the labour market. Some countries have a comprehensive, non-selective system of education and training, while in others the system starts to be selective at an early stage. Table 6.1 sums up some of the structural features of school systems in EU countries that are relevant in this context. The different measures of stratification within European education systems can include, for instance, the age at the end of compulsory schooling, the age at which the first selection is made, the number of types of school or distinct programmes available to 15-year-old pupils (which in many countries correspond to the end of compulsory schooling) or separate provision of academic and vocational programmes. In around one third of European Union countries, 15-year-old pupils follow the same educational track, whereas four or more types of school or distinct programmes are available in Austria, Belgium, the Czech Republic, Germany, Ireland, Luxembourg, Malta, the Netherlands, Slovenia and Slovakia. Selection of different educational tracks occurs at as early an age as 10 in Austria and Germany.

Table 6.1: Structural features of the school systems across the EU Member States (2003)

Member State	Age at the end of full-time compulsory education, 2006/07	Age of first selection in the education system	Number of types of school or distinct programmes available to 15-year-old pupils	Proportion of 15-year-old pupils designed to give access to VET studies at the next level or the labour market
Belgium	15	12	4	23
Bulgaria	16*	14	1	m
Czech Rep.	15	11	5	17
Denmark	16	16	1	0
Germany	16*	10	4	10
Estonia	16	16	1	m
Ireland	16*	15	4	18
Greece	15*	15	2	20
Spain	16	16	1	0
France	16	15	m	10
Italy	14	14	3	m
Cyprus	15	15	2	m
Latvia	16	16	1	m
Lithuania	16	14	2	m
Luxembourg	15	13	4	5
Hungary	18*	11	3	20
Malta	16	16	4	m
Netherlands	17	12	4	61
Austria	15	10	4	43
Poland	16*	16	1	m
Portugal	15	15	3	9
Romania	16	15	3	m
Slovenia	15	15	4	m
Slovakia	16	11	5	3
Finland	16	16	1	0
Sweden	16	16	1	0
United Kingdom	16	16	1	m

Source: Eurydice, UOE, Eurostat, OECD PISA 2003 database

Note: * Reference year 2005/06. m - Missing or not available

See Chart A.4.1 in Annex 2 for additional notes.

One specific aspect differentiating between institutions and programmes is separate provision of academic and vocational programmes. The proportion of 15-year-old pupils who are enrolled in vocational programmes ranges from zero in Denmark, Finland, Spain and Sweden to 61% in the Netherlands.

The OECD calculates a composite measure of stratification from the information on four measures within the education systems:¹⁸⁶ the number of educational tracks into which pupils can be sorted, separate provision of academic and vocational programmes, the age at which selection between tracks is made and the extent of repetition of grades.

Relating this index to the PISA performance the OECD reveals that the more differentiated and selective education systems tend to show larger variation in school performance. As a result, both overall variation in pupils' performance and differences in performance between schools tend to be greater in countries with explicit differentiation between types of programme and schools at an early age.

Furthermore, the OECD (2005)¹⁸⁷ found that the relationship between quality and the degree of institutional differentiation was negative. Countries with selective education systems performed, on average, less well than countries with more comprehensive education systems. Education systems with more differentiation in terms of grade levels also tend to perform less well – although this relationship is not as strong. Finally, in many countries pupils enrolled in vocational programmes perform significantly less well in reading literacy than pupils enrolled in general programmes.

6.4 Financing vocational education and training

One important issue for most countries is allocation of resources to education and training. As mentioned in the 2006 Joint Interim Report, most governments seem to recognise that the necessary reforms cannot be accomplished within current levels and patterns of investment.¹⁸⁸ Nonetheless, there were wide variations between countries in their levels of total *public expenditure on secondary-level VET programmes as a percentage of GDP* in 2003.¹⁸⁹ These data, available for the first time, show that expenditure on VET ranged from 0.3% to 1.1%. Finland had the highest relative spending at 1.1% of GDP, followed by the Czech Republic, Hungary, the Netherlands and Slovakia, all of which allocated 1% of their GDP to VET. Public spending on vocational education as a percentage of GDP is often seen as the commitment which governments make to provision of this type of education. A better measure of governments' commitment to education is the proportion of total public expenditure devoted to education. Some countries allocate a high percentage, as is the case in Slovakia, Finland and the Netherlands where public spending on vocational programmes at secondary level (ISCED levels 2, 3 and 4 combined) accounts for more than 2% of total public expenditure (see Table 6.2).

¹⁸⁶ The OECD index of stratification is constructed across the four various measures of stratification. The components were averaged with equal weight with the measure of the age of selection inverted. EaG2005 (p. 403 "Stratification and pupils' performance in mathematics") demonstrates the relationship between the overall index of stratification and school variance in pupils' performance in mathematics. Explanation of these results is by no means straightforward. There is no intrinsic reason why institutional differentiation should necessarily lead to greater variation in pupils' performance, or even to greater social selectivity. If teaching homogeneous groups of pupils is more efficient than teaching heterogeneous groups, this should increase the overall level of pupils' performance rather than the scatter of scores. The index is a measure of the percentage of variance in pupils' performance that is explained by the economic, social and cultural status (ESCS) of pupils. ESCS is measured by the PISA index of economic, social and cultural status. A low value for this relationship indicates that relatively little of the variance in pupils' performance can be attributed to ESCS; if the value is high, the reverse is true. A strong relationship is a sign of inequity in the system. Looking at the strength of this relationship alongside the measures of stratification shown in this indicator therefore provides a means of examining the extent to which inequities can be associated with structural features of the education system.

¹⁸⁷ School Factors Related to Quality and Equity (OECD, 2005).

¹⁸⁸ http://eur-lex.europa.eu/LexUriServ/site/en/oj/2006/c_079/c_07920060401en00010019.pdf.

¹⁸⁹ These data are available for the first time (2003) and cover 14 countries.

Although both indicators give a picture of a country's financial commitment to education, each of them also takes into consideration different factors, such as the general national wealth and, indirectly, the number of pupils. Data on private expenditure on VET are not available in every country. The latest data available on business expenditure on training activities are from 1999. New data will not be available before autumn 2007 (from Eurostat's third continuing vocational training survey CVTS3).

Table 6.2: Public expenditure on secondary education by programme orientation (2003)

Country	as % of GDP			as % of total public expenditure		
	Total secondary	Type of programme		Total secondary	Type of programme	
		General	Vocational		General	Vocational
European Union	2.4	m	m	5.1	m	m
Belgium	2.6	m	m	5.0	m	m
Bulgaria	1.9	1.3	0.6	m	m	m
Czech Rep.	2.3	1.3	1.0	4.4	2.5	1.9
Denmark	2.9	m	m	5.2	m	m
Germany	2.4	1.7	0.7	4.9	3.5	1.4
Estonia	2.7	2.2	0.5	7.4	6.1	1.4
Ireland	1.7	m	m	5.2	m	m
Greece	1.5	m	m	3.0	m	m
Spain	1.7	m	m	4.5	m	m
France	2.9	2.3	0.6	5.4	4.4	1.0
Italy	2.3	m	m	4.8	m	m
Cyprus	3.4	3.0	0.4	7.4	6.5	0.9
Latvia	3.0	m	m	8.6	m	m
Lithuania	2.7	2.3	0.3	8.1	7.1	1.0
Luxembourg	2.0	1.2	0.7	4.4	2.8	1.6
Hungary	2.7	1.7	1.0	5.5	3.5	2.0
Malta	1.6	1.6	m	3.3	3.3	m
Netherlands	2.0	1.0	1.0	4.2	2.1	2.1
Austria	2.7	m	m	5.3	3.4	2.0
Poland	2.3	m	m	5.2	3.9	1.4
Portugal	2.3	m	m	5.0	m	m
Romania	0.7	m	m	m	m	m
Slovenia	1.5	m	m	3.0	m	m
Slovakia	2.2	1.2	1.0	5.6	3.1	2.4
Finland	2.7	1.6	1.1	5.2	3.1	2.2
Sweden	2.8	1.9	0.8	4.7	3.3	1.4
United Kingdom	2.6	m	m	6.2	m	m
Croatia	1.1	m	m	m	m	m
FYR Macedonia	m	m	m	m	m	m
Turkey	0.8	0.4	0.4	m	m	m
Iceland	2.6	m	m	5.5	m	m
Liechtenstein	m	m	m	m	m	m
Norway	2.7	m	m	5.7	m	m
United States	2.1	5.7	m	m	m	m
Japan	1.4	4.1	m	m	m	m

m - Missing or not available; p - Provisional data

Source: Eurostat

The orientation of the programme provided to pupils and the number of pupils enrolled in the education system largely influences the allocation of resources to VET. Expenditure on educational institutions per pupil gives a better measure of unit costs in formal education, providing an assessment of the investment made in each pupil. With the exception of the Netherlands all countries for which data are available spend, on average, more per pupil on vocational programmes than on general

programmes, with sizeable differences in countries like Germany, Cyprus and Bulgaria where spending per vocational pupil is almost double expenditure per secondary pupil following a general programme (see Table 6.3). The differences between European countries are due mainly to the disparities in employee compensation (which are counted differently as part of total expenditure by educational institutions), to expenditure on teaching materials and facilities but also to private expenditure which can be sizeable in some countries.

Table 6.3: Expenditure per full-time equivalent pupil in secondary education by programme orientation (in 1000 EUR PPS, 2003)

	EU-27		BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	IT	CY	LV	LT	LU	HU
2003	5.7		6.6	1.3	3.4	7.0	5.8	m	5.4	4.2	5.5	7.4	6.7	7.1	2.1	1.9	m	m
Gen.	m		m	1.1	3.3	m	4.9	m	m	m	m	7.3	m	6.7	m	1.9	m	m
Voc.	m		m	2.0	3.5	m	8.6	m	m	m	m	7.8	m	12.0	m	2.1	m	m
	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	HR	TR	IS	LI	NO	JP	US
2003	3.7	6.0	7.9	2.5	5.1	m	3.7	2.1	6.3	6.5	6.2	m	m	5.9	5.3	7.5	6.2	8.2
Gen.	m	6.2	m	m	m	m	m	1.8	6.1	6.2	m	m	m	m	m	m	m	m
Voc.	m	5.7	m	m	m	m	m	2.6	6.6	7.1	m	m	m	m	m	m	m	m

m - Missing or not available

Source: Eurostat

These disparities may reflect teaching quality and the availability of other potentially important resources in schools along with labour market factors. The varying enrolment patterns can affect the interpretability of expenditure on education per pupil. In particular, comparatively low annual expenditure on education per pupil can result in comparatively high overall costs of education if the typical duration of studies is long.

6.5 Outputs and outcomes of VET

Currently there is a lack of comparable data on the volume of VET provision and the links to national qualification frameworks, to transition processes, etc. No direct (internationally comparable) output indicators (i.e. pupil achievement in basic subjects and competences) are available for upper secondary vocational education, with the exception of some TIMSS and PISA results. The situation is similar for outcome indicators. Cohort data are missing and limited information is available on effectiveness and success rates in VET. Large-scale internationally comparable assessments often concentrate on general competences (e.g. reading, information processing, numeracy and problem-solving), whereas many employers argue that in vocational education the domains assessed should be sector- or work-specific skills, which are highly contextualised. The exceptions are the “final year” TIMSS and International Adult Literacy Survey (IALS) data, where a distinction is drawn for the population that has completed secondary level (ISCED 3). In both surveys information could be made available on the educational background of participants. However, only some of these questions could be asked in a similar way in all countries participating, and literacy and numeracy results from the two surveys can be of only limited use for matching the literacy profiles with national or international educational attainment levels. Hence often either the data are not refined enough or it is unclear how the categorisation has been made.

Completion of upper secondary education increased but variation in performance can be observed between 15-year-olds enrolled in general and vocational programmes. Evidence shows that in many countries pupils enrolled in vocational programmes perform significantly less well in reading literacy than pupils enrolled in general programmes. The results from PISA 2003 show that 15-year-old pupils in pre-vocational and vocational programmes perform significantly less well in mathematics than pupils enrolled in general programmes in 12 out of the 16 OECD countries for which data are available. On average, across OECD countries 15-year-old pupils enrolled in general programmes

have a performance advantage of 47 points and this difference exceeds 60 points in Belgium, Greece, Hungary and the Netherlands. After adjusting for socio-economic factors, the performance advantage still remains at 29 points, which is in the order of magnitude of one school year.¹⁹⁰ Also, countries with selective education systems, on average, performed less well than countries with more comprehensive education systems and although there is a tendency for the more stratified education systems to perform less well, this is small and not statistically significant (OECD, EaG 2005).

Completion rates can be used as a proxy for educational outputs as they are an indicator of the current rate of production of higher-level knowledge by each country's education system. Countries with high completion rates are most likely to be developing or maintaining a highly skilled labour force.

6.6 Labour market status of VET graduates

Avoiding early difficulties on the labour market is particularly important for youths as abundant literature shows that long spells of unemployment on entering the labour force may have persistent effects on employment prospects and wages later in life. Dual systems¹⁹¹ have proven quite successful in giving young people a good start on the labour market. Indeed, Denmark and Switzerland are among the European countries with the lowest youth unemployment rates and Austria is still well below the EU average for the same indicator. In addition, Austria, Denmark and Germany are among the countries with the lowest percentages of young people experiencing repeated spells of unemployment (see chapter 8, Table 8.2).

Adding to the already rich literature, recent empirical findings provide further support for the idea that apprenticeships have a positive effect on early-career employment outcomes. Van der Velden *et al.* (2001) showed that European countries with apprenticeship systems display better youth employment patterns, particularly in the form of a larger share of employment in skilled occupations and in high-wage sectors, than those with few or no apprenticeships. Along similar lines, Gangl (2003) studied labour market outcomes of different types of school/work-based qualifications – including apprenticeships – for 12 European countries and found that apprenticeships perform rather favourably both compared with school-based education at the same level of training and across different qualification levels. Gangl also reported that, after correcting for institutional and structural factors, apprenticeships produce a significant reduction in early-career unemployment rates. Ryan (2001) and Steedman (2005) argued that part of this effect may stem from better matching of training to labour market demand as apprenticeship training is contingent on offers from employers. However, the evidence shows that the effects of apprenticeship training on long-term employment outcomes and on post-apprenticeship wages are more mixed (OECD 2006).¹⁹²

¹⁹⁰ Indicator C1/EaG2007 forthcoming, based on PISA 2003.

¹⁹¹ Systems where school-based and work-based training are provided in parallel are known as “dual” systems. In a “dual” system – typical of Austria, Denmark, Germany, Switzerland and, more recently, Norway – youths spend some time in educational institutions and the remainder at the workplace. Apprenticeships are then part of the formal educational structure and are usually entered into after completion of compulsory education. They involve an employment relationship *plus* formal schooling – normally one and a half to two days per week – over a period of three or sometimes four years. At the end of the programme, apprentices take a final examination in which they have to prove their theoretical and practical grasp of the occupation concerned.

¹⁹² “*Starting Well or Losing their Way? The Position of Youth in the Labour Market in OECD Countries*” (OECD Social, Employment and Migration Working Papers, 2006) <http://www.oecd.org/dataoecd/0/30/37805131.pdf>.

7. MODERNISING HIGHER EDUCATION

Main messages

MST graduates

- The EU is on course to surpass the benchmark of an increase of 15% in the number of tertiary graduates in mathematics, science and technology (MST) by 2010 (equal to an absolute increase of 100 000 graduates). Average annual growth was 4.7% over the period 2000-2005 (over 35 000 graduates per year, making a total of over 175 000 in this period). However, growth is currently even stronger in major new competitor countries like India and China (in 2004 the number of MST graduates in China had already overtaken the EU figure). Demographic trends (decreasing cohort size) could spell a further slowdown in growth in the number of MST graduates in Europe in the long term.
- The strong overall growth in the EU also masks considerable differences between Member States and between disciplines: while the number of graduates in computing increased by over 80% between 2000 and 2005, the number of graduates in physical science decreased by 5% over the same period.
- There is still a wide gap in employment of researchers per thousand labour force between the EU and the USA and Japan.
- Little progress has been made on reducing the gender imbalance among MST graduates. The proportion of female graduates has increased slightly, from 30.8% in 2000 to 31.2% in 2005. Another notable feature is that the gender imbalance is more marked in engineering, manufacturing and construction and in computing and less pronounced in architecture and building and in manufacturing and processing. Gender balance has been achieved for mathematics and statistics, and women predominate in life sciences.

Mobility

- The percentage of students with foreign citizenship has increased in the EU. Three quarters of the outgoing students from EU countries go to another EU country.
- Mobility within the Erasmus programme has continued to increase – by 7.3% between 2005 and 2006. More than 1.5 million students have now taken part in the Erasmus scheme since its inception in 1987. However, mobility in the Erasmus programme varies widely, with some countries receiving far more students than they send abroad.

Quality of institutions

- International university rankings show a relatively high share of institutions in western and northern European countries ranked among the institutions performing well. The very top end of the rankings is, however, dominated by US universities.

Introduction

Treaty states that the Community “shall contribute to the development of quality education by encouraging cooperation between Member States”. The Community has three complementary roles to play: to add a European dimension to education, to help develop quality education and to encourage lifelong learning. One important EU scheme has been Socrates/Erasmus (since 2007 Erasmus has the status of a programme) which celebrates its 20th anniversary in 2007 and supports and encourages Europe-wide mobility of students and teachers. To facilitate recognition of studies abroad, several initiatives have been launched, including the European Credit Transfer System (ECTS) and the “Diploma Supplement”. To promote the quality of higher education the European Network for Quality Assurance (ENQA) was set up in 1999.

In 1999 ministers from 29 European countries signed the Bologna Declaration (today 46 countries are participating in this process), with the aim of establishing a European area of higher education by 2010.¹⁹³

The growing attention given to higher education is reflected in a series of Commission Communications in recent years on:

- the role of universities in the Europe of knowledge;¹⁹⁴
- mobilising the brainpower of Europe: enabling universities to make their full contribution to the Lisbon strategy (April 2005);¹⁹⁵
- delivering on the modernisation agenda for universities: education, research and innovation (May 2006);¹⁹⁶
- the European Institute of Technology: further steps for its creation (June 2006).¹⁹⁷

The European Institute of Technology (EIT) is a new flagship project of the Commission which aims at reinforcing the innovation capacity of Member States and the Community. It addresses several issues already highlighted in the modernisation agenda, notably the fragmentation of the European higher education and research system, the lack of excellence in certain areas and the low level of involvement of business in education and research. It is expected to boost Europe’s innovation capacity by supporting full integration of the knowledge triangle (innovation, research and education) and pooling resources from universities, research organisations and business partners. While the EIT is not meant to address issues exclusive to higher education, the EIT’s governance, working methods and relationship with business are expected to inspire change for the better throughout Europe.

There are currently several quantitative EU objectives relating to higher education:

- *The EU benchmark of an increase in the number of mathematics, science and technology graduates by at least 15% by 2010 (compared with 2000) while at the same time reducing the gender imbalance.*¹⁹⁸

¹⁹³ <http://ec.europa.eu/education/policies/educ/bologna/bologna.pdf>

¹⁹⁴ http://europa.eu/eur-lex/en/com/cnc/2003/com2003_0058en01.pdf

¹⁹⁵ http://ec.europa.eu/education/policies/2010/doc/comuniv2005_en.pdf

¹⁹⁶ http://ec.europa.eu/education/policies/2010/doc/comuniv2006_en.pdf

¹⁹⁷ http://ec.europa.eu/education/policies/educ/eit/comm_8_6_06_en.pdf

- *The Commission proposal for an objective of investing 2% of GDP in higher education (current level: 1.3%).*¹⁹⁹

- *The goal of 3 million Erasmus students by 2012 (Council and Parliament Decision of November 2006 on an action programme in the field of lifelong learning).*²⁰⁰

The objective set at the spring 2002 Barcelona European Council of spending 3% of GDP on research and development by 2010 (the current level is 1.8%) also has implications for higher education since about 22% of R&D spending in Europe goes into university-based research.

The next four subchapters report on progress towards these objectives while the fifth looks at quality at institutional level.

Subchapter 1 covers the benchmark for MST graduates, shows the progress made and gender breakdown but also provides data on the trend in the number of tertiary students, in order to put the data into perspective.

Subchapter 2 covers the important issues of student mobility, for which there is an EU target for the number of Erasmus students.

Finally, Subchapter 3 looks at the institution level and deals with international university rankings.

Additional information on higher education financing can be found in Chapter 2 (Efficiency of investment). More information on participation in higher education can be found in Chapter 3 (Lifelong learning) and in Chapter 1 (Equity).

7.1 Mathematics, science and technology (MST) graduates

Science and technology are vital to the knowledge-based and increasingly digital economy. The issue of increasing the intake to these studies, particularly to technological fields, has been emphasised on numerous occasions.

The Council underlined the importance of this goal in May 2003 when it adopted the benchmark of increasing the number of mathematics, science and technology graduates by at least 15% by 2010. Furthermore, it underlined that education of an adequate supply of science specialists was all the more important in the light of the goal set by the Barcelona European Council of increasing overall spending on research and development (R&D) to 3% of GDP by 2010.²⁰¹ The European Council declared that “special attention must be given to ways and means of encouraging young people, especially women, in scientific and technical studies as well as ensuring the long-term recruitment of qualified teachers in these fields.”²⁰² Studies have been launched by the Commission to identify good practice.²⁰³

¹⁹⁸ Council Conclusions of 5-6 May 2003 on Reference Levels of European Average Performance in Education and Training (Benchmarks).

¹⁹⁹ COM(2006) 30 final of 25 January 2006 and COM(2006) 208 final of 10 May 2006 “Delivering on the Modernisation Agenda for Universities: Education, Research and Innovation”.

²⁰⁰ Decision No 1720/2006/EC of the European Parliament and of the Council of 15 November 2006 establishing an action programme in the field of lifelong learning.

²⁰¹ European Commission (2003), *Third European Report on Science and Technology Indicators*.

²⁰² Presidency Conclusions European Council, Stockholm, 2001.

²⁰³ For example, the Socrates Action 6 project “GRID - Growing Interest in the Development of Teaching Science (2006)”, coordinated by the Pôle universitaire européen de Lorraine.

7.1.1 Indicators for monitoring performance and progress

“Mathematics, science and technology” (MST) cover the following fields: *life sciences, physical sciences, mathematics and statistics, computing, engineering and engineering trades, manufacturing and processing, architecture and building*.²⁰⁴

The indicators selected mainly address the key aspects of motivating more young people to choose studies and careers in MST (in particular, research careers and scientific disciplines) and of improving the gender balance.

Two points which should be noted are that the total number of graduates and the growth rates double count graduates at various degree levels and also include the impact of the introduction of short-study cycles (if only first-degree graduates were considered the compound growth rate for 2000-2004 would, however, be only 2 percentage points lower). Double-counting of graduates is a problem in some countries because of the specific features of the educational system (for instance, in France). Since both first and second degrees are included (the latter account for about 15% of graduates and new PhDs for 5%), the indicators cover the total number of graduates during the year concerned, not the number of first-time graduates. The number of people leaving the education system with an MST degree is therefore lower.

In order to put the data on MST graduates into context, data on trends in MST students and general students have been added to the analysis.

7.1.2 General student population trends

In 2005 about 32 million people in the EU (49% female and 51% male) were between 20 and 24 years old, the typical tertiary student age bracket. The student-age population has declined slightly in the recent past (-1.1% between 2000 and 2005), with large differences in trends between Member States. Most Member States reported an increase over this period, but southern European countries (where birth rates dropped in the 1980s) and some of the new Member States recorded a decrease. Southern European countries and many new Member States (in most of which the number of births dropped sharply after 1989) will see a further decline in their student-age population up to 2010.

²⁰⁴ ISCED fields of education 42, 44, 46, 48, 52, 54 and 58.

Table 7.1: Tertiary students (2000-2005)

	Number of tertiary students (in 1000)			Growth per year (%)	Number of tertiary MST students (in 1000)			Growth per year (%)
	2000	2004	2005	2000-05	2000	2004	2005	2000-05
EU-27	15920	18233	18530	3,1	3534	4079	4073	3.4
Belgium	356	386	390	1.8	74.6	80	64.5	-2.9
Bulgaria	261	228	238	-1.9	64.5	62	63.3	-0.4
Czech Republic	254	319	336	5.8	74.5	95.7	98.1	5.7
Denmark	189	217	232	4.2	38.3	42.3	43.0	2.3
Germany	2055	2330	2269	2.0	587.2	707.4	696.9	3.5
Estonia	54	66	68	4.8	11.4	14.4	15.3	6.0
Ireland	161	188	187	3.0	45.3	43.9	42.1	-1.5
Greece	422	597	647	8.9	:	189.8	208.0	:
Spain	1829	1840	1809	-0.2	525.1	566.7	534.0	0.6
France	2015	2160	2187	1.7	:	:	:	:
Italy	1770	1986	2015	2.6	433.2	473.4	476.1	1.9
Cyprus	10.4	20.8	20.1	14.0	1.8	3.5	3.6	14.5
Latvia	91	128	131	7.5	15.1	21.1	19.2	5.0
Lithuania	122	183	195.4	9.9	33.4	46.9	48.6	7.8
Luxembourg	2.4	:	:	:	0.4	0.4	:	:
Hungary	307	422	436	7.3	65.7	78.6	77.7	3.4
Malta	6.3	7.9	9.4	8,4	0.7	1.2	1.3	12.3
Netherlands	488	543	565	3.0	80.8	85.8	87.3	1.6
Austria	261	239	244	-1.3	73.9	58.5	59.0	-4.4
Poland	1580	2044	2118	6.0	284.8	411.5	423.3	8.2
Portugal	374	395	381	0.4	102.2	116.4	112.1	1.9
Romania	453	686	739	10.3	124.2	179.3	184.9	8.3
Slovenia	84	104	112	6.0	19.7	22.9	23.8	3.9
Slovakia	136	165	181	6.0	38.1	43.5	47.9	4.7
Finland	270	300	306	2.5	97.9	115	116.3	3.5
Sweden	347	430	427	4.2	106	113.3	110.6	0.9
United Kingdom	2024	2247	2288	2.5	477.4	505.7	509.8	1.3
Croatia	:	126	135	:	:	30	32.2	:
FYR Macedonia	:	47	49	6.0	:	12.3	12.6	:
Turkey	1015	1973	2106	15.7	301	426.9	450.6	8.4
Iceland	9.7	14.7	15.2	9.4	1.7	2.3	2.3	6.7
Liechtenstein	0.5	0.5	0.5	:	:	0.1	0.1	:
Norway	191	214	214	2.3	29.9	36	34.9	5.3
Japan	3982	4032	4038	0.3	819.4	796.7	787.2	-0.8
United States	13202	16900	17272	5.5	:	:	2692.2	:

Data source: Eurostat (UOE)

Additional notes:

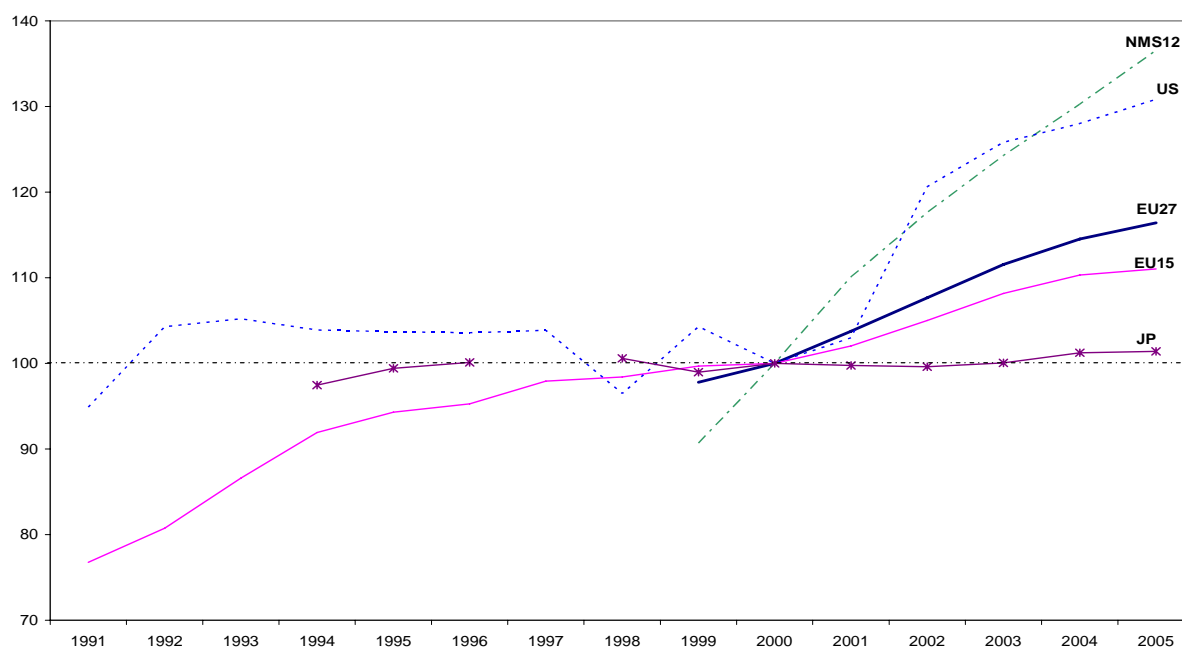
Number of students means the total number of full-time and part-time students.

All students: 2000-2004: DE, SI: data exclude ISCED level 6. 2000: RO: Data exclude ISCED level 6; MK: Data exclude ISCED level 5A second degrees and ISCED level 6; 2000-2004: BE: Data exclude independent private institutions and German-speaking community; CY: most tertiary students study abroad and are therefore not included.

MST students: Austria: Break in time series in 2003; before 2003 Austria reported students studying more than one field in each of the fields in which they were enrolled, leading to double-counting; since 2003 students have been allocated to only one field. The EU total for 2003 includes Greece (with 2002 data). The EU total for 2000 would be about 3 330 if Greece were included.

Despite the slight decline in the number of young people in the EU, the increase in the tertiary education participation rate and in the number of students from outside Europe studying in the EU (currently nearly 0.8 million) led to growth of 16.4% in the number of tertiary students in the EU over the period 2000-2005 or, on average, 3.1% per year. In 2005 the number of students increased by 1.6%, less than in previous years, to 18.5 million (of whom 55% were female). Growth has been particularly strong in the new Member States, where the number of students has expanded by a quarter since 2000. In 2004 there were 4.1 million new entrants to tertiary studies in the EU, compared with 3.7 million in 2000 and with a one-year cohort in the student-age bracket of about 6.4 million.

Chart 7.1: Trend in number of tertiary students 1991-2005 (1999 = 100)



Source: DG EAC/CRELL based on Eurostat data

Additional note: For EU-15, data for Luxembourg not available in 2004 and 2005; the calculations therefore use the data for 2003.

7.1.3 Students enrolled in MST

The number of tertiary MST students has increased by more than 15% since 2000.²⁰⁵ Growth has been particularly strong in Malta, Poland, Lithuania, Romania and Cyprus. For some countries, however, the number of MST graduates stagnated or even declined. The latter was the case in Austria (due to introduction of tuition fees in 2001/02 and breaks in series), Ireland and Bulgaria. Despite this strong growth, overall growth slowed down slightly in the EU in 2004²⁰⁶ to 3.7%. Contrary to the growth in the EU, in Japan the number of MST students declined by 2.8% (on average by 0.7% per year). In the EU MST students accounted for 22.4% of the total tertiary student population in 2004.

European benchmark²⁰⁷
The total number of graduates in mathematics, science and technology in the European Union should increase by at least 15% by 2010 while at the same time the level of sex imbalance should decrease.²⁰⁸

7.1.4 Number of graduates in mathematics, science and technology (MST)

As a result of the growth rate of 4.7% per year since 2000, EU-27 had already achieved the benchmark before 2005. After strong growth in previous years, the increase decelerated somewhat in 2004 but picked up speed again in 2005, pushing up the total to about 860 000 graduates. Taking 2000 (i.e. the 1999/2000 academic year) as the base year (when there were 686 000 graduates), the target growth of 15% implies an absolute increase of some 100 000 graduates by 2010 or of about 10 000 graduates per year. However, up to now much higher growth rates and an increase of over 175 000 MST graduates have been achieved.

²⁰⁵ The fact that Greece is not included in the 2000 figures has been taken into account in this rate.

²⁰⁶ The slowdown is overstated in the statistics because of a break in the time series in the UK.

²⁰⁷ Council conclusions of 5-6 May 2003 on Reference Levels of European Average Performance in Education and Training (Benchmarks).

²⁰⁸ Indicator: Total number of tertiary (ISCED level 5A, 5B and 6) graduates in mathematics, science and technology.

In 2005 Estonia, Greece, Poland, Austria and Italy showed the strongest growth in the numbers of MST graduates (>10%). Despite the general positive trend, Spain and Cyprus showed a considerable decrease (-5% and more) in numbers in 2005.

Table 7.2: Graduates in MST

	Number of graduates (in 1000)			Per 1000 inhabitants aged 20-29	Growth in graduates per year (%)	Growth in graduates (%)
	2000	2004	2005	2005	2000-2005	2005
EU-27	686.2	824.6	864.2	13.1	4.7	4.8
Belgium	12.9	14.6	14.1	10.9	1.8	-3.1
Bulgaria	8.1	9.7	9.7	8.6	3.8	0.7
Czech Republic	9.4	12.1	13.2	8.2	7.1	8.5
Denmark	8.5	9.1	9.4	14.7	2.1	3.4
Germany	80.0	85.9	93.5	9.7	3.1	8.8
Estonia	1.3	1.7	2.4	12.1	:	37.6
Ireland	14.5	15.4	16.8	24.5	3.0	9.5
Greece		13.2	16.3	10.1	:	24.1
Spain	65.1	83.2	78.5	11.8	3.8	-5.6
France	154.8	175.3	179.3	22.5	3.0	2.1
Italy	46.6	78.9	79.5	13.3	11.3	0.8
Cyprus	0.3	0.5	0.4	3.6	4.7	-9.2
Latvia	2.4	3.1	3.3	9.8	6.2	5.5
Lithuania	6.6	8.3	9.0	18.9	6.6	8.4
Luxembourg	0.1	:	:	:	:	:
Hungary	7.2	8.0	7.9	5.1	1.8	-1.4
Malta	0.2	0.2	0.2	3.4	2.1	-1.4
Netherlands	12.5	15.6	16.9	8.6	6.3	8.5
Austria	7.5	8.9	10.1	9.8	6.1	13.7
Poland	39.2	59.1	70.8	11.1	12.1	19.8
Portugal	10.1	17.4	18.7	12.0	13.1	17.6
Romania	17.1	33.8	35.3	10.3	6.7	4.2
Slovenia	2.6	2.8	2.9	9.8	2.0	4.3
Slovakia	4.7	8.5	9.4	10.2	14.7	10.0
Finland	10.1	11.5	11.8	17.7	3.1	2.3
Sweden	13.0	17.1	15.3	14.4	5.1	-10.4
United Kingdom	140.6	135.0	139.8	18.4	-0.1	3.5
Croatia	:	3.3	3.5	5.7	1.5	6.1
FYR Macedonia	1.2	1.2	1.3	4.0	1.7	7.8
Turkey	57.1	74.5	76.5	5.7	6.0	2.7
Iceland	0.4	0.5	0.4	10.1	4.1	-6.3
Liechtenstein	:	0.004	0.1	12.7	:	1300.0
Norway	4.8	5.1	5.1	9.0	1.0	-1.1
Japan	236.7	226.5	226.4	13.7	-1.1	0.0
United States	369.4	407.4	429.7	10.6	3.1	5.5

Source: DG EAC, calculations based on Eurostat (UOE) data

Additional notes:

PL: growth based on 2001-2005. RO: growth based on 2000-2002 and 2003-2005. HR: growth 2003-2005. SE: Growth 2000-2003

HU: growth 2000-2003

BE: Data for the Flemish community exclude second qualifications in non-university tertiary education; the data also exclude independent private institutions (although the number is small) and the German-speaking community.

EE: 2000 data exclude Master's degrees (ISCED level 5A).

EL: No data available for 2000-2003. EU total includes an estimate for Greece for this period.

CY: Data exclude tertiary students graduating abroad. Over half of the total number of Cypriot tertiary students study abroad. The fields of study available in Cyprus are limited.

LU: Luxembourg has no complete university system, since most MST students study and graduate abroad.

HU: 2004: Changes in data collection on graduates by fields led to breaks in the time series.

AT: 2000: ISCED level 5B refers to the previous year.

PL: Data for 2000 exclude advanced research programmes (ISCED level 6).

RO: 2000 data exclude second qualifications and advanced research programmes (ISCED level 6). There is therefore a break in the series in 2004.

SE: 2004: Changes in data collection on graduates by fields led to breaks in the time series.

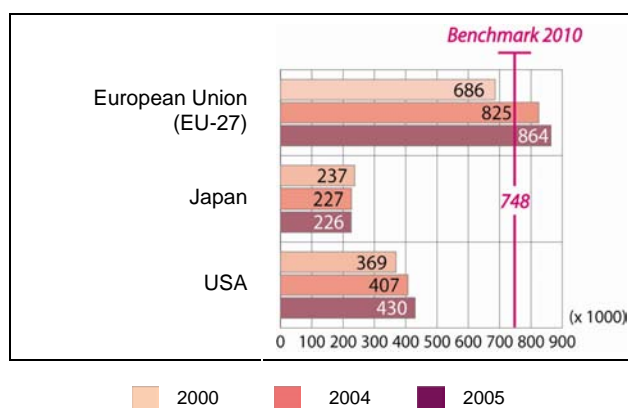
UK: National data used for 2000.

LI: 2003-2004 data exclude tertiary students graduating abroad. The fields of study available in Liechtenstein are limited.

IT: 2005 result includes an estimate of 10 000 graduates for ISCED 5A second degrees and ISCED 6, which were not included in the original figure for Italy

The EU produces about one sixth of the nearly 5 million MST graduates worldwide every year.²⁰⁹ In 2004 there were 825 000 MST graduates in the EU compared with 407 000 in the USA, 227 000 in Japan and 346 000 in Russia. However, the number of MST graduates is rising fast in China, where it has more than doubled since 2000 to 1 020 000 in 2004.²¹⁰ The availability of a large pool of MST graduates in low-wage countries is having a growing impact on high-technology industries worldwide and increasingly affecting the comparative advantage (relative abundance of highly skilled workers) of developed countries.

Chart 7.2: Total number of tertiary (ISCED level 5A, 5B and 6) graduates in mathematics, science and technology, 2000-2005



Data source: Eurostat (UOE)

Additional notes: EU total does not include Greece. EU total for 2000 includes UK national data.

The average number of graduates in mathematics, science and technology (ISCED levels 5A, 5B and 6) in the EU was 10.2 per 1000 inhabitants aged 20-29 in 2000 and 13.1 in 2005. Related to a one-year age cohort, this implies that about 13% of young people take a degree in MST (the real figure is about 15% lower because of double-counting of graduates at various levels). Relative growth was slightly stronger than the absolute growth in the number of graduates, because the size of the population aged 20-29 declined slightly over this period. Ireland, France, Lithuania, Finland and the UK showed a relatively high number of MST graduates, with over 15 per 1000, whereas Hungary recorded only 5.1 per 1000 (Malta and Cyprus have only limited university systems).

Since the number of MST students increased up to 2005, the number of graduates will probably continue to increase in the next few years. However, long-term demographic trends, especially the strong decline in birth rates in the new Member States after 1989, might also pose the risk of stagnation or decline in the number of MST students and graduates after 2010, despite the increase in higher education participation rates.

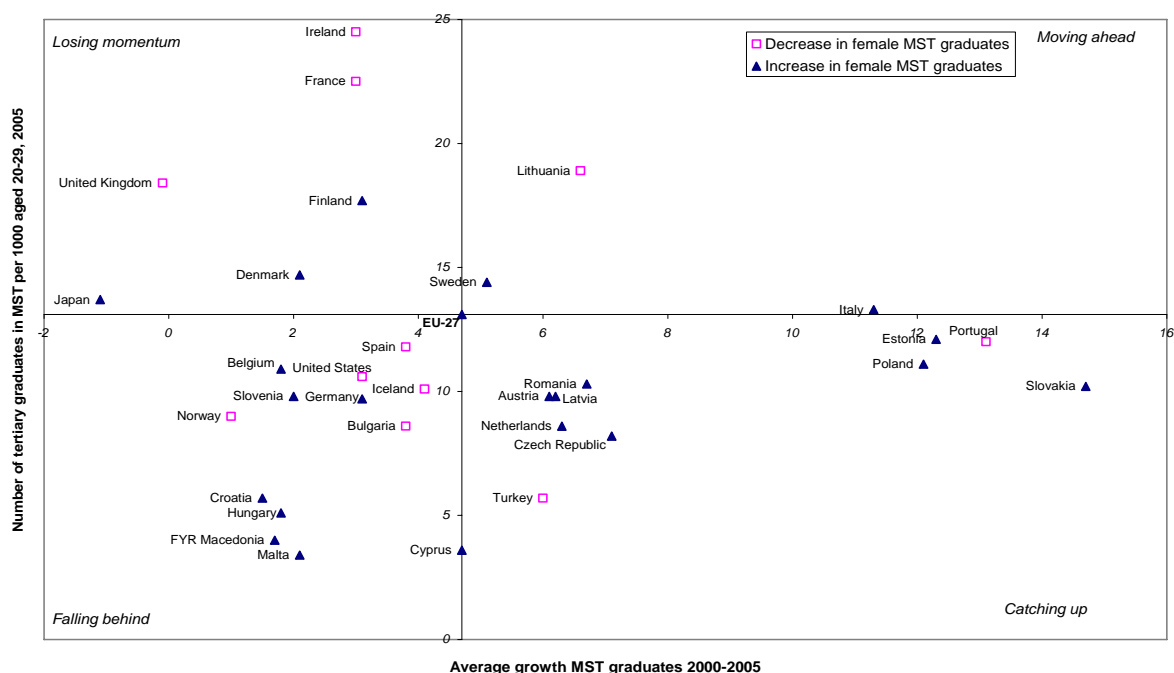
What is more, the increase in MST graduates has not been reflected in sufficient employment of researchers in many Member States, as a by no means negligible share opt for a non-science and non-engineering career or for jobs in other countries.²¹¹ It is hence important to create conditions conducive to a thriving research environment in Europe and to avoid a loss of European MST graduates to other sectors of the economy and other parts of the world.

²⁰⁹ The world figure is a Commission estimate based on UNESCO statistics and national data.

²¹⁰ Source for China: Statistical Yearbook of China 2006. In India also a large number of students graduated in MST (about 220 000 in engineering in 2002 and a similar number in science).

²¹¹ European Commission Directorate-General for Research "Key Figures 2005", p. 12.

Chart 7.3: Average annual growth rate 2000-2005 by number of graduates in MST per 1000 inhabitants aged 20-29 in 2005 and gender balance²¹²



Source : DG Education and Culture, based on Eurostat data
 Notes: Growth rates based on data in table 7.2, except for Estonia
 HR and FYR Macedonia: growth in female MST graduates calculated from 2004-2005 results

Chart 7.3 compares the average yearly growth in MST graduates between 2000 and 2005 with the number of MST graduates per 1000 inhabitants aged 20-29. This is a way of showing the process in play in each country. Are they catching up, i.e. is the number per 1000 inhabitants lower but the yearly growth higher than the EU-27 average? Or are they losing momentum, i.e. do they have a higher number of graduates but lower growth? The graph shows that, compared with the EU, the USA and Japan are either falling behind or losing momentum. This is also true for the candidate countries Croatia and the former Yugoslav Republic of Macedonia. Lithuania has a high number of MST graduates per 1000 young people and is moving ahead, while many southern European countries and new Member States are catching up. Although current trends in the overall number of MST graduates appear encouraging, stagnation or slow growth can be observed in certain fields, such as physical sciences and life sciences (see Table 7.3). Coupled with unfavourable demographic trends in the future, this highlights that action is needed to encourage young people to take up studies in these fields.

Table 7.3: Growth in the number of graduates by field (EU-27)

ISCED fields	Graduates (in 1000)		Growth (in %)
	2000	2005	2000-2005
Life sciences (42)	91.6	91.1	-0.5
Physical science (44)	86.9	82.6	-4.9
Mathematics and statistics (46)	37.5	42.0	11.8
Computing (48)	83.9	154.0	83.5
Engineering and engineering trades (52)	264.4	312.1	18.0
Manufacturing and processing (54)	32.0	39.1	22.2
Architecture and building (58)	88.8	110.5	24.4

Data source: Eurostat; in the case of physical science and computing, no data are available for Romania.
 Includes estimates for Greece for 2000 (see tables A7.1- A7.5 in the Annex)

²¹² For non-EU-27 countries data are available for 2004 only.
 EL, ES: the figures on growth in the female share of MST graduates are based on the 2004-2005 data.

In 2004 some 37 000 or 4.3% of MST graduates in the EU were ISCED level 6 (PhD) graduates, compared with 18 800 in the USA (4.4%) and only 5 700 in Japan (2.5%). This was an increase of 7.5% compared with 2000.

Table 7.4 shows the growth in MST graduates by type of programme. The academic programmes requiring an ISCED level 5A second degree grew strongly between 2000 and 2005, partly a result of the Bologna process, while the number of new PhDs increased only moderately.

Table 7.4: Growth in the number of MST graduates by type of programme

ISCED field	Graduates (in 1000)		Growth (in %)
	2000	2005	2000-2005
Academic programmes, all first degrees (5A)	451.8	523.5	15.9
Academic programmes, second degree (5A)	57.3	133.2	132.5
Occupation-oriented programmes, first qualification (5B)	131.2	159.9	21.9
Occupation-oriented programmes, second qualification (5B)	2.1	2.7	24.1
Second stage leading to an advanced research qualification (PhD) (6)	34.3	37.0	7.5

Source: Eurostat

Despite the high number of new MST PhDs produced by the EU, the EU has fewer researchers on the labour market than the USA, both in absolute terms and as a proportion of the total labour force (1.18 million researchers in EU-25 in 2003 or 5.4 per 1000 labour force, compared with 1.26 million in the USA or 9.0 per 1000 labour force).²¹³ This is partly a result of the comparatively high amount of financing available for research activities and higher education in the USA compared with the EU and partly of the less attractive career prospects²¹⁴ (in 1999 about 116 000 EU-born science and engineering (S&E) employees were working in the USA out of a total 3.5 million S&E employees).²¹⁵ This seems to indicate a need for further efforts fully to tap the potential offered by the increasing numbers of MST graduates. Reaching the spring 2002 Barcelona European Council objective of spending 3% of GDP on research and development by 2010 (current level:1.8%) would imply a significant increase in the resources for research and research posts and hence an increased need for researchers.

7.1.5 Gender imbalance among graduates in MST

The share of female MST graduates shows the gender balance. Bulgaria, Estonia, Greece and Portugal have the highest share of female graduates (>40%) while the biggest increases since 2000 have been in Estonia, Cyprus, Hungary and Slovakia. At EU level the female share of MST graduates increased slightly, from 30.8 % in 2000 to 31.2% in 2005. Since there was little change in the share of female MST over the period 2000-2005, no significant improvements in the gender balance in MST graduates (who will be drawn from these students) are likely in the next few years. However, the share of women amongst MST students is lower than amongst MST graduates, implying a lower dropout rate for women.

The share of female students has not changed since 2000. There are considerable differences within countries between the shares of female MST students and of female MST graduates, implying differences in dropout rates between men and women and also between countries.

Gender imbalance is especially pronounced in engineering (19% female graduates) and computing (24%) and, to a lesser extent, in architecture and building (35%), whereas in mathematics and statistics

²¹³ European Commission Directorate-General for Research “Key Figures 2005”, p. 50. Both concepts are measured in full-time equivalents.

²¹⁴ European Commission Staff Working Document – 2004 Implementation Report on “A Mobility Strategy for the European Research Area” and “Researchers in the ERA: one profession, multiple careers” SEC(2005) 474.

²¹⁵ European Commission Directorate-General for Research “Key Figures 2003-2004”, p. 46.

gender balance has existed since 2000. On the other hand, in the field of life sciences women clearly predominate (61%).

Table 7.5: Females as a proportion of all MST graduates and students

	Females as a proportion of all MST graduates (%)			Proportion of students (%)		
	2000	2004	2005	2000	2004	2005
EU-27	30.8	31.0	31.2	29.1	29.7	29.6
Belgium	25.0	25.3	27.3	23.4	25.4	25.7
Bulgaria	45.6	41.7	41.1	41.5	35.5	35.4
Czech Republic	27.0	29.4	27.4	24.2	25	26.0
Denmark	28.5	32.3	33.9	30.7	32.9	32.5
Germany	21.6	23.8	24.4	24.6	26.2	26.3
Estonia	35.4	40.6	43.5	30.9	32.6	32.7
Ireland	37.9	31.3	30.5	34.5	29.6	29.7
Greece	:	40.5	40.9	:	33.2	33.0
Spain	31.5	30.3	29.6	31.2	31.2	30.6
France	30.8	:	28.4	:	:	:
Italy	36.6	36.8	37.1	33.9	34.2	34.7
Cyprus	31.0	37.1	38.1	30.5	28.6	28.7
Latvia	31.4	32.7	32.8	34.2	26.5	24.5
Lithuania	35.9	35.6	35.2	33.4	29.8	28.2
Luxembourg	:	:	:	:	:	:
Hungary	22.6	28.4	30.0	21.7	23.2	23.2
Malta	26.3	30.4	30.1	24.9	33.3	31.1
Netherlands	17.6	19.5	20.3	16.1	16.4	16.6
Austria	19.9	22.6	23.3	25.1	27.5	27.3
Poland	35.9	33.3	36.6	29.2	28.5	28.5
Portugal	41.9	41.0	39.9	33.4	32.6	31.9
Romania	35.1	38.5	40.0	32.8	35.4	34.3
Slovenia	22.8	25.0	26.2	26.2	24.9	26.1
Slovakia	30.1	35.3	35.3	27.8	30.6	29.9
Finland	27.3	29.5	29.7	24.7	25.4	25.4
Sweden	32.1	33.9	33.8	34.6	33.2	33.1
United Kingdom	32.1	31.2	30.8	31.5	30	30.0
Croatia	:	33.2	32.7	:	30.6	30.1
FYR Macedonia	:	45.2	46.9	:	38.2	38.6
Turkey	31.1	30.4	28.5	28.2	26.1	25.9
Iceland	37.9	38.1	37.2	34.7	34.8	34.3
Liechtenstein	:	50	28.6	:	:	31.1
Norway	26.8	24.5	26.0	28.9	29.4	28.9
Japan	12.9	14.6	14.7	12.8	13.9	13.9
United States	31.8	30.8	31.1	:	:	28.9

Data source: Eurostat (UOE)

Additional notes: See Table 7.1.

While males predominate in MST, it should be added that there is an imbalance in favour of women in the student population as a whole (in 2004, 55% of tertiary students in the EU were women, who thus outnumbered men by 1.5 million). This imbalance is even more pronounced among graduates – 56.7% of graduates in EU-27 were female in 2000 and their share increased further to 58.7% in 2004.²¹⁶ The high share of women in other fields shows that there is clear potential to increase the female share in MST too.

²¹⁶ Eurostat estimates.

**Chart 7.4: Gender imbalance among MST graduates:
female graduates as a proportion of all MST graduates**

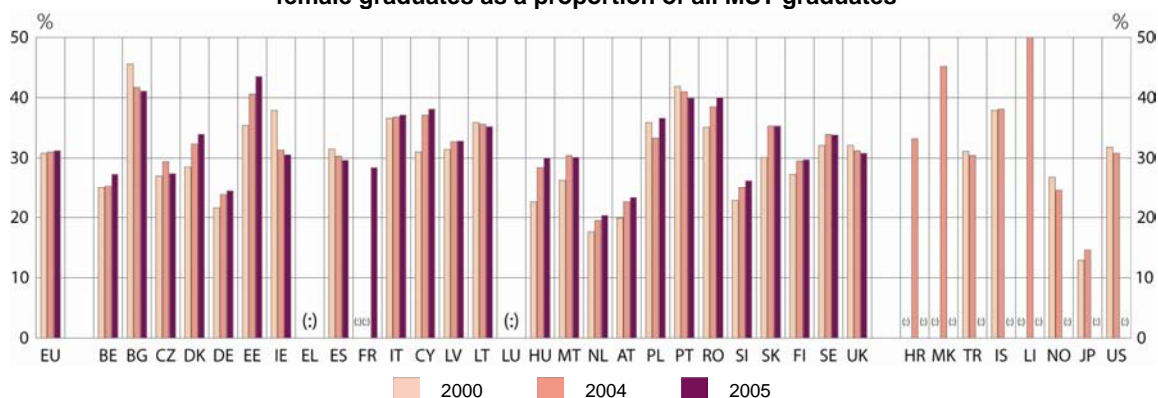


Table 7.6: Percentage of female graduates by field (EU-27)

ISCED field	% female graduates		Countries with the highest and lowest shares of female graduates (2005)	
	2000	2005	Highest 2	Lowest 2
Life sciences	61.2	60.5	Poland 85.3, Hungary 80.6	UK 52.7, Greece 50.7
Physical science	38.9	43.4	Portugal 64.1, Poland 63.0	Austria 31.6, Netherl. 29.6
Mathematics and statistics	49.4	48.1	Estonia 84.8, Latvia 78.4	Sweden 32.4, Denmark 27.7
Computing	23.9	21.4	Bulgaria 47.0, Finland 42.9	Belgium 9.8, Netherl. 9.4
Engineering	15.6	18.3	Bulgaria 32.9, Roman. 32.9	Cyprus 4.0, Slovenia 3.1
Manufacturing and processing	40.7	45.9	Denmark 86.4, Estonia 70.0	Germany 29.2, UK 28.9
Architecture and building	32.1	35.2	Greece 55.3, Malta 50.0	Cyprus 21.4, Netherl. 20.7

Source: Eurostat

7.2 Mobility in higher education

7.2.1 Introduction

Student mobility contributes not only to personal development and fulfilment but also to enhancing competence in fields like languages and intercultural understanding and, hence, to employability on an increasingly international labour market. Moreover, student mobility helps to develop European citizenship and European awareness. By increasing understanding of cultural and linguistic diversity, it promotes creation of a European Area of Education and Training.

Bearing in mind the potential of mobility as an economic and social good, the conclusions of the Lisbon Council of March 2000 specifically requested measures to foster the mobility of students, teachers, trainers and research staff.²¹⁷

In 2001 a joint recommendation by the European Parliament and the Council acknowledged the positive contribution made by mobility to society as a whole and called for increased political cooperation to eliminate obstacles to movement.²¹⁸ The recommendation was followed up by substantial action, at both Community and national level, and has led to a series of positive results.²¹⁹

²¹⁷ Presidency Conclusions European Council, Lisbon, 2000, paragraph 26.

²¹⁸ “The transnational mobility of people contributes to enriching different national cultures and enables those concerned to enhance their own cultural and professional knowledge and European society as a whole to benefit from those effects.” Recommendation, 10 July 2001.

²¹⁹ See, in particular, the Second Implementation Report on “A Mobility Strategy for the European Research Area”, SEC(2004) 412 of 1 April 2004.

The Community puts its policies on education into practice through the various channels of its mobility programmes, especially the Erasmus scheme, which has supported over 1.5 million students to date, and the Leonardo da Vinci scheme for vocational training. Mobility has also been an important feature in major recent policy initiatives like the Bologna process, an intergovernmental process in which the Commission also participates, which is intended to create a European Higher Education Area (an objective set for 2010) and to have a demonstrable positive impact on the mobility of higher education students in Europe.²²⁰

However, the need to increase the level of mobility for learning purposes should not detract attention from the *quality* of mobility. The Erasmus University Charter and the Erasmus Student Charter were introduced in 2003 to enhance the organisational arrangements for the mobility of students. The Working Group on Mobility produced a draft charter on the quality of mobility in summer 2004, which was developed into a formal Commission proposal for a recommendation in September 2005,²²¹ as called for by the Education Council in November 2004. The recommendation consists of ten guidelines, addressed mainly to the sending and receiving organisations responsible for mobility.

The 2006 Joint Interim Report of the Council and the Commission on Implementation of the Detailed Work Programme states that despite some promising moves, for example on the quality of mobility, there are not enough national strategies on mobility. The main source of support continues to be from EU programmes. In addition, countries generally tend to promote mobility for incoming more than for outgoing students.²²² In a broader context, the Kok Report²²³ on progress towards the Lisbon goals also concluded that disincentives to mobility persist in Europe, among them administrative and legal impediments, under-funding of universities and the problem of recognition of qualifications. Efficient ways to promote mobility should draw on the well developed European instruments to facilitate recognition (ECTS, Diploma and Certificate Supplement and study levels compatible with Bologna) and provide information on all relevant aspects of mobility via the Internet.²²⁴

One cause for concern is that the EU might attract and retain fewer talented minds because of such disincentives. With this in mind, EU Ministers of Education have already set the objective of turning the EU into “the most favoured destination of students, scholars and researchers from other world regions.”²²⁵ To this end, in 2006 they adopted the ERASMUS Mundus programme to improve the quality of higher education and promote intercultural understanding through cooperation with third countries.²²⁶

Indicators for monitoring performance and progress

The analysis which follows will analyse mobility on the basis of four indicators:

- *Foreign students enrolled in tertiary education (ISCED levels 5 and 6) as a percentage of all students enrolled in the country of destination, by nationality (European country or other countries);*
- *Percentage of students (ISCED levels 5 and 6) from the country of origin enrolled abroad (in a European country or other countries);*
- *Inward mobility of Erasmus students; and*
- *Outward mobility of Erasmus students.*

²²⁰ Communiqué “Realising the European Higher Education Area,” 2003.

²²¹ Recommendation 2005/0179 (COD) of the European Parliament and of the Council.

²²² Draft 2006 joint progress report of the Council and the Commission on implementation of the Education and Training 2010 work programme.

²²³ *Facing the Challenge: The Lisbon strategy for growth and employment*, November 2004.

²²⁴ Lanzendorf, Teichler and Murdoch (2005), *Study on student mobility in secondary and tertiary-level education and in vocational training (NATMOB)*.

²²⁵ European Commission, 2002, Detailed Work Programme.

²²⁶ Decision of the European Parliament and of the Council, OJ L 345 of 31 December 2003.

The indicators are restricted to geographical mobility because at the moment it is difficult to find suitable data to construct indicators for areas such as the quality of mobility. Nevertheless, the above-mentioned indicators yield useful information on, for example, the disparate student mobility levels of individual EU countries, the relative attractiveness of host countries within the EU and the level of demand from both students and teachers/trainers for Erasmus places.

The first two indicators focus on mobility, as reflected in the UOE data, the other two on mobility under the European programmes. The two data sets are, to a certain extent, complementary, since exchange programmes and short stays abroad, such as Erasmus and Leonardo, should, in principle, be excluded from the UOE data collection if they last less than one year. However, the indicators selected for monitoring progress on mobility suffer from a number of significant shortcomings, which are listed below. Data are, however, expected to improve in the medium to long term.

In the past the UOE²²⁷ data collection focused on tertiary students with foreign citizenship.²²⁸ However, this is not the same thing as mobile students. Firstly, many tertiary students with foreign citizenship are not really mobile students, since they may have lived all their life in the country where they are studying.²²⁹ Consequently, a country with a liberal naturalisation policy may have a lower percentage of “foreigners” enrolled in its institutions. Second, a growing number of families live outside the country of which they are citizens; therefore students with home citizenship can now also be classified as “incoming” and, hence, mobile students.²³⁰

The two indicators on mobility under the European mobility programmes obviously do not cover the full range of mobility. Most mobility under the Erasmus programme is regarded as credit mobility, as it is temporary and takes the form of going to another country to gain knowledge and experience to add to that learned at home. By contrast, diploma mobility is aimed at gaining a diploma abroad.²³¹

In response to these deficiencies, the Commission has established strategies to improve the accuracy and completeness of the data. In the short term, a new study is gathering more comprehensive information on mobility in 32 European countries.²³² In 2005 the UOE data collection was revised to make it possible to identify “physical mobility” (i.e. non-resident students) more accurately and, in some cases, to combine these figures with “cultural mobility” (i.e. non-citizens). The first results from this exercise, based on data from 2003/2004, have been available since spring 2006. These more accurate data on mobility will continue to be collected in UOE, and more and more countries will be able to submit the data once their national data collections have been adapted to this new request. However, there are still many gaps and more complete data will not be available until the medium term.

7.2.2 Foreign students in tertiary education

Approximately 1 247 000 students with foreign citizenship were enrolled in tertiary education in EU-27 in 2005 (the 2004/05 academic year). This compares with 788 000 in 2000 and 1 152 000 in 2004. The average annual increase over the period 2000-2005 was 9.6%, but in 2005 the increase declined to 8.2%. Growth in the number of foreign students was faster than growth in overall student numbers. Consequently, the proportion of all students enrolled in tertiary education with foreign citizenship

²²⁷ The UNESCO-UIS/OECD/EUROSTAT data collection on education statistics.

²²⁸ For a comprehensive overview of the present state of mobility statistics see “European Parliament Statistics on Student Mobility within the European Union.” Final report to the European Parliament prepared by Kassel University, October 2002.

²²⁹ The above-mentioned study estimated that non-mobile students with foreign citizenship make up between 18.3% and over 50% of all students with foreign citizenship.

²³⁰ The proportion of students with home citizenship among mobile students ranges from over 5% to almost 17%.

²³¹ The term “diploma” is used in a wide sense and may refer to a degree, certificate or other diploma.

²³² Kelo, Teichler and Wächter et al. (2006), Eurodata.

increased from 5% in 2000 to 6.3% in 2004 and then 6.7% in 2005 (see Chart 7.7).²³³ In 2004 every EU country, with the exception of Denmark, Estonia, Latvia, Lithuania, Hungary and Slovakia, recorded an increase in the percentage of students enrolled who held foreign citizenship.

Austria, Belgium, Germany, France, Cyprus and the UK have the highest proportions, with foreign student populations of more than 10%, while in Lithuania and Poland the figures stand at less than 1%.

Table 7.7: Foreign tertiary students as % of all tertiary students (ISCED levels 5 and 6) enrolled in the country (2000-2004)

	Foreign tertiary students as % of all tertiary students			Non-resident tertiary students as % of all tertiary students	Main countries of origin (% of foreign students)
	2000	2003	2004		
EU-27	4.95	6.16	6.32		
Belgium	10.90	11.17	11.47	5.0	France (30.2), Morocco (9.5), Netherlands (6.9)
Bulgaria	3.11	3.48	3.63	:	Macedonia (37.8), Greece (15.8), Turkey (12.2)
Czech Republic	2.25	3.60	4.68	:	Slovakia (51.8), Russian Federation (2.7), Ukraine (2.7)
Denmark	6.80	8.98	7.90	4.6	Norway (10.0), Iceland (6.9), China (6.6)
Germany	9.10	10.73	11.17	:	Turkey (10.6), China (9.7), Poland (5.9)
Estonia	1.61	1.71	1.26	1.3	Finland (30.5), Latvia (17.1), Liechtenstein (12.9)
Ireland	4.62	5.62	6.74	:	United Kingdom (17.0), United States (15.8), China (8.7)
Greece	:	2.22	2.41	:	Cyprus (79.4), Albania (7.4), Bulgaria (1.6)
Spain	1.39	1.76	2.27	0.8	Morocco (11.3), Colombia (9.5), Argentina (6.6)
France	6.80	10.46	11.00	:	Morocco (13.8), Algeria (9.4), China (4.8)
Italy	1.41	1.89	2.05	:	Albania (20.9), Greece (17.6), Croatia (3.3)
Cyprus	19.44	28.91	31.99	28.5	China (22.2), Bangladesh (19.9), Pakistan (19.7)
Latvia	6.57	2.01	1.02	1.0	Lithuania (41.4), Russian Federation (21.3), Estonia (7.4)
Lithuania	0.44	0.41	0.40	:	Lebanon (17.1), Belarus (15.3), Poland (9.1)
Luxembourg	:	:	:	:	:
Hungary	:	3.13	3.06	:	Romania (23.7), Slovakia (18.9), Ukraine (9.1)
Malta	5.56	4.57	5.62	0.0	China (28.7), Russian Federation (10.2), Bulgaria (8.8)
Netherlands	2.87	3.90	3.91	:	Germany (26.1), Belgium (9.3), China (9.2)
Austria	11.63	13.53	14.13	11.3	Italy (18.5), Germany (18.1), Turkey (6.0)
Poland	0.39	0.38	0.40	:	Ukraine (23.2), Belarus (14.4), Lithuania (6.7)
Portugal	2.99	3.86	4.09	:	Angola (21.8), Cape Verde (21.8), Brazil (11.4)
Romania	2.78	1.51	1.53	:	Moldova (43.0), Greece (8.9), Ukraine (6.5)
Slovenia	0.93	0.95	1.06	0.9	Croatia (45.6), Bosnia-H. (19.5), Serbia-Montenegro (12.1)
Slovakia	1.16	1.04	1.00	0.9	Czech Republic (27.0), Serbia-Mont. (13.2), Ukraine (7.2)
Finland	2.06	2.52	2.64	:	China (16.5), Russia (14.4), Estonia (7.3)
Sweden	7.37	7.83	8.49	4.0	Finland (11.2), Germany (7.8), Norway (4.1)
United Kingdom	11.01	11.16	13.35	13.4	China (15.9), Greece (7.6), Ireland (4.9)
Croatia	:	0.55	0.63	2.7	Bosnia-H. (33.0), Slovenia (16.3), Serbia-Montenegro (9.8)
FYR Macedonia	0.66	0.25	0.33	0.3	Bulgaria (35.9), Albania (30.1), Serbia-Montenegro (17.6)
Turkey	1.74	0.66	0.78	:	Azerbaijan (9.3), Turkmenistan (7.6), Greece (7.4)
Iceland	4.17	4.35	3.32	:	Denmark (10.8), Germany (10.6), Sweden (6.1)
Liechtenstein	:	:	:	77.4	:
Norway	4.56	5.21	5.79	1.7	Sweden (9.8), Denmark (7.4), Russian Federation (5.4)
Japan	1.50	2.17	2.92	2.7	China (64.6), Korea (19.7), Malaysia (1.6)
United States	3.60	3.53	:	2.7	:

Source: For EU, EEA and acceding countries: UOE data collection. For other countries: UNESCO Institute of Statistics

Additional notes: DE, SI: Students in advanced research programmes (ISCED level 6) in these countries are excluded. RO 2000/01-2001/02. Data exclude ISCED level 6.

An increasing share of tertiary students come from outside Europe. The number of students from China more than quintupled from fewer than 20 000 in 2000 to 107 000 in 2005, while the number of students from India quadrupled at the same time. One reason for the growth in the number of students is the more restrictive visa policy introduced in the USA after 2001. The number of students from other parts of the world varies between countries. In Cyprus, France, Malta and Portugal more than 80% of foreign students come from outside the EU, while the corresponding figures in Austria, the Czech Republic, Estonia and Greece were under 40%.

²³³ See paragraph on indicators on page 129 for a discussion of mobility and foreign citizenship.

There are several reasons for the high proportion of students from other parts of the world studying in EU-27. Firstly and most importantly, the indicator analysed is students with foreign citizenship and not mobile students *per se*; many of these students may have lived all their life in the country where they are studying (see section on quality of data). Another reason could be the wide variety of teaching languages in Europe, attracting students from all over the world. Finally, students from former colonies of European countries may study in the former colonial countries with which they have cultural and historical ties and whose language they share.

Table 7.8: Main countries of origin of non-European students studying in the EU

	Non-European students in EU-27 (in 1000)		
	2000	2004	2005
Africa	134.2	200.3	202.3
Morocco	38.2	52.5	48.6
Algeria	14.9	23.7	23.7
Cameroon	8.6	13.1	13.9
Asia	183.0	331.9	344.2
China	18.6	96.1	107.5
India	6.6	22.7	24.7
Japan	10.7	12.7	12.2
America	63.0	90.6	92.5
USA	22.7	26.3	24.9
Canada	5.8	7.5	7.5
Brazil	6.8	9.4	9.7
Oceania	2.9	3.6	3.9
Australia	2.1	2.7	2.9

Source: Eurostat (UOE collection)

7.2.3 Tertiary students enrolled outside their country of origin

In 2004, world wide 2.7 million students (slightly more than 2% of all students) were enrolled outside their country of citizenship, of whom 2.3 million (85%) were studying in the OECD area. The United States received most foreign students (in absolute terms) with 22% of the total. However, the share of the United States in total foreign students reported to the OECD decreased by 3 percentage points between 2000 and 2004. The UK (11%), Germany (10%), France (9%), Spain (2%), Belgium (2%), Italy (2%), Austria (1%), Sweden (1%) and the Netherlands (1%) account for a combined total of 39%. Australia is in fifth place with 6%. Together, these countries host nearly 67% of all foreign students.²³⁴

For most EU countries, the majority of outgoing students are enrolled in another EU country (see Table 7.9). The only exception is the UK, where the majority of students studying abroad are studying outside the EU. In 2003 on average 2.9% of EU students were studying abroad and 2.2% were studying in other EU countries.

Countries diverge greatly in terms of the proportion of their students enrolled abroad. In general, the larger countries have a lower proportion of students studying abroad than the smaller countries. This may be attributable to the greater number and range of universities in the larger countries. Another possible explanation is that students from smaller countries may be more likely to go abroad because they have already acquired the language of one of the larger countries. However, one major factor in the high mobility levels of students from countries such as Cyprus and Luxembourg is simply the absence or lack of capacity of third-level institutions in the students' own country.

By way of illustration: 75% of Luxembourgish students are enrolled abroad. Cyprus follows with 56.5% of its students at foreign institutions; Ireland is third with 8.8% and Slovakia comes fourth with 8.6%. At the other end of the scale come Spain, the UK and Poland, with less than 1.5% of their students enrolled abroad..

²³⁴ OECD, *Education at a Glance*, 2005, pp. 253-254.

Table 7.9: Percentage of all tertiary students (ISCED levels 5 and 6) enrolled outside their country of origin

	Students (ISCED levels 5 and 6) studying in another EU-27, EEA or Candidate country - as % of all students		
	2000	2004	2005
EU-27	2.1	2.2	2.2
Belgium	2.4	2.6	2.6
Bulgaria	3.2	8.6	8.7
Czech Republic	1.3	1.8	1.8
Denmark	2.7	2.5	2.3
Germany	1.8	1.9	2.2
Estonia	2.5	3.5	3.6
Ireland	9.4	8.5	8.8
Greece	12.4	7.3	5.9
Spain	1.1	1.2	1.1
France	1.8	2.0	2.0
Italy	1.7	1.6	1.5
Cyprus	46.5	54.8	56.5
Latvia	1.3	1.6	1.6
Lithuania	1.8	2.3	2.5
Luxembourg	74.5	:	:
Hungary	1.7	1.5	1.5
Malta	8.2	8.4	7.9
Netherlands	1.9	1.8	1.2
Austria	3.8	4.7	4.4
Poland	0.9	1.2	1.3
Portugal	2.3	2.7	3.0
Romania	1.5	2.4	2.3
Slovenia	2.2	2.1	2.0
Slovakia	3.0	8.2	8.6
Finland	3.2	2.9	2.6
Sweden	2.7	2.2	2.2
United Kingdom	0.6	0.6	0.4
Croatia	:	6.9	6.3
FYR Macedonia	6.2	10.4	12.1
Turkey	3.3	1.8	1.6
Iceland	16.9	15.5	17.0
Liechtenstein	22.1	34.5	78.1
Norway	4.7	4.7	4.8

Source: Eurostat (UOE)

Additional notes:

DE, SI: Students in advanced research programmes (ISCED level 6) in these countries are excluded.

Data on non-national students are missing for several countries outside Europe. However, many of these countries cannot be expected to have many European students enrolled. Data are not available, however, for, for example, Argentina, Brazil, Paraguay, Peru and South Africa. Russia reports data on non-national students from the Baltic countries only.

7.2.4 Flow of students

Table 7.10 shows the flow of students within the UOE data collection. The EU-27 is a net receiver of students: over 650 000 more students with non-EU citizenship study in the EU than the number of EU citizens studying outside the EU. In 2005, 67% of students with foreign citizenship in the EU were from countries outside the EU. This figure included 5% from EEA and candidate countries, 2 % from the USA and 60% from other parts of the world. Two thirds of foreign students study in Germany, France and the UK.

Some countries have many more students with foreign citizenship than the number of citizens which they themselves send abroad. Within the EU this is the case for Belgium, France, Germany, Austria, Spain, Sweden and the UK. The UK is the Member State with the lowest proportion of its outgoing students heading for other countries in EU-27, with 45% of its students studying in EU-27.

The USA is a net receiver of students from EU-27. More than twice as many students go to the USA from EU as from the USA to EU. More than 20% of the outgoing students from the Czech Republic, Sweden and the UK study in the USA.

Table 7.10: Flow of students into and out of the EU. 2005

	Outgoing	Incoming	Balance
EU-27	388	388	0
EEA/candidate countries	7.9	62.8	54.9
USA	59.6	24.9	-34.7
Other	54	712	658

Source: Eurostat (UOE collection), for 'other' 2003 results

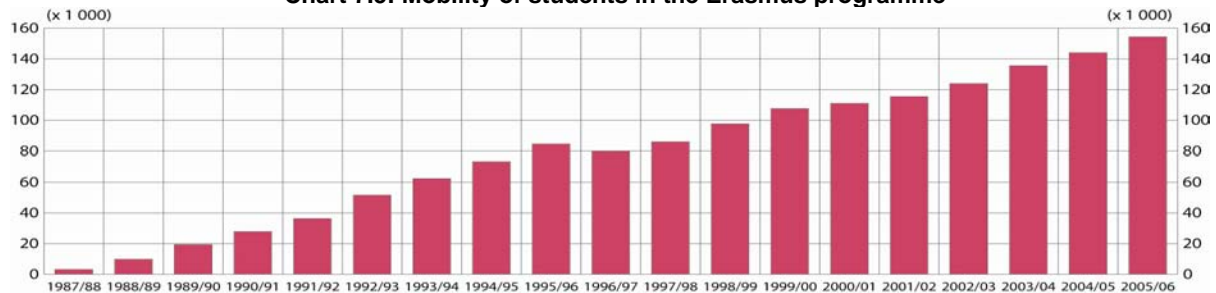
7.2.5 Mobility of students in the Erasmus programme²³⁵

A large proportion of overall mobility is supported through Community programmes such as Erasmus (see Chart 7.5). A number of interesting trends can be observed in participation rates.²³⁶

The total number of Erasmus students increased by 7.3% in 2005/06 compared with the previous year. This was lower than the increase in former years, but higher than the 6.3% a year before. The increase was substantial in the new Member States and also in the candidate country Turkey, where it more than doubled compared with the year before. This increase should be seen in the context of the increasing number of European universities from 31 countries taking part in the Erasmus programme. Currently 87% of all European universities are taking part in Erasmus.²³⁷

In 2004/05 Erasmus led to mobility on the part of 0.7% of the student population in EU and EEA countries. In practice, mobility under Erasmus would have to more than double, i.e. affect 2% of students per year, to reach a participation rate of 10% (since then, during a period of five years' formal study, 10% of the student population would be affected). The current EU target is to reach 3 million Erasmus students by 2012, implying annual participation figures of over 200 000.

Chart 7.5: Mobility of students in the Erasmus programme



	1987/88	1989/90	1994/95	1999/00	2000/01	2002/03	2003/04	2004/05	2005/06	Total
EU-27			72 341	106 418	109 933	122 777	134 190	141 391	149 933	1 503 951
Turkey	-	-	-	-	-	-	-	1142	2852	3994
Iceland, Liechtenstein and Norway	-	-	1066	1248	1159	1180	1396	1504	1636	16659
Total (EU-27 + EEA + CC)	3 244	19 456	73 407	107 666	111 092	123 957	135 586	144 037	154 421	1 524 604

Source: DG Education and Culture (Erasmus programme)

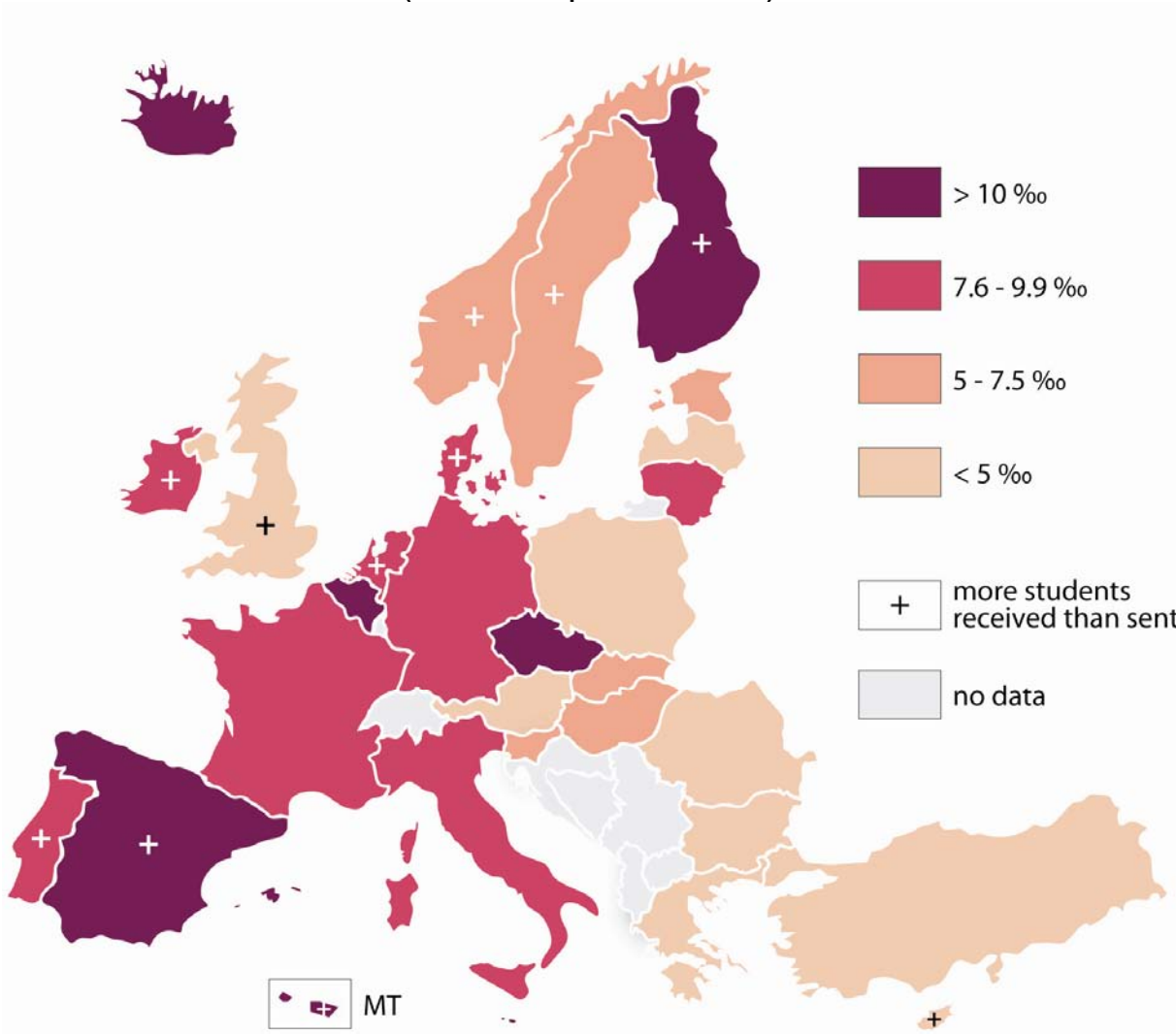
²³⁵ In this section on Erasmus, data on academic years will be referred to by the last year. For example, the 1999/2000 academic year will be referred to as 2000 in tables.

²³⁶ No detailed analysis of the 2004/05 data has been performed yet. Conclusions from more in-depth analysis are taken from European Commission, *Student and teacher mobility 2003/2004 – Overview of the National Agencies' final reports, 2003/2004*.

²³⁷ European Commission press release IP/05/1313 of 20 October 2005.

Between 1987/88 and 2004/05 more than 1.5 million students studied abroad under the Erasmus programme (increasing from 3 200 in 1987/88 to over 150 000 in 2005/06). Sweden, Denmark, Ireland, Malta and the UK are the biggest net receivers of Erasmus students in relative terms; they receive more than twice as many as they send (see Table 7.11)²³⁸.

**Chart 7.6: Outward mobility of Erasmus students, 2004/05
(students sent per 1000 students)**



Source: DG Education and Culture (Erasmus programme)

²³⁸ The impact of Erasmus on student careers has been studied, amongst others, in the Socrates Action 6 project OBSER-ERASMUS (2006) coordinated by the School of Political Studies in Bucharest.

Table 7.11: Inward and outward mobility of Erasmus students, 2004/05

	Students sent	Students received	Students sent	Students received	Per 1000 students 2004/05	
	2004/05	2004/05	2005/06	2005/06	Students sent	Students received
EU-27	137645	140858	149933	154421	7.55	7.73
Belgium	4833	4728	4971	5087	12.52	12.25
Bulgaria	779	179	882	250	3.42	0.79
Czech Republic	4178	1946	4725	2613	13.10	6.10
Denmark	1793	3880	1682	4356	8.26	17.88
Germany	22427	17283	23848	17879	9.63	7.42
Estonia	444	275	511	372	6.73	4.17
Ireland	1572	3649	1567	1899	8.36	19.41
Greece	2491	1658	2714	26611	4.17	2.78
Spain	20819	25511	22891	21420	11.31	13.86
France	21561	20519	22501	3870	9.98	9.50
Italy	16440	13370	16389	14591	8.28	6.73
Cyprus	93	94	133	125	4.47	4.52
Latvia	607	150	681	258	4.74	1.17
Lithuania	1473	388	1910	626	8.05	2.12
Luxembourg	116	16	146	15	:	:
Hungary	2316	1297	2658	1554	5.49	3.07
Malta	130	310	149	295	16.46	39.24
Netherlands	4743	6842	4623	6965	8.73	12.60
Austria	3809	3539	3971	3735	4.10	1.14
Poland	8390	2332	9974	3063	4.32	0.88
Portugal	3845	4166	4312	4542	9.73	10.55
Romania	2962	602	3261	653	4.32	0.88
Slovenia	742	378	879	589	7.13	3.63
Slovakia	979	284	1165	508	5.93	1.72
Finland	3932	5351	3851	5736	13.11	17.84
Sweden	2698	6626	2530	7048	6.27	15.41
United Kingdom	7214	16266	7131	16386	3.21	7.24
Croatia	:	:	:	:	:	:
FYR Macedonia	:	:	:	:	:	:
Turkey	1142	299	2852	828	0.58	0.15
Iceland	199	253	194	256	52.00	34.00
Liechtenstein	26	17	30	31	:	:
Norway	1279	1841	1412	2260	5.98	8.60

Source: DG Education and Culture (Erasmus programme)

Additional notes: Data for Luxembourg from 2003/2004.

In absolute terms Spain and France are the most popular destinations for Erasmus students, followed by Germany and the UK. The country that sends most Erasmus students is Germany, followed by France and Spain. There have been no significant changes in the disciplines studied by foreign students – business management/social sciences remain the most common subject areas. Medical sciences, education, sciences and other subjects are conspicuously under-represented in the profile of Erasmus students. Education is strongly related to the context of national education systems, hence there might be less interest in mobility. 61% of Erasmus students are female – women are generally well represented in business studies and social sciences and in humanities, but under-represented in the more technical subjects.²³⁹

The average duration of Erasmus mobility has remained stable at between six and seven months since 1994/95. The average EU Erasmus grant was €140 per month, an increase of 13% over the previous year.

A study carried out for the European Commission showed that the unemployment rate was lower for former Erasmus graduates (3% in 1999) than for non-mobile graduates (5% in 1999). However, the gap seems to have narrowed in recent years.²⁴⁰

²³⁹ See also section on MST.

²⁴⁰ International Centre for Higher Education Research, INCHER-Kassel, The professional value of Erasmus mobility, Final report, June 2006.

7.3 Quality of higher education institutions

The quality of higher education institutions is a growing concern for education policies at both national and European levels. In February 2006 the European Parliament and the Council adopted a recommendation on quality assurance in higher education.²⁴¹ At the same time international rankings have evolved in recent years, receiving growing media attention.

There are currently two worldwide university rankings: the *Academic Ranking of World Universities* (ARWU) from Shanghai's Jiao Tong University, released for the first time in 2003 (latest ranking: February 2007) and the *World University Ranking (WUR)* from the *Times Higher Education Supplement (THES)*, first released in 2004 (latest ranking: 2006).

In the *Academic Ranking of World Universities* institutions are ranked on their academic and research performance, based on the number of Nobel prize winners, highly cited researchers, articles published in *Nature* and *Science*, articles in the expanded Science Citation Index (SCI) and the Social Science Citation Index (SSCI), plus a composite indicator of academic performance weighted by the size of the institution.²⁴² In the *THES World University Ranking (WUR)*, the opinion of scientists and international employers plays a crucial role. Around 3 700 researchers and employers are asked to indicate the best universities. This "peer review" counts for 50% in the total score of each university. In addition, the following other criteria are applied: research impact in terms of citations per faculty member, staff/student ratio, percentage of students and staff recruited internationally. Both the ARWU and WUR assessments of research performance consider only academic research output (i.e. scientific articles and other academic publications covered in the SCI, SSCI and ESI). This means, in particular, that, regardless of the correctness of either ranking of academic research performance, both ignore any output of research activities other than publications (including all commercial output, such as patents, and all non-commercial non-academic output, such as advice to policy-makers).

Table 7.13 shows the performance of countries in these two international university rankings, focusing more specifically on the Shanghai ranking. In 2007, according to the ARWU, EU-27 had 197 of the top 500 universities, while 166 were in the United States and 32 in Japan. Germany and the United Kingdom had the highest numbers of top institutions in Europe. Out of the new Member States only Poland, Hungary, Czech Republic and Slovenia have universities in the top 500. Considering the number of relevant institutions, the Netherlands, which has only 13 comprehensive universities but 12 institutions on the list, Sweden (11 out of 17) and Denmark (4 out of 9) perform particularly well. Europe has a solid base of medium to good quality universities and a higher share of its 4 000 higher education institutions (which include around 560 universities)²⁴³ in the top 500 than the USA (in 2005 the USA had 4 387 higher education institutions, of which 413 awarded doctorates).²⁴⁴ This picture is confirmed if the number of universities in the top 500 is related to the number of tertiary students (as shown in Table 7.13). EU-27 has slightly more top 500 universities per 100 000 students than the United States and Japan. Denmark, Austria, Sweden and the Netherlands perform particularly well on this point.

However, if only the top 200 or top 100 universities are considered, the performance of the European higher education system lags behind the United States. Out of the top 100 universities, 54 are located in the United States and only 29 in the EU.

²⁴¹ http://eur-lex.europa.eu/LexUriServ/site/fr/oj/2006/l_064/l_06420060304fr00600062.pdf.

²⁴² See the annex for a more detailed presentation of the weights and indicators.

²⁴³ Defined here as full members of the European University Association (EUA), i.e. institutions that awarded at least one doctorate in the three years prior to becoming a member of the EUA.

²⁴⁴ It must be remembered, however, that the definition of university differs between countries. The comparability of statistics on the number of institutions is therefore limited.

The USA leads especially in terms of institutions at the very top: it has 17 of the ARWU top 20 universities. Top of the list comes Harvard University, a private institution, which had endowment assets of \$ 25 billion in 2005, making it the richest university in the world. Stanford University in California (endowment assets in 2005: \$12 billion) is ranked third. The EU has only two institutions in the top 20: Cambridge, ranked fourth, and Oxford, ranked tenth. Japan has one (Tokyo University, ranked 20th).

There are considerable differences between the Shanghai ranking and the THES ranking. The United States hosts only 55 of the top 200 universities in the THES ranking compared with 87 in the Shanghai ranking. There are even greater differences in terms of specific institutions. For instance, the London School of Economics ranks 11th in the THES ranking but only just above 200th in the Shanghai ranking.

In 2007 the Shanghai ranking also introduced a league table by broad subject field (see Table 7.12). In medicine and natural sciences EU-27 takes similar shares of the top 100 or so institutions, but its share is lower in engineering and social science. In engineering China is in a relatively strong position, while India has only one institution in this field and none in the others. Apart from engineering, countries like Canada and Australia have a much higher number of institutions in any subject field than China, India or Russia.

Table 7.12: Ranking of world universities by broad subject fields (ARWU), 2007

	Number of universities in the:				
	Top 106	Top 104	Top 106	Top 108	Top 110
	ENG	SOC	LIFE	MED	SCI
EU-27	22	17	26	32	30
Japan	7	1	3	2	7
USA	48	72	62	62	60
Australia	4	3	4	3	1
Canada	6	6	5	6	2
China	9	1	0	0	0
India	1	0	0	0	0
Russia	0	0	0	0	1

Data source: University of Shanghai, <http://ed.sjtu.edu.cn/ARWU-FIELD.htm>

Additional notes :

- SCI: Natural Sciences and Mathematics.
- ENG: Engineering/Technology and Computer Sciences.
- LIFE: Life and Agriculture Science.
- MED: Clinical Medicine and Pharmacy.
- SOC: Social Sciences.

Table 7.13: Results of two university rankings (ARWU and THES)

	Academic Ranking of World Universities (Shanghai)					World University Ranking (THES)		
	Number of universities in the top 500			Universities in the top 500 per 100 000 tertiary students	Number of universities		Number of universities	
	2003	2006	2007		2007	Top 200	Top 100	Top 200
				2007		2007	2006	2006
EU-27	197	193	197	1.08	72	29	75	34
Belgium	7	7	7	1.81	4	0	5	2
Bulgaria	0	0	0	0	0	0	0	0
Czech Republic	0	1	1	0.31	0	0	0	0
Denmark	6	5	4	1.84	3	1	3	1
Germany	42	40	41	1.76	14	6	10	3
Estonia	0	0	0	0	0	0	0	0
Ireland	3	3	3	1.60	0	0	0	0
Greece	2	2	2	0.34	0	0	0	0
Spain	13	9	9	0.49	1	0	1	0
France	22	21	23	1.06	7	4	7	5
Italy	22	23	23	1.16	5	0	1	0
Cyprus	0	0	0	0	0	0	0	0
Latvia	0	0	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0	0	0
Luxembourg	0	0	0	:	0	0	0	0
Hungary	2	2	2	0.47	0	0	0	0
Malta	0	0	0	0.00	0	0	0	0
Netherlands	12	12	12	2.21	9	2	11	7
Austria	4	7	7	2.94	1	0	3	1
Poland	3	2	2	0.10	0	0	0	0
Portugal	1	0	2	0.51	0	0	0	0
Romania	0	0	0	0.00	0	0	0	0
Slovenia	0	0	1	0.96	0	0	0	0
Slovakia	0	0	0	0	0	0	0	0
Finland	6	5	5	1.67	1	1	1	0
Sweden	10	11	11	2.56	4	4	4	0
United Kingdom	42	43	42	1.87	23	11	29	15
Croatia	0	0	0	0	0	0	0	0
FYR Macedonia	0	0	0	0	0	0	0	0
Turkey	0	0	1	0.05	0	0	0	0
Iceland	0	0	0	0.00	0	0	0	0
Liechtenstein	0	0	0	:	0	0	0	0
Norway	3	4	4	1.87	1	1	1	0
Japan	36	32	32	0.79	9	6	11	3
USA	161	167	166	0.98	88	54	55	33
China	19	19	25	0.13	2	0	6	0
India	3	2	2	0.02	0	0	3	0
Russia	2	2	2	0.02	1	1	2	1

Data source: <http://www.arwu.org/>, <http://www.thes.co.uk/>.

Additional note : The number of students enrolled refers to 2004, UNESCO, Eurostat.

University rankings apply a wide range of criteria for measuring excellence. There is still no clear consensus about the indicators that should be used to measure the “quality” of HEIs. Quality of teaching is not taken into account in either of the two global rankings and the assessment of research activities focuses exclusively on academic research output. Social sciences and humanities are at a comparative disadvantage as academic research performance is measured bibliometrically. The bibliometric methods used are often not up to state-of-the-art standards in bibliometric practice.²⁴⁵ The weight assigned to each indicator is arbitrary (see Table 7.14).

²⁴⁵ See van Raan, A.J.F. “Challenges in Ranking of Universities”, Invited paper for the First International Conference on World Class Universities, Shanghai Jiao Tong University, Shanghai, 16-18 June 2005. See also section 3.3.2 (“Performance”) of the Commission Staff Working Document annexed to the Green Paper “The European Research Area: New Perspectives”, SEC(2007) 412/2 of 4 April 2007.

Table 7.14: Weights used in the ARWU and WUR rankings

Shanghai Jiao Tong University Rankings (ARWU), 2007

Criterion	Indicator	Weight
Research output	Articles published in Nature & Science over the four previous years	20%
Research output	Articles in the expanded Science Citation Index and the Social Science Citation Index during the previous year	20%
Quality of education	Alumni winning Nobel prizes and field medals	10%
Quality of staff	Staff winning Nobel prizes and field medals	20%
Quality of staff	Highly cited researchers	20%
Size of institution	Performance relative to size	10%

Source: <http://www.arwu.org/rank/2007/ranking2007.htm>. The indicators and weights used in 2003 are slightly different from those used in 2007 and 2006. See <http://ed.sjtu.edu.cn/rank/2003/methodology.htm#Definition> for further details.

Times Higher Education Supplement Rankings (WUR), 2006

Criterion	Indicator	Weight
Quality of faculty	Peer review, 3 703 academics	40%
Quality of research output	Total citation	20%
Quality of graduates	Employers' opinion, 736 recruiters	10%
Quality of teaching environment	Staff/student ratio	20%
International faculty	Percentage of international staff	5%
International students	Percentage of international students	5%

Source: <http://www.thes.co.uk/>

For all these reasons, caution is needed with interpretation of these results.²⁴⁶ In order to improve the methods used to prepare the rankings, in May 2006 the International Ranking Expert Group (IREG) established the *Berlin principles* on quality and good practice in HEI rankings.²⁴⁷

²⁴⁶ The Centre for Higher Education Development (CHE) offers an alternative to these two worldwide rankings. CHE provides a ranking of German universities and of German-speaking universities in Austria and Switzerland, which takes account of diversity in terms of languages, subject areas, profiles, student services, research and teaching quality. In the context of a pilot project funded by the European Commission to design an international system for comparing the quality of institutions and programmes in higher education, the CHE is currently examining the Dutch and Flemish university systems. See <http://www.che.de/cms/> for further details.

²⁴⁷ The IREG was set up in 2004 by the UNESCO European Centre for Higher Education (UNESCO-CEPES) and the Institute of Higher Education Policy in Washington. See http://www.che.de/downloads/Berlin_Principles_IREG_534.pdf for further details on the Berlin principles.

8. EMPLOYABILITY

Main messages

Over the period 2000-2006 there was a considerable improvement in the **educational attainment** of the working age population in EU-27. However, almost 80 million people still have low educational qualification. Since, labour force participation is closely related to educational attainment, the increase in medium and high levels of educational attainment impacts on higher activity and employment rates.

In 2004, one year after leaving school, many young Europeans were still without work (more than 50% in Greece, Poland, Italy, and Slovakia compared to about 20% in Netherlands or Denmark).

Cohort data following young people over seven years after they left the education system (from 1994 to 2000) showed that the Spanish, Italian and Finnish school leavers were those that took longest to find a first job, with transitions of more than two years. School leavers in Ireland, Denmark and Germany took one to one and a half years on average to find their first job.

Apprenticeship and dual-type systems have proven successful in giving young people a good start on the labour market and this helps explain why Austria, Denmark and Germany (where such systems exist) are the countries with relatively high youth activity rates.

Among school leavers who find a job, **temporary employment** seems to be the rule in Europe. In Spain, 8 in 10 young people employed one year after finishing school, were on a temporary contract in 2004. In Portugal, Sweden, France, Germany, Finland and Italy the same figure exceeded 50%. The United Kingdom and Slovakia had the lowest incidence of temporary employment one year after finishing school. Finding a permanent job takes on average several months longer than finding any job and this difference is most striking in Greece and Portugal where a first job is found within about two years on average from finishing school, but a further 30 months are needed to find a permanent position.

In 1995-1997 employed youth aged 18 were most likely to be in temporary jobs in Spain, Finland, France and Sweden. While the share of temporary workers decreases over time in all four countries, it settles at different levels: in France, the share of 27 year-olds in temporary work in 2005 was just 13% while it stands at more than 45% in Spain.

Introduction

The Lisbon strategy is designed to enable the EU to regain the conditions for full employment and to strengthen social cohesion by 2010. Increasing employment rates is among the most important success criteria within the strategy.²⁴⁸ Firm targets were set by successive European Councils on overall employment rates, employment rates of older workers and employment rates of women.²⁴⁹ Following the mid-term review of the Lisbon strategy in 2005, the importance of employment was further emphasised in the re-launch of the strategy.²⁵⁰

One key determinant of the employment rate is the educational attainment of the population. In the light of demographic changes, which are projected to lead to a decline in the total working age population by 2011,²⁵¹ increases in levels of education and, consequently, employment rates are central to sustaining overall employment levels.

²⁴⁸ Presidency Conclusions, Lisbon (2000).

²⁴⁹ See, for instance, Presidency Conclusions, Lisbon (2000).

²⁵⁰ Presidency Conclusions, Brussels (2006).

²⁵¹ Demography report – forthcoming.

This chapter analyses the educational attainment of the population (section 1), which is the core indicator²⁵² used by the Commission for monitoring progress in this field. It examines recent labour market developments (section 2) and outlines school-to-work transition patterns for youths (section 3). Finally, it analyses other outcomes of education and training at individual level (section 4).

8.1 Educational attainment of the adult population

The level of educational attainment of the adult population (aged 25 to 64) provides a good proxy for the knowledge and skills available in each country. In 2006 in EU-27 under one third (30%) of the adult population had a low level of educational attainment, almost half (47%) had a medium level and about a quarter (23%) a high level (see Table A.8.1). Compared with 2000, the proportion of the adult population with a low level of educational attainment was down by 5.6% while the proportions with medium and high educational attainment were up by 2.2% and 3.4% respectively.²⁵³

The table reveals marked differences in the educational attainment levels of the adult population between countries. The percentage of the adult population with low educational attainment varies between 10% in the Czech Republic to over 70% in Portugal and Malta. In the Czech Republic, Denmark, Germany, Estonia, Latvia, Lithuania, Poland, Slovenia, Slovakia and Sweden under 20% of the adult population have low educational attainment, but in Greece, Spain, Italy, Malta and Portugal more than 40%. The percentage of the adult population with a high level of educational attainment varies between 12% in Malta and Romania and 35% in Finland. Nine countries break the ceiling of 30% of the adult population with a high educational attainment level, namely Belgium, Denmark, Estonia, Ireland, Cyprus, Netherlands, Finland, Sweden and the United Kingdom.

Between 2000 and 2006 in every Member State there was a shift in the adult population from low levels of educational attainment to medium and high levels, most notably in Spain, where the proportion of the adult population with low educational attainment decreased by 11%. Other countries where high percentages of the adult population had a low level of educational attainment in 2000 experienced similar changes – Malta, Portugal and Greece.

In 2006 almost 80 million persons aged 25-64 in Europe had low levels of formal educational qualifications, approximately 10 million fewer than in 2000. This number is expected to decrease in the years ahead, as more young people with higher levels of formal educational qualifications enter the labour force, while older generations gradually leave.

8.2 Labour market developments

Labour market performance has been encouraging in almost every European country against the EU employment targets set in the Lisbon strategy.²⁵⁴ At EU level the employment rate was 64.3% in 2006, an increase of 2.1% compared with 2000 (see Table A.8.3). Denmark, the Netherlands, Sweden and the United Kingdom are the EU's best performers with rates well over 70%.

Female employment rates are also on the increase. In 2006 at EU-27 level the rate was 57.1%, up by 3.4 percentage points on 2000. With the exception of Denmark, Estonia, Finland, Sweden and the

²⁵² Council conclusions of 26 May 2007.

²⁵³ The three levels of educational attainment are based on ISCED levels. "Low" includes persons who completed lower secondary education (ISCED levels 0 to 2 and 3C short), "medium" persons who completed upper secondary level (ISCED levels 3AB and 4) and "high" persons who completed tertiary level (ISCED levels 5 and 6).

²⁵⁴ The targets are, by 2010, to increase the total employment rate to 70%, the employment rate of females to 60% and the employment rate of older workers to 50%.

United Kingdom, female employment rates remain substantially lower than rates for men, but the gap is narrowing down at EU level (by some 2 percentage points compared with 2000).

In 2006 the employment rate of older workers (55 to 64-year-olds) stood at 43.5%, an increase of 6.6% on the 2000 level. As a result of measures to promote active ageing, in most countries by means of legislation to raise the retirement age, the activity rates of the population aged 55-64 have increased in nearly every Member State, with the exception of Malta and Denmark.

The greatest cause for concern is the very high level of youth unemployment in some countries. In 2006, on average, 17.4% of youths (aged 15 to 24) on the labour market were unemployed; the proportion was 18.3% in 2000. Youth unemployment rates remain very high in about half the Member States, with extremes in Poland and Slovakia – 29.8% and 26.6% respectively in 2006 – and rates exceeding 20% in Belgium, Greece, France, Italy, Romania and Sweden (see Table A.8.4). In every country youths were much more likely to be unemployed than adults in their prime (25-64 year olds).

Labour force participation by the adult population is closely related to educational attainment levels. Higher employment rates can be observed in all EU countries amongst the population with high educational attainment levels (see Tables A.8.2.a and A.8.2.b). At EU level, on average, the employment rate of 25- to 64-year-olds holding higher formal educational qualifications was 84.5% in 2006. This compares with 73.6% and 56.4% for people holding medium and lower formal educational qualifications respectively.

At country level this gap between people with high and low educational attainment ranges from almost 56% in Slovakia to less than 25% in Denmark, Greece, Spain, Cyprus, Luxembourg, Portugal, Sweden and the United Kingdom. The same patterns can be observed in the activity rates, where the EU averages are 88.2% and 62.8% respectively and the country gaps range from over 35% in a number of new Member States, namely Hungary, Poland, Lithuania, Bulgaria, Slovakia and Romania, to less than 20% in Portugal or Sweden (see Tables 8.2.a and 8.2.b).

Unemployment rates are almost three times as high for adults with low educational attainment (10.1%) than for adults with high educational attainment (4.1%). It is notable that the country gap between adults with low and high educational attainment ranges from 40% in Slovakia to close to 2% in Greece, Cyprus, Italy, Luxembourg and Portugal.

8.3 School-to-work transition patterns for youths

The transition from education to work occurs at different points of time in different EU countries. This reflects not only the demand for education, but also the general state of the labour market and the length and orientation of educational programmes in relation to the labour market.

Education and working status

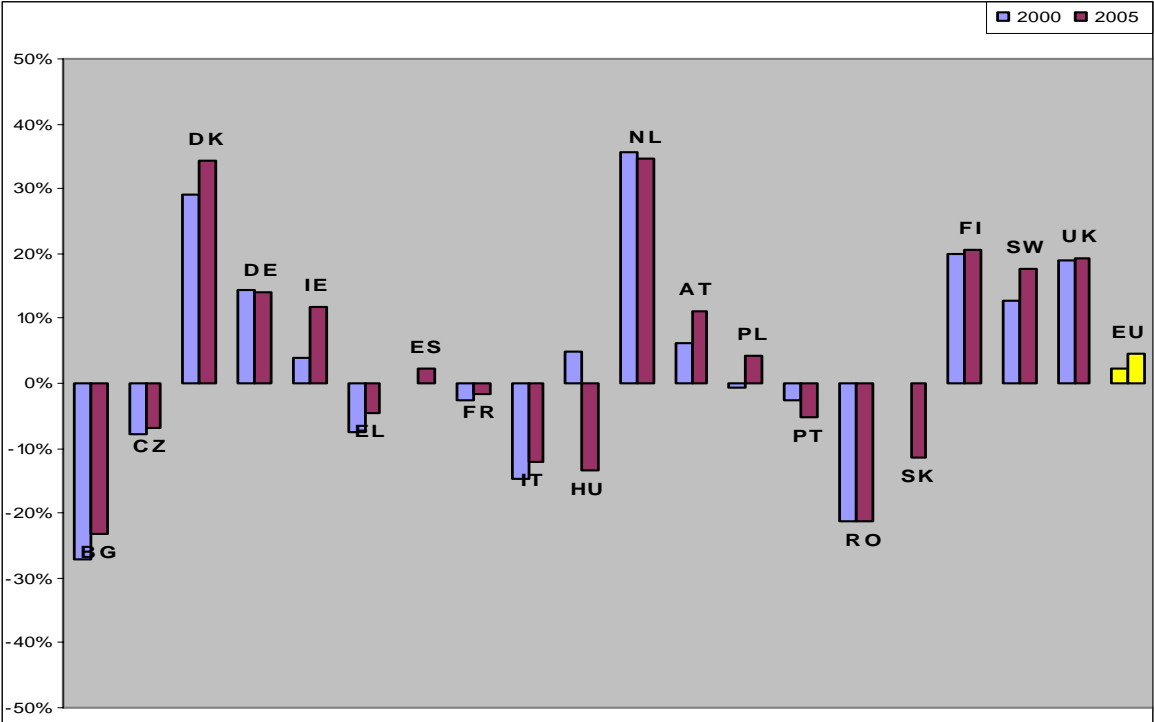
In some European countries education and work largely occur consecutively, while in others they are concurrent. Work-study programmes, which are relatively common in Scandinavian countries but also in the Netherlands, Germany and Austria, offer coherent vocational training routes to recognised occupational qualifications, whereas in other European countries formal education and work are rarely associated.

The proportion of 15- to 24-year-olds enrolled in formal education went up in 2005 in almost every EU country, with an increase of 4% at EU level compared with 2000. As can be seen in Table A.8.5, the cross-country differences are sizeable, with participation ranging from more than 65% in the Scandinavian countries, Belgium, Lithuania, Poland and Slovenia to 42% in Cyprus and Malta.

Youths facing employment difficulties may be inactive instead of unemployed, in which case they are particularly likely to drop out of the labour force when jobs are hard to find. In many countries less

information is available about youths who have left formal education but remain inactive on the labour market (i.e. are neither employed nor unemployed). In order to provide a better picture of education and youths' work status, one option is to compare participation in formal education and activity rates.²⁵⁵ In countries where the difference between the two rates is sizeable and negative there is a high incidence of "NEETs" (people neither in education nor in employment) among youths aged 15-24 (see Chart 8.1).²⁵⁶ The high non-student inactivity rates should be a matter of concern in Bulgaria, Romania and Italy, where they go hand-in-hand with high early school leaving rates and high youth unemployment rates.

Chart 8.1: Non-student inactivity rates among 15- to 24-year-olds in selected EU countries (Total population minus participation rate in formal education and activity rate)



Source: Eurostat, LFS

Labour market status after leaving school

Employment-to-population ratios among youths who are not in education can provide useful information on the effectiveness of transition frameworks and thus help policy-makers to evaluate transition policies. In almost half the EU countries, fewer than one third (and in some even less than one quarter) of the 15- to 24-year-olds not in education are working. The employment rates of 15- to 24-year-olds exceed 50% only in Denmark, the Netherlands, Austria and the United Kingdom (see Table A.8.5). The table also provides information on activity rates, i.e. the percentage of 15- to 24-year-olds active on the labour market. The apprenticeship and dual-type systems traditionally found in some of these countries have proven successful in giving young people a good start on the labour market and this helps explain why these countries enjoy relatively high activity rates.²⁵⁷ On the other hand, both employment and activity rates are considerably lower in some new Member States, such as Bulgaria, Lithuania and Hungary.

²⁵⁵ This approach typically aims to track down young people who have left formal education and are neither employed nor unemployed. In countries where non-student inactivity is high this information is valuable to supplement the data about youths who are registered with the public employment service or receiving any other kind of benefits.

²⁵⁶ Data for remaining countries can be found in Table A.8.5. in the annex.

²⁵⁷ In some countries with high non-student inactivity rates this may be by choice (e.g. for travel or leisure) or due to non-economic constraints (e.g. military conscription).

Recent evidence shows that, in 2004, one year after leaving school many young Europeans were still without work (more than 50% in Greece, Poland, Italy and Slovakia) compared with only about 20% in the best performing European countries (the Netherlands and Denmark), but big differences related to educational qualifications were observed. Non-employment rates tend to decrease with educational qualifications. For instance, in Greece more than 80% of those without an upper secondary qualification were non-employed one year after leaving school, while the corresponding rate was approximately 55% for those with an upper secondary qualification and 45% for the most educated. This suggests that, one year after leaving school, youths without qualifications are more likely to be neither in further education nor in employment than their more educated counterparts.²⁵⁸

Job-search duration

One key policy issue in connection with the school-to-work transition is the length of the transition period. This reflects not only the general state of the labour market, but also the demand for education, including the length and orientation of educational programmes in relation to the labour market. Recent OECD estimates²⁵⁹ showed that Spanish, Italian and Finnish school leavers take longest to find a first job, with transitions of more than two years. At the other end of the scale, school leavers in Ireland, Denmark and Germany take, on average, one to one and a half years to find their first job. Previous results from the LFS *ad hoc* module on the transition from school to work also showed big differences between countries in the links between educational attainment and job-search duration. Higher educational attainment was associated with shorter times to find a job in most European countries participating in the survey, with the exception of France, Greece, Italy and the Netherlands, where educational attainment had a limited systematic impact on job-search duration (Mueller *et al.*, 2002).²⁶⁰

Table 8.1: School-to-work transition history of youths in selected EU countries (1994-2000)

EU country		Job search duration (months)		Unemployment history (spells)			
		Any job	Permanent job	Average number	No	One	Two or more
Belgium	BE	20.4	45.0	1.1	58.5%	16.8%	24.7%
Denmark	DK	14.6	21.3	1.1	37.9%	48.8%	13.2%
Germany	DE	18.0	33.8	1.0	54.5%	20.6%	24.8%
Ireland	IE	13.2	28.7	0.7	50.2%	36.7%	13.2%
Greece	GR	21.3	51.5	1.2	30.2%	38.0%	31.9%
Spain	ES	34.6	56.6	2.0	17.2%	25.9%	56.9%
France	FR	24.3	40.7	1.5	37.1%	27.9%	35.0%
Italy	IT	25.5	44.8	1.4	23.0%	44.1%	32.9%
Austria	AT	19.9	33.0	0.8	58.5%	16.8%	24.7%
Portugal	PT	22.6	51.5	1.1	40.6%	28.5%	30.9%
Finland	FI	27.6	44.3	1.4	33.6%	28.4%	38.0%
United Kingdom	UK	19.4	36.1	1.0	44.4%	34.0%	21.6%

Source: OECD calculations based on EC Household Panel data

OECD estimates suggest that youths tend to pass through multiple spells of unemployment before settling into work. Table 8.1 presents information on the number of spells of unemployment

²⁵⁸ “Starting Well or Losing their Way? The position of Youth in the Labour Market in OECD Countries.” (OECD Social, Employment and Migration Working Papers, 2006) <http://www.oecd.org/dataoecd/0/30/37805131.pdf>.

²⁵⁹ Calculations based on data from the European Community Household Panel following young people over seven years after they left the education system from 1994 to 2000.

²⁶⁰ Mueller *et al.* “Indicators on school-to-work transition in Europe. Evaluation and analyses of the LFS 2000 *ad hoc* module data on school-to-work transitions” (Mannheim Centre for European Social Research, 2002).

experienced by young people over a reference period of seven years after leaving school (from 1994 to 2000).²⁶¹

In Germany and Austria, where the apprenticeship system is most developed, more than half of those leaving school find a job without experiencing any unemployment. In Spain, on the other hand, multiple spells are common among youths, more than half of whom experienced two or more over the reference period. The total time spent in unemployment over the reference period is also important. In southern European countries youths spent, on average, about a quarter of their time (20 months or more) in unemployment, while in Austria, Denmark and Ireland they were unemployed for only about five out of the 84 months (OECD, 2006).

Temporary employment and part-time work

Temporary employment²⁶² should not necessarily be equated with low-quality employment, as it may be a stepping stone onto the labour market and the pathway to permanent work, particularly for young people without job experience. However, temporary-work traps may arise when youths string together temporary contracts rather than moving on to permanent jobs providing more training and career opportunities.

Although temporary jobs were already a dominant feature of youth employment in the mid-1990s, the proportion of youths in temporary jobs has increased further over the past decade in most countries, with the exception of most northern European countries, Ireland and Spain. OECD estimates show that, among school leavers who find a job, temporary employment seems to be the rule in Europe, as the proportion of employed youths in temporary jobs remains much higher than for adults in EU countries.

In 2004, one year after finishing school 8 in 10 young people employed in Spain were on a temporary contract. The figure exceeded 50% in Portugal, Sweden, France, Germany, Finland and Italy, whereas the United Kingdom and Slovakia had the lowest incidence of temporary employment. Estimates for a typical cohort of youths aged 18 in 1995-1997 show that employed youths aged 18 at the beginning of the period are most likely to be in temporary jobs in Spain, Finland, France and Sweden, but while the share of temporary workers decreases over time in all four countries, it settles at different levels. In France the proportion of 27-year-olds in temporary work in 2005 was just 13% while in Spain it was more than 45%. Finally, finding a permanent job takes, on average, several months longer than finding any job. This difference is most striking in Greece and Portugal where a first job is found, on average, within about two years after finishing school, but a further 30 months are needed to find a permanent post.

With respect to part-time employment,²⁶³ a similar pattern for youths can be found in most European countries for which data exist. While under 5% of the youths employed in 2004 one year after leaving school were working part-time in Hungary, the Czech Republic and Slovakia, over 30% were in Denmark, the Netherlands and Sweden. School leavers who hold a non-matching job are more likely to be employed in a part-time job than school leavers with a matching job. Considerable variation can be observed in this indicator between both countries and genders. Part-time rates are also much higher for young women than for young men and much of the increase between the end of the 1990s and 2004 was attributable to women.

²⁶¹ More recent information does not exist. Forthcoming data will allow updating this information in 2008/2009.

²⁶² Employees with temporary contracts are defined in the EU LFS as persons who declare that they have a fixed-term employment contract or a job which will terminate if certain objective criteria are met, such as completion of an assignment or return of the employee who was temporarily replaced.

²⁶³ The full-time/part-time distinction in the EU LFS (for all countries except the Netherlands and Sweden) is based on the self-reported usual number of working hours per week (i.e. number of hours the person normally works, including overtime (paid or unpaid) and excluding travel time from home to work and lunch breaks).

Job mismatch²⁶⁴

Job mismatch is often the result of incomplete information about the abilities of school leavers and the characteristics of jobs offered by employers. Particularly high incidences of job mismatch for graduates from humanities (with half or more of school leavers working in a job outside their field of education) are found in nearly every country for which data exist (see Table 8.2).²⁶⁵ Relatively lower incidences of job mismatch were observed for engineering graduates, although the proportion of school leavers with a non-matching job was still high in Italy (43%), Greece and Belgium (37% each). Comparatively higher proportions of graduates in services with a non-matching job were found in Denmark (81%) and again Italy (46%).

Table 8.2: Incidence of job mismatches by fields of study in selected EU countries (2000), in %

EU country	Humanities	Engineering	Services
Belgium	67	37	27
Denmark	86	26	81
Greece	73	37	17
Spain	65	26	32
France	62	28	37
Italy	78	43	46
Hungary	58	27	40
Netherlands	82	23	30
Austria	64	24	23
Slovenia	50	23	21
Finland	67	23	36
Sweden	65	24	27

Source: Eurostat, LFS *ad hoc* module 2000²⁶⁶

Table 8.3 shows that, with the exception of Austria and the Netherlands, younger school leavers are more frequently working in a job that is not related to their field of education than older school leavers. This could suggest that older school leavers are more integrated into the labour market (i.e. a life-cycle effect) than their younger counterparts. However, a cohort interpretation is also possible: for older cohorts of labour market entrants it was easier to find a job corresponding to their field of education than for more recent ones. Given the cross-sectional nature of the data set, the individual effects cannot be disentangled. With regard to differences between countries, in the table the relationship between age and job mismatches is strongest in Austria, Spain and Sweden. The differences between the oldest and youngest age groups are 18, 15 and 12 percentage points respectively. In Finland and Slovenia, by contrast, there is no association between age and the likelihood of having a non-matching job.

²⁶⁴ A job mismatch is often measured as a discrepancy between the current occupation of a school leaver (attributed to each 1-digit ISCO occupational code which is based on the skill content of each broad occupational grouping) and the formal education received (measured by the ISCED standardised classification of fields of studies). A person is usually classified as over-educated if their educational qualification is higher than that attached to their occupation. Sometimes over-education may reflect only a temporary mismatch between employees' skills and the jobs they perform although it could reflect a shift in the labour market.

²⁶⁵ School leavers were defined as individuals aged 15-35 years old, who left initial education five years (in the case of Finland, the Netherlands and Sweden) or ten years (for the other countries) before the reference year of the survey (2000). School leavers from ISCED levels 1 and 2 were excluded from the analysis, as in many European countries lower secondary education is considered general. School leavers from upper secondary (general) programmes were also excluded.

²⁶⁶ Newer data does not exist. In 2008/2009 forthcoming data will allow an update of this information.

Table 8.3: Incidence of job mismatches by age group and country, in %

EU country	20-24	25-29	30-35
Belgium	35	31	27
Denmark	44	39	35
Greece	41	41	36
Spain	41	32	26
France	37	34	32
Italy	49	48	43
Hungary	36	35	33
Netherlands	28	29	31
Austria	28	31	46
Slovenia	30	33	30
Finland	31	31	31
Sweden	45	31	33

Source: Eurostat, LFS *ad hoc* module 2000

The same data set also shows that more than one third of all leavers from education and training in the European countries for which data exist had started their work history in high-skilled professional and semi-professional service occupations (ISCO codes 1 to 3) by the late 1990s. About another third entered clerical, administrative, sales or personal service occupations (ISCO codes 4 and 5), while the remaining third found their first job in skilled or unskilled manual occupations corresponding to ISCO codes 6 to 9 (Mueller *et al.* 2002).

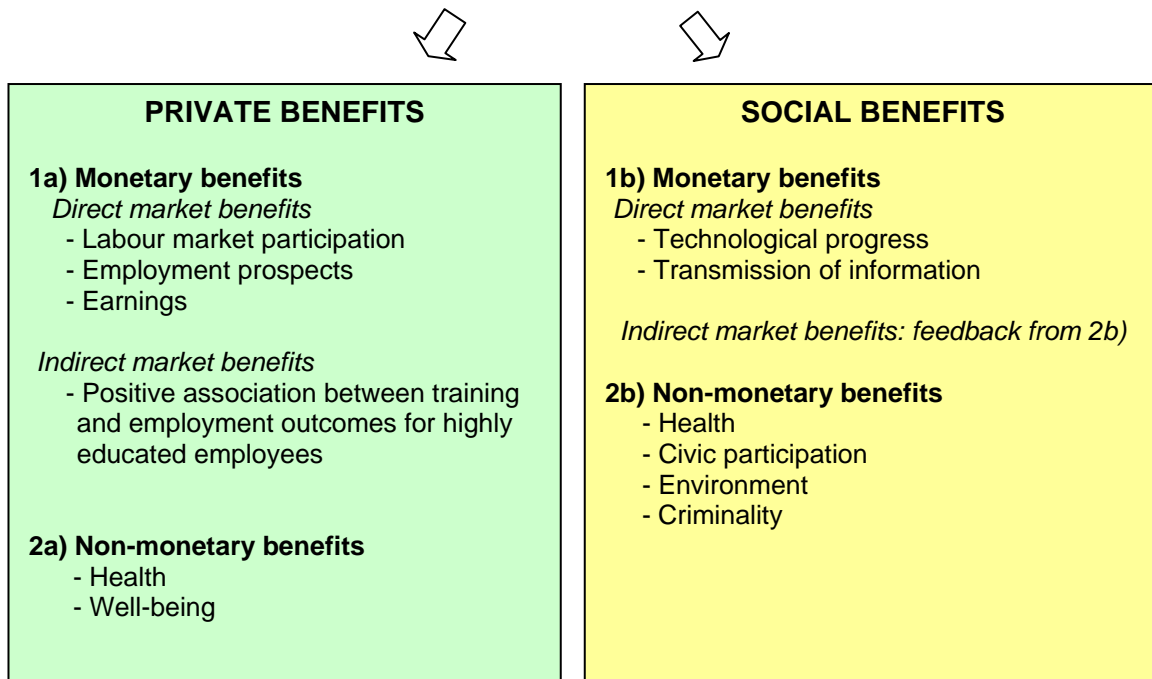
8.4 Other outcomes at individual level

Research over the past decade has produced ample evidence that the monetary and non-monetary prosperity of individuals is related to their level of education and training. Education yields substantial returns to the individual in terms of earnings and employability (e.g. OECD 2000, 2005) and significant social benefits in terms of economic growth (e.g. de la Fuente and Doménech 2006). Evidence shows that the quantity and, especially, quality of schooling, in terms of student performance in cognitive achievement tests yield substantial payoffs on the labour market for the individual and society alike (cf. Barro 2001 and Wößmann 2002). Given that most European countries achieve virtually universal enrolment in primary and lower secondary schooling, policies that increase the quality of schooling in terms of pupils' cognitive and non-cognitive skills may bring considerable benefits. Education is also associated with several pure non-pecuniary benefits, at both individual and society level, through its impact on health, civic participation, well-being and crime rates.²⁶⁷ At private level, there is a positive association between education and health-related behaviour and diet habits. Job satisfaction and well-being are also found to be positively associated with education.²⁶⁸ In addition, demand to participate in political processes, civic knowledge and attitudes tend to rise with education, all of which bring social benefits.

²⁶⁷ See McMahon 2004 for additional information. Note however that while there is evidence for a correlation between education and health, crime or well-being a causal interpretation to these results should be avoided.

²⁶⁸ See Blanchflower and Oswald (2004).

Chart 8.2: Education and its benefits

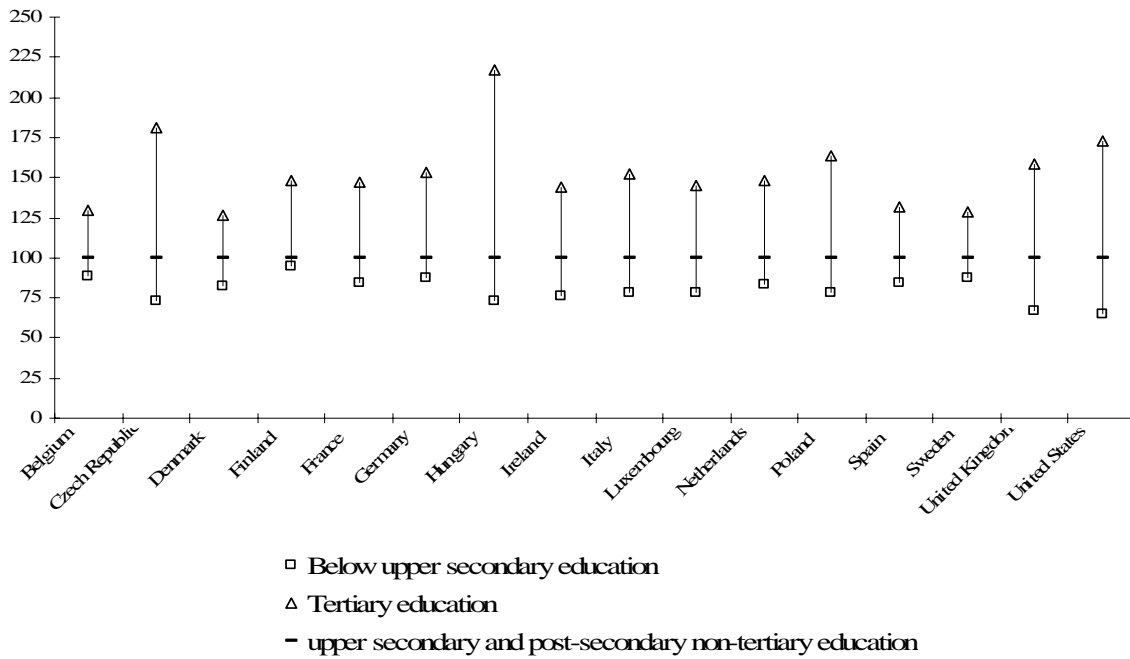


One way to account for educational outcomes is to look at the **rates of return on investment in education**. They give a complete measure of the benefits over time compared with the cost of the initial investment in education. In countries where data exist,²⁶⁹ the investment to obtain a university-level degree, for instance, can produce private annual returns as high as 22.6%, with every country showing a rate of return above 8%.

The **relative earnings from employment** (shown by the index of earning differentials) can also account for returns on investment in education. This indicator examines the relative earnings of workers with different levels of educational attainment. The relative earnings from employment of tertiary graduates compared with upper secondary or post-secondary graduates can be as high as 117% in Hungary or 82% in the Czech Republic but are only around 30% in Sweden or Denmark (see Table A.8.6). In other words, graduates of tertiary-level education in Hungary earn substantially more than upper secondary and post-secondary non-tertiary graduates typically earn, whereas in Sweden the earning gaps are smaller. However, individual salaries largely depend on labour market factors; different institutional arrangements and shifts in relative demand for different types of labour can also influence them. As a result, the measurement limitations can create problems when using this indicator to look for evidence of higher returns from education.

²⁶⁹ These figures are based on the rates of return calculated by the OECD for the hypothetical case of a 40-year-old who decides to return to education in mid-career. See OECD, EaG 2006 for additional information regarding the methodology. An alternative way to measure the private return to education is based on the estimation of Mincerian wage equations (see Psacharopoulos 2006, 2005, 1994 and, with Patrinos, 2004). However, Mincerian estimates do not take into account, for instance, the direct costs of education contrary to the measure proposed by the OECD.

Chart 8.3: Relative earnings of the population, by level of educational attainment for 25- to 64-year-olds (upper secondary and post-secondary non-tertiary education = 100)



Source: Education at a Glance (OECD 2006)

The wage premium associated with tertiary education suggests an “under-supply” of tertiary graduates relative to the demand for tertiary graduates on the labour market. The tertiary educational attainment rate is indeed much lower in Hungary or the Czech Republic than on average in EU countries. At the same time, the growing demand for higher education, driven in part by the introduction of new technologies biased in favour of highly skilled workers, also increases the wage premium attached to tertiary graduates.

LIST OF ABBREVIATIONS

General abbreviations

ACCI	the active citizenship Composite indicator
AES	Adult Education Survey
ALL	Adult Literacy and Life-skills Survey
ARWU	The <i>Academic ranking of World Universities</i>
CEPES	Centre Européen pour l'enseignement supérieur/ European Centre for Higher Education (UN organisation based in Bucharest)
CHE	Centre for Higher Education Development
CILT	UK National Centre for Languages
CIS	Community Innovation Survey
CIVED	Citizenship Education Survey (IEA study of 1999)
CRELL	Centre for Research on Lifelong Learning
CVET	Continuing vocational education and training
CVT	Continuing Vocational Training
CVTS	Continuing Vocational Training Survey
ECTS	the European Credit Transfer System
ECVET	European Credit for Vocational Education and Training
EEA	European Economic Area (EU 27+Norway, Iceland and Liechtenstein)
EIT	European Institute of Technology
EMU	European Monetary Union
ENQA	European Network of Agencies
EPL	Employment Protection Legislation
ESCS	Economic, social and cultural status
ESPAIR	Education par le sport de plein air contre le décrochage scolaire
ESS	European Social Survey
EQF	European qualifications framework
EUR PPS	Euro in purchasing power parities (taking into account different price levels)
EU-SILC	EU-Statistics on Income and Living Conditions
FTE	Full-time equivalent
FYR	Former Yugoslav Republic (of Macedonia)
GDP	Gross Domestic Product
GERESE	European Group of Research on Equity of Educational Systems
GNP	Gross National Product
IALS	International Adult Literacy Survey
ICCS	International Civic and Citizenship education survey
ICT	Information and Communication Technology
IEA	International Association for the Evaluation of Educational Achievement
ILO	International Labour Organisation (UN-Organisation based in Geneva)
IREG	International Ranking Expert Group
ISCED	International Standard Classification of Education
ISCO	International Standard Classification of Occupations
LFS	Labour Force Survey
MST	Maths, science and technology
NACE	Classification of Economic Activities in the European Community
NEET	Not in employment, education or training
NFER	National Foundation for Educational Research
NGOs	Non-government organisations
OMC	Open Method of Co-ordination

OECD	Organisation for Economic Co-operation and Development
OJC	Official Journal of the European Communities
PIAAC	Programme for the International Assessment of Adult Competencies (OECD study)
PIRLS	Progress in International Reading Literacy Survey
PISA	Programme for International Student Assessment
PLA	Peer Learning Activity
PPS	Purchasing Power Standards
R&D	Research and development
SCI	Science Citation Index
S&E	Science and engineering
SENDDD	Statistics on students with disabilities, learning difficulties and disadvantages
SES	socio-economic status
SSCI	Social Science Citation Index
TALIS	Teaching and Learning International Survey (OECD study)
THES	Times Higher Education Supplement
TIMSS	Trends in International Mathematics and Science Study
UIS	UNESCO Institute for Statistics (based in Montreal)
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization (based in Paris)
UOE	UIS/OECD/Eurostat (common data collection)
VET	Vocational education and training
WUR	World University Ranking

Country Abbreviations

EU	European Union	PT	Portugal
BE	Belgium	RO	Romania
BG	Bulgaria	SI	Slovenia
CZ	Czech Republic	SK	Slovakia
DK	Denmark	FI	Finland
DE	Germany	SE	Sweden
EE	Estonia	UK	United Kingdom
EL	Greece		
ES	Spain	CC	Candidate Countries
FR	France	HR	Croatia
IE	Ireland	MK	FYR Macedonia
IT	Italy	TR	Turkey
CY	Cyprus		
LV	Latvia	EEA	European Economic Area
LT	Lithuania	IS	Iceland
LU	Luxembourg	LI	Liechtenstein
HU	Hungary	NO	Norway
MT	Malta		
NL	Netherlands	Others	
AT	Austria	JP	Japan
PL	Poland	US/USA	United States of America

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16 core indicators
for monitoring progress towards the Lisbon objectives in education and training

1. Participation in pre-school education
2. Special needs education
3. Early school leavers
4. Literacy in reading, mathematics and science
5. Language skills
6. ICT skills
7. Civic skills
8. Learning to learn skills
9. Upper secondary completion rates of young people
10. Professional development of teachers and trainers
11. Higher education graduates
12. Cross-national mobility of students in higher education
13. Participation of adults in lifelong learning
14. Adult skills
15. Educational attainment of the population
16. Investment in education and training

StatisticsChapter 1**Table A1.1 Comparison of the share of children with disabilities receiving additional resources in pre-primary and primary education (percentage of all children in that phase of education)**

	Pre-primary education	Primary education
Poland	0.29	2.66
Turkey	0.37	0.49
Belgium (Fr.)	0.57	2.01
Hungary	0.85	4.18
Italy	0.88	2.03
Belgium (Fl.)	0.88	3.61
Netherlands	0.93	2.7
Spain	1.43	3.33
United Kingdom (Eng.)	1.75	2.43
Slovakia	1.86	4.37
Czech Republic	4.83	4.17
Japan	0.09	1.42
USA	5.75	6.08
Median (of all countries above)	0.88	2.7

Source: OECD SENDDD database

Additional note: countries are ranked in ascending order of percentage of students

Chapter 2

Table A.2.1 Efficiency for compulsory education in some European countries (quantity inputs)

Country		Model 2			
		FDH	Peers	DEA VRS	Peers
Belgium	BE	53.19	FI	53.2	FI
Bulgaria	BG	72.95	FI	66.7	FI
Czech R.	CZ	100	-	100	-
Germany	DE	100	-	86.6	FI
Greece	EL	94.34	FI	94.3	FI
Spain	ES	66.7	FI	66.7	FI
France	FR	69.4	FI	69.4	FI
Italy	IT	51.6	FI	51.6	FI
Latvia	LV	100	CZ	100	CZ
Luxembourg	LU	45.0	FI	45.1	FI
Hungary	HU	72.4	DE	53.2	FI
Poland	PL	100	-	79.1	CZ
Romania	RO	87.3	FI	68.5	FI
Slovakia	SK	98.6	CZ	97.0	CZ
Finland	FI	100	-	100	-
Sweden	SE	100	-	70.9	FI

Source: CRELL computations (based on Eurostat UOE data and OECD PISA data)

Additional notes:

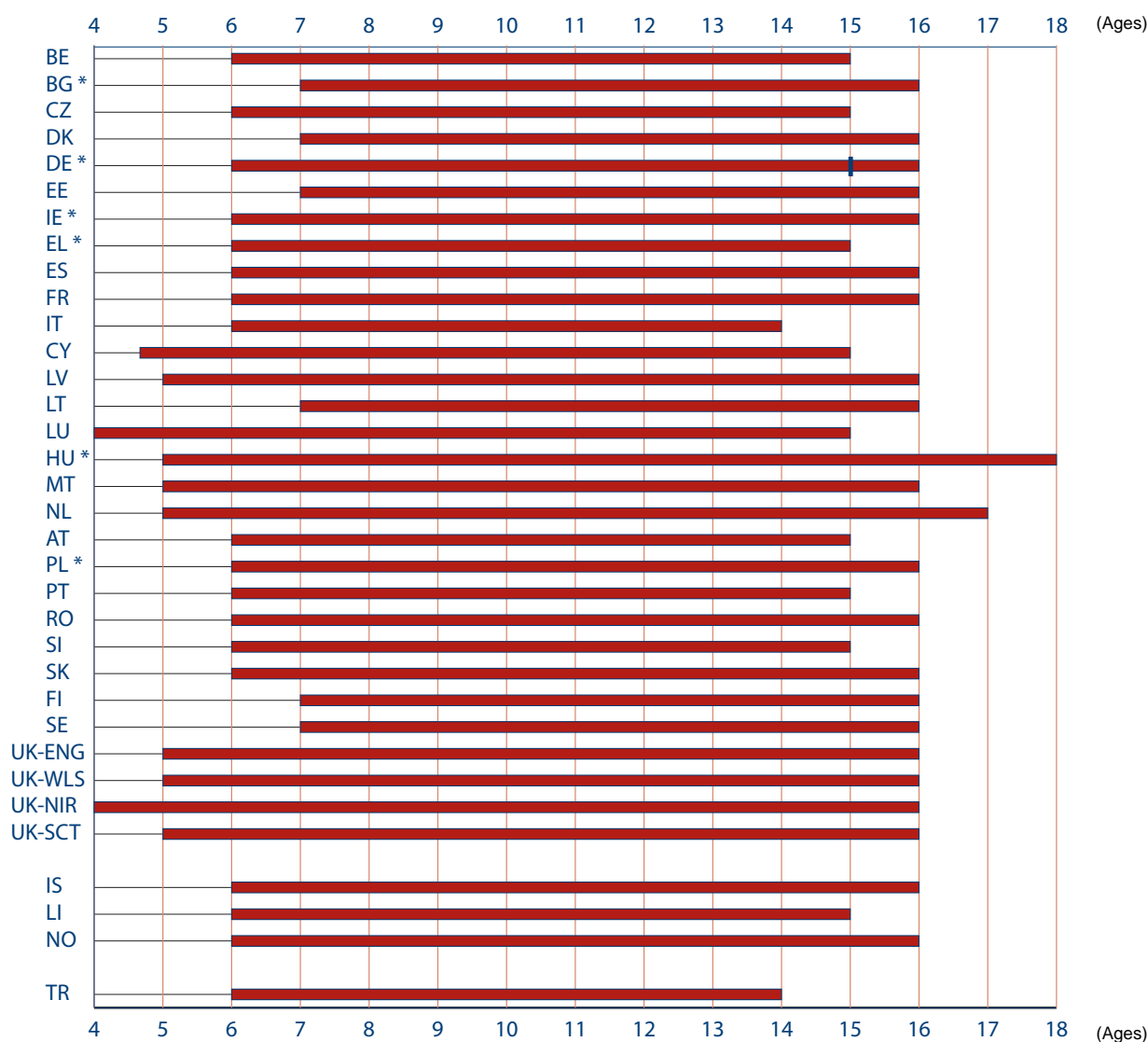
Model 2: Adult attainment (parental background of students), teachers per 100 students/PISA reading scores

FDH/DEA: Full Disposable Hull/Data Envelopment Analysis, CRS/VRS/NIRS: Constant/Variable/Non-increasing returns to scale

Table A.4.1 List of survey questions used for baseline indicators on civics

		Equal Weights	PC weights	Source
S1	Working in an organisation or association	0.01	0.038	ESS1
S2	Signing a petition	0.01	0.058	ESS1
S3	Taking part in lawful demonstrations	0.01	0.043	ESS1
S4	Boycotting products	0.01	0.053	ESS1
S5	Ethical consumption	0.01	0.049	ESS1
S6	HR organisations – membership	0.016	0.034	ESS1
S7	HR organisations – participation	0.016	0.045	ESS1
S8	HR organisations – donating money	0.016	0.075	ESS1
S9	HR organisations – Voluntary Work	0.016	0.054	ESS1
S10	environmental organisations – membership	0.016	0.079	ESS1
S11	environmental organisations – participation	0.016	0.03	ESS1
S12	environmental organisations – donating money	0.016	0.071	ESS1
S13	environmental organisations – Voluntary Work	0.016	0.069	ESS1
S14	Trade Union organisations – membership	0.016	0.073	ESS1
S15	Trade Union organisations – participation	0.016	0.041	ESS1
S16	Trade Union organisations – donating money	0.016	0.072	ESS1
S17	Trade Union organisations – Voluntary Work	0.016	0.059	ESS1
S18	Contacted a politician	0.01	0.058	ESS1
S19	Unorganized Help in the community	0.036	0.013	ESS1
S20	Religious organisations – membership	0.009	0.035	ESS1
S21	Religious organisations – participation	0.009	0.051	ESS1
S22	Religious organisations – donating money	0.009	0.049	ESS1
S23	Religious organisations – voluntary work	0.009	0.044	ESS1
S24	Sports organisations – membership	0.009	0.036	ESS1
S25	Sports organisations – participation	0.009	0.047	ESS1
S26	Sports organisations – donating money	0.009	0.033	ESS1
S27	Sports organisations – voluntary work	0.009	0.044	ESS1
S28	Culture and hobbies organisations – membership	0.009	0.036	ESS1
S29	Culture and hobbies organisations – participation	0.009	0.042	ESS1
S30	Culture and hobbies organisations – donating money	0.009	0.038	ESS1
S31	Culture and hobbies organisations – voluntary work	0.009	0.047	ESS1
S32	Business organisations – membership	0.009	0.035	ESS1
S33	Business organisations – participation	0.009	0.047	ESS1
S34	Business organisations – donating money	0.009	0.039	ESS1
S35	Business organisations – voluntary work	0.009	0.038	ESS1
S36	Teacher/Parents organisations – membership	0.009	0.035	ESS1
S37	Teacher/Parents organisations – participation	0.009	0.045	ESS1
S38	Teacher/Parents organisations – donating money	0.009	0.033	ESS1
S39	Teacher/Parents organisations – voluntary work	0.009	0.046	ESS1
S40	Social organisations – membership	0.009	0.036	ESS1
S41	Social organisations – participation	0.009	0.048	ESS1
S42	Social organisations – donating money	0.009	0.038	ESS1
S43	Social organisations – voluntary work	0.009	0.045	ESS1
S44	Immigrants should have same rights	0.027	0.049	ESS1
S45	Law against discrimination in the work place	0.027	0.096	ESS1
S46	Law against racial hatred	0.027	0.092	ESS1
S47	Allow immigrants of different race group from majority	0.027	0.09	ESS1
S48	Cultural life undetermined/un-enriched by immigrants	0.027	0.075	ESS1
S49	Immigrants make country worse/better place	0.027	0.079	ESS1
S50	How important for a citizen to vote	0.017	0.085	ESS1
S51	How important for a citizen to obey laws	0.017	0.059	ESS1
S52	How important for a citizen to develop an independent opinion	0.017	0.051	ESS1
S53	How important for a citizen to be active in a voluntary org.	0.017	0.081	ESS1
S54	How important for a citizen to be active in politics	0.017	0.082	ESS1
P1	Political parties – membership	0.028	0.028	ESS1
P2	Political parties – participation	0.028	0.028	ESS1
P3	Political parties – donating money	0.028	0.028	ESS1
P4	Political parties – voluntary work	0.028	0.028	ESS1
P5	Worked in political party/action group last 12 months	0.028	0.028	ESS1
P6	Donated money to political organisation/action group last 12 months	0.028	0.028	ESS1
P7	European Parliament - voting turnout	0.028	0.028	Eurostat
P8	National Parliament - voting turnout	0.028	0.028	Eurostat
P9	Women's participation in national parliament	0.028	0.028	Inter-Parliament Union

Chart A.4.1 Ages of pupils and duration of full-time compulsory education, 2005/06 or 2006/07



* Reference year: 2005/06

Source: Eurydice.

Additional notes

Belgium: Full-time compulsory education ends at the age of 16 for pupils who have not completed the first stage of secondary education.

Germany: Full-time compulsory education lasts between 9 and 10 years, depending on the *Länder* concerned.

Ireland: Since the 2002/03 school year, compulsory education has ended at the age of 16 instead of 15.

Italy: Ages relating to compulsory education are subject to an ongoing debate.

Cyprus: From 2004/05 onwards, one year of pre-primary education (*prodimitiki*) is compulsory.

Lithuania: From 2003/04, the revised Law on Education stipulates the age of 7.

Netherlands: Compulsory education ends at the end of the school year in which pupils turn 16 and have followed 12 years of compulsory education.

Poland: From 2004/05 onwards, one year of pre-primary education is compulsory.

Estonia: Compulsory education continues until pupils have completed basic education (at the age of 16) or reached the age of 17.

Romania: With effect from 2003/04, pupils complete both compulsory and lower secondary education at the age of 16.

Chapter 6

Table A.6.1 Policy overview – Copenhagen-Maastricht-Helsinki, some concrete outcomes of cooperation in VET at the European level

Common European tools	Policy objective - contribution to Education and Training 2010	Stage of development (2007)
The European Qualifications Framework (EQF)	To facilitate transfers and recognition of qualifications held by individual citizens, by linking qualifications systems at national and sectoral levels and enabling them to relate to each other. The EQF will provide a common language to describe qualifications which will help Member States, employers and individuals compare qualifications across the EU's diverse education and training systems. It will act as a translation device and will be one of the principal European mechanisms to facilitate mobility for work and study, alongside the European Credit Transfer System (ECTS) and Europass.	On 5 September 2006 the Commission adopted a proposal for a Recommendation of the European Parliament and of the Council on the establishment of the European Qualifications Framework for lifelong learning (EQF). This followed almost two years of consultation across Europe. (EQF emerged as an important action from the 2004 Joint Interim Report and the Irish Presidency conference in March 2004. The Commission formally published the EQF as a Staff Working Document in July 2005 and launched the Europe-wide consultation process which ended in December 2005.) A general approach was subsequently agreed in the Education Committee and endorsed by the November 2006 Council. The co-decision legislative procedure for the EQF will continue in the Parliament and Council during 2007.
A European credit system for VET (ECVET)	To facilitate transfers, accumulation and recognition of learning outcomes. ECVET presents certain principles, rules and conventions in a coherent and rational way, which will facilitate: the mobility of people undertaking training; validation of the outcomes of lifelong learning; the transparency of qualifications; and mutual trust and cooperation between vocational training and education providers in Europe.	In November 2006 the Commission adopted a Staff Working Document which outlines the main characteristics of ECVET. The document was taken as the basis for a consultation process (November 2006 to 31 March 2007) involving, in particular, policy-makers, social partners, stakeholders and experts in qualifications systems and vocational education and training in Europe. The results of the consultation were discussed at a major European conference on 4-5 June 2007, under the German Presidency. They will be analysed with a view to creating a Community instrument which the European Commission will propose in the course of 2007.
Common Quality Assurance Framework for VET	To promote cooperation on quality assurance in VET between Member States by providing a guarantee for quality assurance in VET. Member States will be encouraged to exchange models and methods in this field.	The Education Council endorsed the framework in May 2004 and invited Member States and the Commission, within their respective competences, to promote it on a voluntary basis, together with relevant stakeholders. The Council further invited them to take practical initiatives to assess the added value of the common framework in improving national quality assurance systems and encouraged coordination of activities at national and regional levels to ensure the coherence of such initiatives with the Copenhagen Declaration. A model based on four steps (planning, implementation, evaluation and review) has been produced, a monitoring system proposed and a set of indicators put forward as a measurement tool. A Recommendation to strengthen the framework is being prepared.
A single Community framework for the transparency of qualifications and competences (Europass)	To improve transparency of qualifications and competences which will subsequently facilitate mobility throughout Europe for lifelong learning purposes, thereby contributing to developing quality education and training and facilitating mobility for occupational purposes, both between countries and across sectors.	Adopted by a Decision of the European Parliament and of the Council in December 2004. Entered into force in 2005.
Common European principles for identification and validation of non-formal and informal learning	Common European principles are necessary to encourage and guide development of high-quality, trustworthy approaches and systems for identification and validation of non-formal and informal learning.	The Education Council endorsed a set of common European principles for identification and validation of non-formal and informal learning. A European Inventory on validation of non-formal and informal learning has been set up to support implementation of the common principles and to promote mutual learning between European countries. The Cedefop Virtual Community on non-formal learning provides a platform for dissemination of and further exchanges on the common principles and their further development.
Lifelong guidance	Guidance throughout life contributes to achieving the European Union goals of economic development, occupational and geographical mobility and human capital and workforce development. Provision of guidance within the education and training system, and especially in schools or at school level, has an essential role to play in ensuring that individuals' educational and career decisions are firmly based and in assisting them to develop effective self-management of their learning and career paths.	The Resolution adopted by the Council in 2004 invites Member States to examine national guidance provision in education, training and employment. A template for action to support Member States in this process was devised. Additionally, a Career guidance handbook for policymakers was published by the OECD and the Commission in December 2004. It provides common principles and other tools to improve services at national, local and company levels. A European Lifelong Guidance Policy Network is being set up to implement the principles.
VET statistics	Adequate and consistent data and indicators are the key to understanding what is happening in VET, to strengthening mutual learning, to supporting research and to laying the foundations for evidence-based training policy.	Cooperation is underway between different Commission DGs (EAC, JRC/CRELL and Eurostat) and Community agencies (Cedefop and Eurydice) with the aim of developing a framework for reporting on VET.

Source: European Commission, Directorate-General for Education and Culture, 2007, CEDEFOP, www.cedefop.europa.eu

Table A.6.2: Participation patterns in upper secondary education (ISCED level 3)

	Total FTU pupils as percentage of population in the typical 15-19 age group				
	Orientation		Destination		
	Gen	Voc	3A	3B	3C
2000	24.9%	33.4%	32.7%	6.3%	19.9%
2001	29.7%	38.2%	42.9%	6.7%	21.9%
2002	30.1%	39.6%	42.7%	7.0%	23.6%
2003	30.1%	37.9%	42.3%	6.7%	23.2%
2004	32.1%	38.9%	50.4%	6.6%	18.6%

Source: Eurostat
m - Missing or not available

Table A.6.3: Attainment and progression patterns at the upper secondary level of education (2004 or latest year available)

Country	Completion rates at typical age					
	Programme orientation		Programme destination			
	General	Vocational	3A	3B	3C long	3C short
EU-25	42	50	63	5	18	6
Belgium	37	62	62	a	20	17
Bulgaria	m	m	m	m	m	m
Czech Rep.	18	69	55	n	31	n
Denmark	58	56	58	a	56	a
Germany	36	62	36	61	a	1
Estonia	m	m	m	m	m	m
Ireland	66	34	91	a	6	a
Greece	59	39	59	a	37	x
Spain	45	25	45	a	18	7
France	33	70	51	11	38	3
Italy	29	67	75	3	a	19
Cyprus	m	m	m	m	m	m
Latvia	m	m	m	m	m	m
Lithuania	m	m	m	m	m	m
Luxembourg	28	42	42	7	18	2
Hungary	71	21	71	a	19	x
Malta	m	m	m	m	m	m
Netherlands	34	66	58	a	20	22
Austria	m	m	m	m	m	m
Poland	43	45	82	a	a	7
Portugal	40	14	53	x	x	x
Romania	m	m	m	m	m	m
Slovenia	m	m	m	m	m	m
Slovakia	22	68	66	a	22	1
Finland	52	75	90	a	a	a
Sweden	37	41	77	a	1	a
United Kingdom	m	m	m	m	m	m
Croatia	m	m	m	m	m	m
FYR Macedonia	m	m	m	m	m	m
Turkey	34	19	53	a	m	a
Iceland	61	52	61	1	37	15
Liechtenstein	m	m	m	m	m	m
Norway	66	45	66	a	45	m
United States	75	a	75	a	a	a
Japan	68	24	68	1	23	x

Source: Eurostat

MST graduates by field

Table A.7.1: Life science graduates (field 42) 2000-2005

Life sciences grad.	2000	2004	2005	% growth 2000-2005
EU 27	91601	93187	91101	-0.5
Belgium	2217	2339	1926	-13.1
Bulgaria	295	381	408	38.3
Czech Republic	658	949	1023	55.5
Denmark	873	816	859	-1.6
Germany	6170	7232	8183	32.6
Estonia	92	240	315	242.4
Ireland	:	:	:	:
Greece	:	1880	2030	:
Spain	5356	4873	4624	-13.7
France	27859	:	21860	-21.5
Italy	6684	11260	10311	54.3
Cyprus	0	0	3	:
Latvia	141	156	130	-7.8
Lithuania	162	238	262	61.7
Luxembourg	:	:	:	:
Hungary	299	319	453	51.5
Malta	0	:	0	:
Netherlands	842	1135	1542	83.1
Austria	549	767	985	79.4
Poland	3797	2508	3241	-14.6
Portugal	666	1551	1704	155.9
Romania	2116	5252	5083	:
Slovenia	89	180	212	138.2
Slovakia	215	906	1019	374.0
Finland	481	:	509	5.8
Sweden	889	1400	1308	47.1
United Kingdom	27875	22551	22068	-20.8
Croatia	:	253	260	:
FYR Macedonia	44	58	98	122.7
Turkey	2711	3464	3555	31.1
Iceland	75	82	92	22.7
Liechtenstein	:	0	10	:
Norway	326	308	365	12.0
United States	74597	74408	78388	5.1
Japan	:	:	:	:

incl. an estimate for Greece for 2000 (1000 graduates)

Source: Eurostat (UOE)

Additional note : Since the attribution of graduates to fields has changed in some countries between years, data have to be interpreted with care

Table A.7.2: Physical science graduates (field 44) 2000-2005

Physics grad.	2000	2004	2005	% growth 2000-2005
EU 27	86878	82536	82616	-4.9
Belgium	746	997	1203	61.3
Bulgaria	660	690	737	11.7
Czech Republic	652	1041	1084	66.3
Denmark	942	701	709	-24.7
Germany	11772	9589	10552	-10.4
Estonia	109	163	252	131.2
Ireland	:	:	:	:
Greece	:	2980	2384	:
Spain	6990	5855	5210	-25.5
France	24728	:	20454	-17.3
Italy	3218	5117	3751	16.6
Cyprus	19	51	69	263.2
Latvia	254	205	233	-8.3
Lithuania	259	393	385	48.6
Luxembourg	:	:	:	:
Hungary	420	602	430	2.4
Malta	57	:	52	:
Netherlands	1841	1824	1378	-25.1
Austria	633	546	634	0.2
Poland	2813	5888	6365	126.3
Portugal	878	2107	2153	145.2
Romania	:	:	:	:
Slovenia	124	134	134	8.1
Slovakia	237	836	775	227.0
Finland	668	:	787	17.8
Sweden	913	1053	871	-4.6
United Kingdom	23360	19458	21212	-9.2
Croatia	:	265	264	:
FYR Macedonia	122	174	206	68.9
Turkey	6987	8024	8263	18.3
Iceland	32	48	60	87.5
Liechtenstein	:	0	0	:
Norway	374	271	292	-21.9
United States	27244	29318	31511	15.7
Japan	:	:	:	:

incl. an estimate for Greece for 2000 (3000 graduates)

Source: Eurostat (UOE)

Additional note : Since the attribution of graduates to fields has changed in some countries between years, data have to be interpreted with care

Table A.7.3: Mathematics and statistics graduates (field 46) 2000-2005

Mathematics and statistics grad.	2000	2004	2005	% growth 2000-2005
EU 27	37526	42819	41956	11.8
Belgium	192	374	417	117.2
Bulgaria	159	197	155	-2.5
Czech Republic	302	376	364	20.5
Denmark	171	669	711	315.8
Germany	3858	3778	4524	17.3
Estonia	39	47	79	102.6
Ireland	:	:	:	:
Greece	:	1576	1415	:
Spain	3055	2153	1911	-37.4
France	11352	:	10783	-5.0
Italy	4049	5571	2895	-28.5
Cyprus	30	69	57	90.0
Latvia	52	78	88	69.2
Lithuania	89	271	379	325.8
Luxembourg	:	:	:	:
Hungary	97	346	273	181.4
Malta	0	:	0	:
Netherlands	227	347	436	92.1
Austria	155	152	173	11.6
Poland	2919	2641	3885	33.1
Portugal	689	1249	1192	73.0
Romania	2092	2581	2686	28.4
Slovenia	48	77	63	31.3
Slovakia	120	240	228	90.0
Finland	284	:	299	5.3
Sweden	241	378	303	25.7
United Kingdom	5998	7971	8334	38.9
Croatia	:	113	183	:
FYR Macedonia	87	102	106	21.8
Turkey	3721	4434	4823	29.6
Iceland	7	15	2	-71.4
Liechtenstein	:	0	0	:
Norway	70	84	92	31.4
United States	16588	18578	20004	20.6
Japan	:	195241	195670	:

incl. an estimate for Greece for 2000 (1000 graduates)

Source: Eurostat (UOE)

Additional note : Since the attribution of graduates to fields has changed in some countries between years, data have to be interpreted with care

Table A.7.4: Computing graduates (field 48) 2000-2005

Computing graduates	2000	2004	2005	% growth 2000-2005
EU 27	83946	137460	154015	83.5
Belgium	1858	3235	2992	61.0
Bulgaria	643	967	990	54.0
Czech Republic	2587	1754	1965	-24.0
Denmark	1177	2188	1881	59.8
Germany	6071	11579	14193	133.8
Estonia	167	429	605	262.3
Ireland	:	:	:	:
Greece	:	1856	3122	:
Spain	11095	19935	18726	68.8
France	14136	:	28549	102.0
Italy	1626	3762	3459	112.7
Cyprus	107	227	228	113.1
Latvia	546	825	793	45.2
Lithuania	714	939	1116	56.3
Luxembourg	:	:	:	:
Hungary	563	1403	1498	166.1
Malta	26	:	53	103.8
Netherlands	1308	3603	4119	214.9
Austria	527	1120	1586	200.9
Poland	2150	13065	19133	789.9
Portugal	909	2871	3550	290.5
Romania	:	:	:	:
Slovenia	105	167	229	118.1
Slovakia	836	1328	1278	52.9
Finland	1295	:	1843	42.3
Sweden	2103	2327	2242	6.6
United Kingdom	27452	36751	37445	36.4
Croatia	:	397	472	:
FYR Macedonia	43	61	69	60.5
Turkey	4088	8651	8667	112.0
Iceland	127	169	108	-15.0
Liechtenstein	:	0	0	:
Norway	1697	1891	1858	9.5
United States	71686	122385	109819	53.2
Japan	:	:	:	:

incl. an estimate for Greece for 2000 (1000 graduates)

Source: Eurostat (UOE)

Additional note : Since the attribution of graduates to fields has changed in some countries between years, data have to be interpreted with care

Table A.7.5: Engineering, manufacturing and construction graduates (field 5) 2000-2005

Engineering graduates	2000	2004	2005	% growth 2000-2005
EU 27	391545	468146	479599	22.5
Belgium	7906	7630	7589	-4.0
Bulgaria	6319	7418	7429	17.6
Czech Republic	5159	8018	8728	69.2
Denmark	5293	4695	5221	-1.4
Germany	52174	53725	55998	7.3
Estonia	926	854	1133	22.4
Ireland	5415	7061	7157	32.2
Greece	:	4864	7374	:
Spain	38584	50368	48030	24.5
France	76682	:	97198	26.8
Italy	31013	53203	49124	58.4
Cyprus	180	119	66	-63.3
Latvia	1438	1845	2036	41.6
Lithuania	5340	6489	6890	29.0
Luxembourg	26	:	:	:
Hungary	5820	5301	5217	-10.4
Malta	103	:	101	-1.9
Netherlands	8254	8693	8940	8.3
Austria	5642	6281	6704	18.8
Poland	27561	34144	37304	35.4
Portugal	6942	10008	10585	52.5
Romania	12866	26015	27501	113.7
Slovenia	2253	2219	2259	0.3
Slovakia	3317	5220	6085	83.4
Finland	7376	:	8329	12.9
Sweden	8824	11945	10623	20.4
United Kingdom	55874	48284	50704	-9.3
Croatia	:	2269	2319	:
FYR Macedonia	882	793	802	-9.1
Turkey	39579	49910	51145	29.2
Iceland	110	145	168	52.7
Liechtenstein	:	4	46	:
Norway	2351	2559	2449	4.2
United States	179276	189402	189938	5.9
Japan	209938	195241	195670	-6.8

incl. an estimate for Greece for 2000 (4000 graduates)

Source: Eurostat (UOE)

Additional note : Since the attribution of graduates to fields has changed in some countries between years, data have to be interpreted with care

Table A.7.6: Inward and outward mobility of Erasmus teachers by country 2005/06

		Host country																																	
		BE	CZ	DK	DE	EE	EL	ES	FR	IE	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	SI	SK	FI	SE	UK	EUI	IS	LI	NO	BG	RO	TR	TOTAL	
Country of home institution	BE		35	22	32	12	35	108	115	20	49	0	16	21	0	24	6	75	24	57	72	7	9	81	25	30	0	1	0	21	18	50	35	1.000	
	CZ	43		13	257	5	26	81	139	7	91	0	5	11	0	9	4	28	87	98	74	23	174	78	37	115	0	2	0	10	13	10	44	1.484	
	DK	18	5		31	6	8	28	16	6	16	1	6	13	0	3	0	22	7	14	6	2	2	8	10	50	0	3	0	16	2	0	18	317	
	DE	41	146	31		28	57	261	300	49	216	8	65	71	2	143	10	44	113	259	64	23	38	183	73	188	0	3	1	35	79	128	101	2.760	
	EE	4	5	10	30		4	6	12	2	9	0	7	4	0	3	4	6	5	1	5	4	0	88	4	12	0	0	0	5	4	0	9	243	
	EL	21	18	9	62	2		34	66	0	28	20	1	4	0	10	1	10	13	17	9	1	3	21	10	45	0	2	0	7	20	30	15	479	
	ES	90	61	38	234	6	24		344	23	639	3	2	12	0	26	4	46	65	79	277	11	7	72	44	145	0	2	0	28	14	43	12	2.351	
	FR	81	97	29	180	7	81	301		31	260	6	10	27	1	75	11	16	28	189	72	6	26	52	36	121	0	3	0	16	58	289	25	2.134	
	IE	9	3	1	34	1	4	19	34		9	0	1	2	0	7	1	6	10	9	8	0	0	8	5	6	0	4	0	3	2	6	0	192	
	IT	30	26	10	117	12	32	288	212	7		0	4	12	0	47	8	12	34	76	67	9	14	37	18	57	0	4	0	5	7	61	17	1.223	
	CY	2	0	1	4	0	14	3	3	0	2		0	3	0	0	0	0	5	3	3	0	0	7	0	6	0	0	0	0	2	1	0	59	
	LV	12	5	6	40	5	5	7	9	0	4	0		50	0	1	0	8	11	21	6	0	3	26	6	7	0	2	0	4	4	1	2	245	
	LT	23	15	31	93	13	9	33	35	4	30	3	43		0	3	0	19	25	44	40	4	5	60	32	30	0	0	0	15	18	1	20	648	
	LU	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	HU	23	9	8	148	3	19	24	89	3	64	0	1	4	0		0	25	41	11	14	2	16	49	7	28	0	1	0	12	4	22	10	637	
	MT	6	3	2	3	0	3	5	7	0	8	0	0	2	0	0		1	3	1	3	0	0	6	1	10	0	0	0	0	0	0	0	0	64
	NL	55	32	19	60	4	9	48	43	6	24	0	21	13	0	34	1		23	47	15	9	14	52	23	39	0	3	0	25	4	12	23	658	
	AT	15	46	12	102	7	20	55	35	18	61	1	13	21	1	33	3	16		32	25	20	10	57	31	32	0	2	1	14	7	24	21	735	
	PL	72	96	36	388	1	37	136	186	18	178	3	22	44	1	24	1	44	48		82	13	55	57	45	72	0	2	0	8	17	16	39	1.741	
	PT	44	30	12	37	4	9	162	60	9	58	1	2	17	0	15	0	28	11	49		4	3	36	7	30	0	0	0	7	5	16	10	666	
	SI	4	8	3	21	1	2	10	5	0	13	0	0	4	0	5	0	2	16	7	10		2	14	3	7	0	2	0	1	1	0	2	143	
	SK	8	89	0	51	1	6	17	26	1	18	1	0	6	0	27	0	10	8	35	12	10		19	7	13	0	1	0	4	6	0	7	383	
	FI	74	51	20	152	61	25	78	51	10	45	6	25	29	0	71	5	47	54	38	28	10	13		18	83	0	7	0	15	3	15	9	1.043	
	SE	32	15	11	41	4	11	49	39	14	27	0	9	20	0	19	5	29	21	29	19	5	7	9		48	0	7	0	18	1	6	7	502	
	UK	27	78	34	220	5	54	147	151	8	100	12	13	17	0	31	22	64	35	56	33	12	16	121	51		0	4	1	31	23	24	14	1.404	
	EUI	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		0	0	0	0	0	0	0	3
	EUR25	734	873	358	2338	188	494	1900	1978	236	1949	65	266	407	5	610	86	558	687	1172	944	175	417	1141	493	1175	0	55	3	300	312	755	440	21.114	
	IS	1	0	8	8	0	2	1	5	1	9	0	3	3	0	0	1	0	2	0	2	1	0	3	2	4									56
	LI	0	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0								6
	NO	6	7	21	46	2	2	33	17	5	13	0	10	9	0	8	0	20	10	21	5	4	3	17	14	35	0								308
EEA	7	7	30	55	2	4	35	22	6	23	0	14	12	0	8	1	20	12	21	7	5	3	20	16	40	0								370	
BG	29	15	2	117	1	29	20	50	2	28	3	1	6	0	3	0	16	8	16	13	5	3	10	8	29	0								414	
RO	78	6	4	110	0	62	62	344	1	127	1	1	1	0	22	0	25	15	18	45	1	4	16	2	25	0								970	
TR	38	46	13	142	5	36	17	33	0	30	0	0	14	0	20	0	27	25	64	14	3	9	17	11	17	0								581	
TOTAL	886	947	407	2762	196	625	2034	2427	245	2157	69	282	440	5	663	87	646	747	1291	1023	189	436	1204	530	1286	0	55	3	300	312	755	440	23.449		

Table A.7.7: Erasmus student mobility 2005/2006 - Total number of students by country

Country of home institution	Host Country																												TOTAL				
	BE	CZ	DK	DE	EE	EL	ES	FR	IE	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	SI	SK	FI	SE	UK	IS	LI	NO			BG	RO	TR
BE		72	106	337	6	77	1.359	762	130	443	7	6	6	0	55	12	299	100	89	185	11	7	218	189	325	5	0	82	17	28	38	4.971	BE
CZ	165		136	1.032	6	110	378	619	60	193	2	5	25	1	11	3	239	280	135	216	63	66	293	170	375	5	1	63	11	4	58	4.725	CZ
DK	45	24		330	2	13	280	221	26	68	3	3	6	0	6	11	95	69	16	15	5	0	10	26	345	17	0	27	0	0	19	1.682	DK
DE	334	374	568		67	199	5.063	4.498	858	1.857	23	54	98	6	335	34	818	472	652	377	50	50	1.061	1.874	3.106	76	11	647	24	52	210	23.848	DE
EE	7	4	35	67		13	38	57	3	50	0	0	5	0	3	1	34	22	8	10	2	2	75	25	28	1	0	10	8	0	3	511	EE
GR	148	111	66	376	2		411	491	22	265	6	0	3	1	32	1	119	83	43	103	8	4	124	92	140	1	0	28	9	17	8	2.714	GR
ES	1.191	317	663	2.630	13	221		3.615	598	5.291	14	20	57	0	127	13	1.221	368	345	1.245	51	38	642	877	2.901	36	1	246	34	99	17	22.891	ES
FR	390	311	606	2.888	54	225	5.481		1.202	1.642	5	22	67	2	204	55	893	391	459	274	84	46	834	1.238	4.499	22	1	337	21	160	88	22.501	FR
IE	55	13	29	271	2	10	274	479		87	0	0	2	0	8	10	82	43	12	14	6	0	39	70	43	0	3	11	4	0	0	1.567	IE
IT	585	115	336	1.753	41	146	6.080	2.542	260		6	7	38	0	137	77	577	275	232	762	29	21	315	396	1.283	24	0	168	11	144	29	16.389	IT
CY	1	1	0	3	0	54	13	14	0	7		0	0	0	1	0	1	1	0	5	0	0	10	1	18	0	0	0	0	0	3	133	CY
LV	56	8	35	159	5	2	27	49	3	29	3		40	0	3	1	31	27	25	18	4	3	64	41	21	2	0	19	0	2	4	681	LV
LT	119	42	194	302	10	30	97	131	25	105	5	31		0	11	0	49	64	84	85	10	18	217	137	72	2	0	37	7	5	21	1.910	LT
LU	1	1	1	33	0	0	24	29	0	6	0	0	0		1	0	3	10	1	6	0	0	2	12	15	0	0	1	0	0	0	146	LU
HU	137	14	80	676	6	59	150	321	16	272	0	1	1	0		0	171	156	34	42	7	5	226	71	131	1	8	47	2	5	19	2.658	HU
MT	6	1	5	2	0	0	5	15	9	57	0	0	0	0	0		7	0	0	3	0	0	6	3	30	0	0	0	0	0	0	149	MT
NL	164	55	184	378	13	56	808	574	104	270	0	4	7	0	83	10		109	71	85	5	0	280	435	538	7	0	137	4	10	100	4.491	NL
AT	97	81	104	236	16	47	712	526	138	426	1	12	22	0	43	16	218		53	83	26	11	252	314	364	22	0	113	6	5	27	3.971	AT
PL	475	247	541	2.329	20	182	968	1.116	136	824	7	36	84	0	70	4	440	293		371	76	109	423	375	567	7	0	100	49	22	103	9.974	PL
PT	228	205	76	196	7	52	1.076	315	21	771	4	11	51	0	78	5	253	43	269		62	37	98	118	172	0	2	38	14	91	19	4.312	PT
SI	34	35	29	135	2	8	114	87	0	76	0	0	12	0	6	0	47	88	21	57		5	27	35	32	0	2	8	4	1	14	879	SI
SK	67	98	40	201	1	25	107	125	6	73	2	5	9	4	19	0	36	66	59	49	8		78	20	42	0	0	10	1	0	14	1.165	SK
FI	131	144	28	617	58	66	488	429	114	178	22	10	19	0	122	12	320	270	62	72	29	18		105	473	13	1	18	18	3	11	3.851	FI
SE	67	51	26	368	8	26	307	475	71	133	1	6	6	0	25	0	221	136	35	36	9	1	15		467	3	0	15	2	2	18	2.530	SE
UK	138	99	163	971	13	43	1.578	2.192	17	658	8	2	6	0	26	26	325	118	55	76	6	25	241	222		12	1	98	4	3	5	7.131	UK
EUR25	4.641	2.423	4.051	16.292	352	1.664	25.838	19.687	3.819	13.781	119	235	564	14	1.406	291	6.499	3.484	2.760	4.189	551	466	5.550	6.847	15.989	256	31	2.260	250	653	828	145.790	EUR25
IS	3	3	50	21	2	4	17	24	0	3	0	12	0	0	1	0	3	6	0	0	1	0	3	16	25							194	IS
LI	0	0	5	0	0	1	3	1	3	1	1	0	0	0	0	0	2	0	0	1	0	0	6	3	3							30	LI
NO	29	33	100	213	5	13	234	200	14	80	0	8	5	0	17	3	80	40	10	43	3	1	21	62	198							1.412	NO
BG	65	24	16	221	6	55	65	126	7	51	5	0	7	1	4	0	23	35	34	44	4	7	28	16	38							882	BG
RO	181	12	49	441	2	91	345	1.143	21	466	0	1	4	0	61	0	65	45	35	143	4	4	41	28	79							3.261	RO
TR	168	118	85	691	5	71	109	239	6	209	0	2	46	0	65	1	293	125	224	122	26	30	87	76	54							2.852	TR
TOTAL	5.087	2.613	4.356	17.879	372	1.899	26.611	21.420	3.870	14.591	125	258	626	15	1.554	295	6.965	3.735	3.063	4.542	589	508	5.736	7.048	16.386	256	31	2.260	250	653	828	154.421	TOTAL
%	3,29	1,69	2,82	11,58	0,24	1,23	17,23	13,87	2,51	9,45	0,08	0,17	0,41	0,01	1,01	0,19	4,51	2,42	1,98	2,94	0,38	0,33	3,71	4,56	10,61	0,17	0,02	1,46	0,16	0,42	0,54	100,00	

Table A.8.1: Educational attainment of the adult population (aged 25-64) in %

EU country		Low		Medium		High	
		2006	% change (2000-06)	2006	% change (2000-06)	2006	% change (2000-06)
EU average	EU-27	30	-5.6	47	2.2	23	3.4
Belgium	BE	33	-8.6	35	4.0	32	4.6
Bulgaria	BG	25	-8.4	54	4.9	22	3.6
Czech Rep	CZ	10	-4.2	77	2.2	13	2.0
Denmark	DK	18	-1.9	47	-7.1	35	8.9
Germany	DE	17	-2.0	59	1.9	24	0.1
Estonia	EE	12	-3.8	55	-0.6	33	4.4
Ireland	IE	34	-8.9	35	-0.3	31	9.2
Greece	EL	41	-7.6	37	2.9	22	4.6
Spain	ES	51	-11.1	21	5.1	28	6.0
France	FR	33	-4.6	41	0.8	25	3.9
Italy	IT	49	-6.1	38	2.8	13	3.2
Cyprus	CY	30	-8.1	39	2.6	31	5.4
Latvia	LV	16	-1.3	63	-1.7	21	3.0
Lithuania	LT	11	-4.1	62	19.1	27	-15
Luxembourg	LU	34	-4.6	42	-1.1	24	5.7
Hungary	HU	22	-8.8	60	5.1	18	3.7
Malta	MT	73	-8.4	15	1.7	12	6.7
Netherlands	NL	28	-6.3	42	0.2	30	6.1
Austria	AT	20	-4.2	63	0.8	17	3.4
Poland	PL	14	-6.1	68	-0.4	18	6.5
Portugal	PT	73	-8.0	14	3.5	13	4.5
Romania	RO	26	-4.9	62	2.4	12	2.5
Slovenia	SI	19	-6.7	60	1.1	21	5.7
Slovakia	SK	11	-5.2	74	0.9	15	4.3
Finland	FI	21	-6.5	44	3.9	35	2.5
Sweden	SE	16	-6.9	53	6.0	31	2.6
UK	UK	27	-8.7	42	6.1	31	2.6

Source: Eurostat, (LFS).

http://epp.eurostat.ec.europa.eu/portal/page?_pageid=1090_30070682,1090_33076576&_dad=portal&_schema=PORTAL
database extraction: 6 June 2007

Additional notes :

DE and FR: provisional data fro 2006

d: See definitions.

(d) The three levels of educational attainment are based on ISCED levels, as follows: "low" includes ISCED levels 0 to 2 and 3c short, "medium" ISCED levels 3ab,3c long and 4 and "high" ISCED levels 5 and 6. Calculations do not include non-responses.

Table A.8.2a: Labour force statistics by educational attainment of 15- to 24-year-olds (d) 2006

EU country (2006)		Low educational attainment level			Medium educational attainment level			High educational attainment level		
		Employment	Activity	Unemployment	Employment	Activity	Unemployment	Employment	Activity	Unemployment
EU average	EU-27	24.7	31.4	21.2	47.8	56.7	15.6	60.0	69.6	13.7
Belgium	BE	12.5	17.9	30.1	35	42.6	18	65.9	78.5	16.1
Bulgaria	BG	6.5	10.4	37.8	42.6	50.3	15.3	63.8	71.7	m
Czech Republic	CZ	3.8	6.8	43.5	47.9	56.3	14.9	51.1	59.1	13.6u
Denmark	DK	58.6	64	8.5	73.8	78.8	6.3	69.7	78.6	m
Germany	DE	31.6	38	16.7	61.5	69.2	10.9	75.8	83.4	m
Estonia	EE	14.4	17.6	m	47.9	53.6	m	72.6u	76.9u	m
Ireland	IE	24	28.4	15.7	64.5	69.6	7.2	79.2	83.5	5.2u
Greece	EL	18.2	23.2	21.7	26.5	35.8	26.1	56	80.1	30.1
Spain	ES	42.1	52.5	19.8	39.3	46.8	16.1	57.6	67.9	15.2
France	FR	15.3p	23p	33.3p	39.8p	49.3p	19.3p	44.5p	53p	16p
Italy	IT	16.7	22	24.1	36.3	45.3	19.9	29.5	37.7	24.6
Cyprus	CY	18.8	20.3	7.5u	46	50.6	9.1	73.3	84.3	13.1
Latvia	LV	16.9	21.6	22.1	53.3	58.5	8.8	85	90.1	m
Lithuania	LT	6.9u	7.9u	m	34.7	38.5	9.8u	71.3u	77.4	m
Luxembourg	LU	14.1	18.4	23.1u	36.4	40.9	11u	59.1u	67.7	m
Hungary	HU	7.3	10.7	31.8	34.3	40.8	15.7	65.8	79.3	16.9
Malta	MT	38.6	48.2	19.9	51.9	57.8	m	74.9	83.7	m
Netherlands	NL	56.5	62.4	9.4	76.2	79.5	4.2	82.9	85.1	m
Austria	AT	38.1	44	13.4	68.9	73.8	6.5	70.6	78.1	m
Poland	PL	6.2	9.7	36.3	37	52.5	29.5	55.8	72.6	23.2
Portugal	PT	37.6	44.3	15.2	29.7	35.3	16	52	73.3	29
Romania	RO	15.9	19.8	19.7	32.7	41.9	22	57.6	79.6	27.7
Slovenia	SI	14.9	18.1	17.2u	48.9	56.2	12.9	69u	83.6u	m
Slovakia	SK	2.2	8.2	74	44.9	57.1	21.4	65.8	78.6	16.2u
Finland	FI	24.4	33.9	28	61.2	71.2	14.1	79.2	86	m
Sweden	SE	29.8	44.1	32.5	63.3	74.3	14.8	55.6	63.8	12.9u
United Kingdom	UK	43.4	58.1	25.4	63.6	71.3	11	78.8	86.6	9.1

Source: Eurostat (LFS) , database extraction: 5 June 2007

Additional notes:

m: Missing or not available.

u: Unreliable data.

DE and FR: provisional data

(d) The indicators are based on the EU Labour Force Survey. The employment rate is the number of employed as a percentage of the corresponding age-group population. The activity rate is the number of persons who are in the labour force (i.e. are either employed or unemployed) as a percentage of the corresponding total population (the employed, the unemployed and the inactive) by single year of age or by age group. Persons are regarded as participating in the labour market if they were either employed or unemployed in the four weeks prior to being questioned in the Labour Force Survey (LFS). The unemployment rate is the number of unemployed as a percentage of the labour force (employed and unemployed). The unemployed are persons who: were without work during the reference period of the survey AND were available for work (i.e. could start a job within two weeks) AND had been actively seeking work during the past four weeks.

Table A.8.2b: Labour force statistics by educational attainment of 25- to 64-year-olds (d)

EU country (2006)		Low educational attainment level			Medium educational attainment level			High educational attainment level		
		Employment	Activity	Unemployment	Employment	Activity	Unemployment	Employment	Activity	Unemployment
EU average	EU-27	56.4	62.8	10.1	73.6	79.3	7.2	84.5	88.2	4.1
Belgium	BE	49	55.9	12.3	73.2	78.5	6.7	83.6	87.6	3.7
Bulgaria	BG	41.4	50.8	18.5	73	78.3	6.8	82.7	86.6	3.8
Czech Rep	CZ	43.9	56.6	22.4	75.6	80	5.5	85.1	87.3	2.2
Denmark	DK	62.8	66.4	5.5	81.3	83.5	2.7	87.4	90.1	3.2
Germany	DE	53.8	67.2	19.6	72.6	80.6	9.8	84.4	88.6	4.7
Estonia	EE	56.5	63.9	m	78.1	82.8	5.7	87.7	91.7	m
Ireland	IE	58.7	62.3	5.7	77.3	79.9	3.2	86.5	88.5	2.2
Greece	EL	59.5	64.1	7.2	69.8	76.5	8.8	83.4	89.1	6.3
Spain	ES	59.8	65.8	9	76	81.5	6.8	83.4	88.1	5.5
France	FR	57.4p	64.7p	11.3p	74.9p	80.3p	6.7p	82p	86.1	5.2p
Italy	IT	52.5	56.4	6.9	74.4	78	4.6	80.6	85.4	4.8
Cyprus	CY	65.6	68.9	4.8	78.4	81.6	3.9	87	90.5	3.5
Latvia	LV	54.3	62	12.3	76.5	81.3	6	87	90.3	3.7
Lithuania	LT	46.6	51.9	10.2u	74.9	79.9	6.2	89.1	90.1	2.2u
Luxembourg	LU	60.8	63.9	4.9	73.4	76.3	3.9	85.2	86.8	2.9
Hungary	HU	38.2	44.8	14.8	70.4	74.9	6.1	81.8	83.9	2.2
Malta	MT	48.2	51.8	7	83.8	85.7	m	84.9	84.6	m
Netherlands	NL	60.6	63.6	4.8	79.1	82	3.5	86.4	88.4	2.3
Austria	AT	55.7	60.5	7.9	75.8	78.7	3.7	85.9	88.1	2.5
Poland	PL	38.6	49.2	21.5	62.9	72	12.7	83.5	87.8	5
Portugal	PT	71.7	77.6	7.6	80.2	86.4	7.1	86.4	91.3	5.4
Romania	RO	53.4	57.3	6.9	71	75.9	6.4	87.4	91.4	2.9
Slovenia	SI	55.9	60.1	7u	74.1	78.5	5.6	88.2	90.9	3u
Slovakia	SK	28.9	51.6	44	71.9	80.4	10.5	84.8	87.3	2.7
Finland	FI	58.4	65	10.1	75.6	81.3	7	85	88.3	3.7
Sweden	SE	66.9	72.2	7.4	81.9	86.3	5.1	87.3	90.9	4.2
United Kingdom	UK	64.4	68.4	5.9	80.8	84	3.8	88	90.1	2.2

Source: Eurostat (LFS), database extraction: 5 June 2007

Additional note:

d: See definitions in Table 8.2a.

m: Missing or not available.

p: Provisional data.

u: Unreliable data.

Table A.8.3: Employment rates in the EU (d)

EU country (i)		Total 15- to 64- year-olds		Female		Older workers 55- to 64- year-olds	
		2006	% change (2000)	2006	% change (2000)	2006	% change (2000)
EU average	EU-27	64.3p	2.1p	57.1p	3.4p	43.5p	6.6p
Belgium	BE	61.0	0.5	54.0	2.5	32.0	5.7
Bulgaria	BG	58.6	8.2	54.6	8.3	39.6	18.8
Czech Republic	CZ	65.3	0.3	56.8	-0.1	45.2	8.9
Denmark	DK	77.4	1.1	73.4	1.8	60.7	5.0
Germany	DE	67.2	1.6	61.5	3.4	48.4	10.8
Estonia	EE	68.1	7.7	65.3	8.4	58.5	12.2
Ireland	IE	68.6	3.4	59.3	5.4	53.1	7.8
Greece	EL	61.0	4.5	47.4	5.7	42.3	3.3
Spain	ES	64.8	8.5	53.2	11.9	44.1	7.1
France	FR	63.0	0.9	57.7	2.5	37.6	7.7
Italy	IT	58.4	4.7	46.3	6.7	32.5	4.8
Cyprus	CY	69.6	3.9	60.3	6.8	53.6	4.2
Latvia	LV	66.3	8.8	62.4	8.6	53.3	17.3
Lithuania	LT	63.6	4.5	61.0	3.3	49.6	9.2
Luxembourg	LU	63.6	0.9	54.6	4.5	33.2	6.5
Hungary	HU	57.3	1.0	51.1	1.4	33.6	11.4
Malta	MT	54.8	0.6	34.9	1.8	30.0	1.5
Netherlands	NL	74.3	1.4	67.7	4.2	47.7	9.5
Austria	AT	70.2	1.7	63.5	3.9	35.5	6.7
Poland	PL	54.5	-0.5	48.2	-0.7	28.1	-0.3
Portugal	PT	67.9	-0.5	62.0	1.5	50.1	-0.6
Romania	RO	58.8	-4.2	53.0	-4.5	41.7	-7.8
Slovenia	SI	66.6	3.8	61.8	3.4	32.6	9.9
Slovakia	SK	59.4	2.6	51.9	0.4	33.1	11.8
Finland	FI	69.3	2.1	67.3	3.1	54.5	12.9
Sweden	SE	73.1	0.1	70.7	-0.2	69.6	4.7
United Kingdom	UK	71.5	0.3	65.8	1.1	57.4	6.7

Source: Eurostat (Structural Indicators webpage, May 2007).

d: See definitions.

i: See explanatory text.

Additional notes:

DE and FR: provisional data for 2006

(d) The employment rate is calculated by dividing the number of persons aged 15 to 64 in employment by the total population of the same age group. The female employment rate is calculated by dividing the number of women aged 15 to 64 in employment by the total female population in the same age group. The employment rate of older workers is calculated by dividing the number of persons aged 55 to 64 in employment by the total population in the same age group. All three indicators are based on the EU Labour Force Survey.

(i) From October 2006 this indicator is based on the annual averages of the quarterly data instead of a single reference quarter (the second quarter). Annual averages are reported from 2005 onwards for all EU countries but there is no consistent reference period prior to 2005. Spring data are used between 2000 and 2002 (for DE, FR, LU, CY, MT and SE) and between 2000 and 2001 (for DE and CY), whereas the average of the two semi-annual surveys is used between 2000 and 2001 for LV and LT. Estimates are used by Eurostat for any missing values or outliers in the quarterly results.

Table A.8.4: Labour force statistics in the EU (d)

EU country (2006)		Employment rate (%)		Unemployment rate (%)	
		15- to 24-year-olds	25- to 64-year-olds	15- to 24-year-olds	25- to 64-year-olds
EU average	EU-27	36.3	70.6	17.4	7.1
Belgium	BE	27.6	68.5	20.5	7.0
Bulgaria	BG	23.2	67.4	19.5	8.0
Czech Republic	CZ	27.7	73.8	17.5	6.2
Denmark	DK	64.6	80	7.7	3.3
Germany	DE	43.3	72.3	13.8	9.9
Estonia	EE	31.6	78.8	12u	5.3
Ireland	IE	50	73.9	8.6	3.6
Greece	GR	24.2	68.5	25.2	7.6
Spain	ES	39.5	69.9	17.9	7.3
France	FR	29.3	70.9	22.6	7.6
Italy	IT	25.5	64.5	21.6	5.6
Cyprus	CY	37.4	77.1	10.0	4.0
Latvia	LV	35.9	75.3	12.2	6.2
Lithuania	LT	23.7	75.4	9.8u	5.3
Luxembourg	LU	23.3	71.9	16.2	3.9
Hungary	HU	21.7	65.3	19.1	6.5
Malta	MT	44.7	57.8	16.1	5.1
Netherlands	NL	66.2	76.1	6.6	3.4
Austria	AT	54	73.7	9.1	4.1
Poland	PL	24	63.1	29.8	11.9
Portugal	PT	35.8	74.9	16.3	7.2
Romania	RO	24	68.4	21.4	6.0
Slovenia	SI	35	73.8	13.9	5.2
Slovakia	SK	25.9	69	26.6	11.7
Finland	FI	42.1	75.4	18.7	6.2
Sweden	SW	40.3	80.9	21.5	5.1
United Kingdom	UK	53.2	75.7	14.1	3.8

Source: Eurostat (LFS),
database (extraction date: 8 May 2007)

Additional notes:

DE and FR: provisional data for 2006

d: See definitions.

i: See explanatory text in Table 8.3.

p: Provisional data.

u: Unreliable data.

(d) The employment rate is the number of employed as a percentage of the corresponding age group population. The unemployment rate is the number of unemployed as a percentage of the labour force. To further improve comparability within the EU, a more precise definition of unemployment is used in the EU Labour Force Survey. Under this definition, the unemployed are persons aged 15-74 who: were without work during the reference period of the survey AND were available for work (i.e. could start a job within two weeks) AND had been actively seeking work during the past four weeks. The indicators are based on the EU Labour Force Survey.

Table A.8.5 Education and working status of 15- to 24-year-olds in the EU (2000-2005)

EU country	2005				Activity rate (d) = b+c	Difference= (a+d)-100*	2000			Activity rate (d)= b+c	Difference (a+d)-100
	As % of total population aged 15- 24 In formal education (a)	Active (labour force)		As % of total population aged 15- to 24 In formal education (a)			Active (LFS)				
		Employed (b)	Unempl. (c)				Employed (b)	Unempl. (c)			
EU 27 average	60.5	35.9	8.3	44.2	4.7	56.4	37.4	8.4	45.8	2.2	
Belgium	68.3	27.5	7.5	35.0	3.3	65.3	29.1	6.2	35.3	0.6	
Bulgaria	48.9	21.6	6.2	27.8	-23.3	42.5	19.7	10.8	30.5	-27.0	
Czech Republic	59.2	27.5	6.5	34.0	-6.8	47.9	36.4	8.0	44.4	-7.7	
Denmark	66.0	62.3	5.9	68.2	34.2	58.4	66.0	4.8	70.8	29.2	
Germany	64.4	42.0	7.7	49.7	14.1	62.8	47.2	4.3	51.5	14.3	
Estonia	63.0	29.1	5.5	34.6	-2.4	60.7	28.3	9.1	37.4	-1.9	
Ireland	58.5	48.7	4.6	53.3	11.8	54.3	50.4	3.8	54.2	8.5	
Greece	61.6	25.0	8.8	33.8	-4.6	53.6	27.6	11.4	39.0	-7.4	
Spain	54.6	38.3	9.4	47.7	2.3	56.2	32.5	11.4	43.9	0.1	
France	60.0	30.1	8.2	38.3	-1.7	61.7	28.6	7.0	35.6	-2.7	
Italy	54.0	25.7	8.1	33.8	-12.2	46.9	26.4	11.9	38.3	-14.8	
Cyprus	42.3	36.7	5.9	42.6	-15.1	37.0	37.0	4.1	41.1	-21.9	
Latvia	64.8	32.6	5.1	37.7	2.5	55.4	29.6	8.5	38.1	-6.5	
Lithuania	69.1	21.2	3.9	25.1	-5.8	60.1	25.9	11.0	36.9	-3.0	
Luxembourg	44.4	24.9	3.9	28.8	-26.8	40.8	31.9	2.2	34.1	-25.1	
Hungary	59.7	21.8	5.2	27.0	-13.3	50.1	33.5	4.8	38.3	-11.6	
Malta	42.7	45.3	9.1	54.4	-2.9	37.1	52.8	5.9	58.7	-4.2	
Netherlands	63.5	65.2	5.8	71.0	34.5	62.7	68.7	4.2	72.9	35.6	
Austria	51.9	53.1	6.1	59.2	11.1	50.9	52.4	2.8	55.2	6.1	
Poland	68.6	22.5	13.2	35.7	4.3	61.6	24.5	13.3	37.8	-0.6	
Portugal	51.8	36.1	6.9	43.0	-5.2	51.1	42.2	4.1	46.3	-2.6	
Romania	47.4	24.9	6.3	31.2	-21.4	37.3	33.1	8.3	41.4	-21.3	
Slovenia	67.6	34.1	6.5	40.6	8.2	59.3	32.8	6.4	39.2	-1.5	
Slovakia	52.1	25.6	11.0	36.6	-11.3	m	29.0	17.0	46.0	m	
Finland	69.8	40.5	10.2	50.7	20.5	67.5	41.1	11.2	52.3	19.8	
Sweden	67.5	38.7	11.5	50.2	17.7	64.5	42.2	5.9	48.1	12.6	
United Kingdom	57.5	54.0	7.9	61.9	19.4	54.2	56.6	8.2	64.8	19.0	

Source: CRELL calculations based on Eurostat (LFS) data

*Negative values show the percentage of young people not in education nor active on the labour market (NEETs)

Additional notes:

m: Missing or not available.

p: Provisional data.

* Figures do not add up to 100% due to different definitions (i.e. UOE for education status and LFS for working status).

Table A.8.6: Relative earnings of the population, by level of educational attainment for 25- to 64-year-olds
(upper secondary and post-secondary non-tertiary education = 100)

	Below upper secondary education			Tertiary education		
	M+F	M	F	M+F	M	F
Belgium	89	90	81	130	132	132
Czech Republic	73	79	73	182	193	160
Denmark	82	82	85	127	134	127
Finland	94	92	97	148	160	146
France	85	89	82	147	154	145
Germany	88	91	81	153	149	148
Hungary	73	76	71	217	253	190
Ireland	76	71	60	144	141	153
Italy	78	74	78	153	162	147
Luxembourg	78	79	74	145	149	131
Netherlands	84	84	72	148	143	155
Poland	78	77	68	163	179	151
Spain	85	84	78	132	132	141
Sweden	87	85	88	128	137	128
United Kingdom	67	71	69	158	150	178
United States	65	62	62	172	179	166

Source: OECD. (www.oecd.org/edu/eag2006).

Standing Group on Indicators and Benchmarks

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for monitoring progress towards the Lisbon objectives in education and training

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