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Éducation & formations

International comparisons

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Theme : International comparisons

International comparisons

Claude Sauvageot

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Organiser of the European Conference on International Comparisons and Coordinator of this special edition

International comparisons have taken on a very important place in the public debate on education today.

It is the sign of a larger opening of each system vis-à-vis foreign educational systems, but also the mark of a desire to compete with these same systems.

Initial studies have, first and foremost, enabled a better understanding of the complexity of this comparison in a field of significant diversity. This was a vital stage before attempting to measure this diversity.

To do this, we have developed a range of international comparison indicators.

This is when we clearly realised that creating 'comparable' indicators was not a simple task: Unesco (in the '70s), the OECD ("INES" project on educational systems indicators), since the early 90s, Eurostat with the support of Eurydice more recently have all led numerous studies on this comparability but despite significant progress, more research is still required.

It is, however, very interesting to show the progress made through these comparative analyses and equally to trace a few suggestions for improvement.

With this in mind, the DEPP[1] has organised a conference, in the context of France's EU Presidency, on the theme of "International Comparison of Educational Systems: A European Model?" (November 13-14, 2008).

Once the challenges of these comparisons have been outlined, this conference will address five key themes: **Evaluation of student achievement in compulsory education, teachers and the organisation of the educational system, equality-effectiveness-efficiency: what comparisons should be made?, the typology and ratings of higher education establishments, indicators for professional training and education.**

On this occasion, to illustrate these key themes, we would like to distribute several studies in this special edition of our review: Éducation & formations (Education and Training). Hence this edition addresses the themes selected for the conference in the order of the workshops that undertake them.

After a presentation by Norberto Bottani[2] on the challenges of these comparisons and the use of indicators to measure the quality of education, two articles present two different angles: one gives a global view of the situation in France in terms of the comparison indicators (Nadine Dalsheimer and Claude Sauvageot), the other makes a highly detailed analysis of expenditure in education in the various OECD countries (Christine Ragoucy).

On the theme of evaluating student achievement, it seemed interesting to show what the results of a comparative analysis on an ever-controversial subject, such as repeating a school year (Thierry Rocher), might provide. But are we sure of what we are measuring? Does not the methodology employed result in a definition of the concepts and not, as desired, the contrary?

This is the question that Pierre Vrignaud asks in relation to the methodology employed in the PISA. The measuring of skill for adults is equally topical. After having strongly criticised the first survey of this kind for its considerable biases, France has developed its own expertise in this domain, which enables it to make a certain number of suggestions just as a major new skill assessment project is being developed (PIAAC[3]). Fabrice Murat addresses this matter.

Another important field of the evaluation is that of foreign language skills. A unique and interesting experiment has been led in seven EU countries.

Paul Caffrey is making a report on this experiment just as a European project is being developed on this subject.

Across the various countries of the Union, teachers work in very diverse situations. Sweden had implemented a totally decentralised teacher management system. Also, it was interesting to compare the situation of Swedish teachers (Sten Söderberg, Gunnar Iselau and Daniel Gustafsson) with that of French teachers (Nadine Esquieu). Moreover, are we employing the right indicators to measure the size of the groups that teachers have to teach, for example?

Paola Serries attempts to answer this question.

Equality is a major preoccupation in numerous European countries of the EC. But do all countries have the same notion of equality? All evidence suggests they do not. So how can this be measured? Marc Demeuse and Ariane Baye attempt to provide the answers, factoring in various view points.

The rating of higher education establishments is certainly **the** most debated issue today.

Nadine Dalsheimer and Denis Despréaux address every rating awarded since 2002 and outline a few perspectives for a more European-centred project.

By addressing professional education and training and the professional integration of young people, we encounter several problem subjects in different European countries: early school leavers and how to measure their number (Pascale Poulet-Coulibando), how the skills of higher education graduates are validated depending on whether they are male or female (Christine Guégnard, Jean-François Giret and Jean-Jacques Paul), and the highly varying combinations of training and employment (Pascale Poulet-Coulibando) from one country to another. All of this affects the quality and the value of the indicators used by the European Commission.

Finally, none of these comparative measurements can be made without international classifications and namely an international classification of educational activities.

Constructing it will be hard work, but also an adventure in which rigour must be combined with diplomacy as, in the end, an international classification is an international agreement. It was interesting to demonstrate how the current version of CITE-ISCED 1995-1997 (Claude Sauvageot) was constructed, in order to encourage participation in the discussions on its development.

In order to compare ourselves better, we need to know each other better. We also need to use the tools we have at our disposal and endeavour to improve them. In short, we need to further develop a culture of comparison, at the very least in EU countries. Our aim is to provide our modest contribution to this significant project through this publication.

1. Directorate for Evaluation, Prospective and Performance.

2. Norberto Bottani worked for CERI (Centre for International research and Study) during the '80s and the early '90s. That is when he launched the "INES" CERI-OECD project.

3. Programme for the International Assessment of Adult Competencies led by the OECD, which should result in a measurement of these competencies in the participating countries, in 2011.

The oil level, the engine and the car; the stakes involved in assessing the quality of education on the basis of indicators

Published in Éducation et Société, no 18, INRP, 2006/2.

Norberto Bottani
Consultant

What exactly is at stake in assessing the quality of education on the basis of indicators? This may seem a strange question since it establishes a link between three elements whose range and definition are not clearly defined: assessment of education, quality of education and education indicators. The latter are a tool for analysing the performance of a system; assessment is, broadly speaking, a procedure for the rational examination of performance resulting in the formulation of an appreciation on which to base a decision; quality, a state of education (product and/or approach) with respect to a pre-established, conventional or arbitrary threshold of appreciation. These three elements are not complementary per se and do not naturally combine to make a consistent whole. Their characteristics and configurations have varied over time. Combining them in a single equation is thus no easy matter.

We therefore need to specify the nature of the relationship between indicators, assessments and quality of education before determining under which conditions indicators may be used as a tool for assessment in education to evaluate its quality. If assessment of an education system is acknowledged as a rational, public examination of its performance, implying the use exogenous reference frameworks recognisable by the social groups concerned (given the status of education in democratic societies), then we should consider that this examination can only be carried out on the basis of convincing arguments which can be validated or invalidated using scientific procedures. If this is the case, indicators can be part of the toolbox used to collect documented proof on the state of education and become an element of assessment. However, this issue cannot be tackled on the basis of a doctrinal prejudice which right from the start, invests indicators with a very specific function in a specific type of assessment i.e. that of education systems. This issue must be dealt with using a scientific approach, mindful of both the theoretical and methodological aspects. In short, we must first determine if correlations exist between specific elements differing as widely as the quality of education, indicators and assessment programmes; then we need to check whether these correlations are, or are not, causal; and thirdly, we need to build a theory to explain how the causal relationship works and test it in real-life situations. The first step therefore consists in determining if there are any correlations between these three parameters; the second, in establishing the nature of these correlations (causal or not), and finally, we need to develop a theory of education indicators to serve assessment. My hypothesis is that there are no causal relationships between education indicators and assessment of an education system and that the device for elaborating these indicators is not in itself a constitutive element of a theory for assessing education systems, but I am unable here to back up this hypothesis with proof. This presupposes lengthy research in addition to which, the information required to make this demonstration is still sparse. In this article I will therefore keep to paving the way for future research.

The education macro-system

The situation

To clarify the issue, the scope of education assessment needs to be clearly defined since education is such a vast subject: teaching in class? Teaching of a discipline? Developing a skill? Teaching at school? In counties? Regions? Countries? Given the reference framework surrounding the meeting which sparked off this research[1], we will concentrate on the assessment of education systems since this is the principle objective of education policies[2]. We therefore need to agree on a definition of the concept "education system", if we accept that there is an analogy between education policy and education system assessment. Education systems can be differentiated by scope, dimensions, configuration, distribution of decision-making centres, responsibility allocated to each level of decision-making and decision-making procedures, resources and last but not least, aims. A class is itself a complex education system; a History or Geography class is an education system. I would say that in these examples, we are faced with education micro-systems. We know that it is possible to design, develop and hone indicators both for schools (a school being an education micro-system) and for macro-systems, such as the set of indicators used in the French publication *"L'état de l'École"* (the state of education). In this article, the assessment of education policies we will be dealing with concerns only education macro-systems and the sets of indicators to which we will refer will concern only the sets of indicators developed for these systems, such as the French education system, that of a German Land like Bavaria or of a Swiss canton like Lucerne.

Assessment with or without indicators

Historically, assessment of education systems has anticipated the development of a set of indicators for education. For instance, teachers, schools and departments have been assessed by school inspectors for years without using indicators and this is probably still the case where inspections are still carried out. Here we have a case of assessment without indicators. The inspectors give an appreciation (hence, they assess) based on criteria or parameters specific to the corporation of inspectors and which are founded on an established interpretation of what constitutes a good school. The inspectors know, or believe or claim to know, what a good school is. Their appreciation is based on a pre-existent knowledge of what constitutes a school's quality: they know this quality in great detail, they have, or believe they have, a holistic perception of the quality of an education micro-system such as a class or a school and also of a macro-system in cases such as general or national school inspection departments. Of course, there is nothing to prevent inspectors from using indicators to formulate an appreciation or assess a system but an approach of this sort implies radical changes in the school inspection system.

Another kind of assessment which is usually done without indicators is self-assessment, although self-assessment processes combined with indicators, or leading to the creation of indicators, do exist (Berger, 2005; McBeath, 1999 and 2000). Thus for many years, assessments of education, in education and for education have been carried out without indicators. And so if assessments have been made without indicators, this means that indicators are not crucial to carrying out assessments. An assessment of education policies with respect to education systems can be achieved without indicators. For many years, the idea of assessing education systems never even occurred to us and nor did anybody feel the need to develop sets of indicators for these systems in order to steer, monitor or assess them. The development and creation of sets

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1. The international congress on assessment of education and training policies organised by *Association internationale de sociologues de langue française* (the international association of French-speaking sociologists) and the joint education and politics research unit *(Unité mixte de recherche Éducation & Politiques)* at the *Institut National de Recherche Pédagogique* (INRP, French National Institute for Pedagogical Research), held in Lyon from 12-13 September 2005.

2. Education systems in the strictest sense of the term are not the sole target of education policies. The latter may, for example, deal with a number of matters which are merely components of the education system set, such as the decision-making process underlying policies, the procedures for making decisions concerning education, the level at which decisions are made, parliamentary procedures regarding education in democratic parliamentary systems, the organisational structure of school administration, its composition, role and the influence of teachers' unions, but also children's health, the level of parental education, housing policy, and therefore, policy regarding cultural facilities, freedom of choice with respect to schools, etc. Including these aspects in education policy and therefore in the assessment of education systems depends on the purpose of a system, the goals of education or the objectives a community recognises for it.

of education system indicators are relatively recent occurrences[3] which infiltrate the assessment processes in various forms.

The oil level, the engine, the car

A priori, there is no direct relationship between indicators and assessment even if the two are frequently lumped together. How is it that this confusion occurs, reducing the assessment of education policies to the production of education system indicators or investing indicators with an assessment role which they theoretically do not have? To answer this question, we need to clarify the concept of indicator. And to do so, I would like to use the dashboard metaphor and an anecdote.

Not so long ago, I bought a new car but after a few thousand kilometres (the car was still under guarantee), I was intrigued by the repeated blinking of a warning light on the dashboard. After checking the user manual to find out first of all what it was all about (the warning light was for the oil level in the engine), I applied the procedure indicated in the guide to deal with this particular case. However, some hundred kilometres further on, the warning was reiterated. I once more carried out the operations indicated in the manual. Given that the engine was new, the lack of oil indicated by the warning light could be considered a normal occurrence, according to the manual. I therefore topped up the oil for the second time and everything seemed to return to normal. Unfortunately, the warning light began blinking again soon after. If the same thing happens again, the manual invites the driver to return the car to an accredited garage immediately. After a quick check, the mechanic decided to put seals on the engine along with calibrated reference points using a finer scale than that of the oil gauge to monitor the engine's oil consumption more precisely. I had barely gone another hundred or so kilometres when the warning light alerted me again. I returned to the garage where I was compelled to leave the car: no question of leaving before discovering the problem causing the malfunction indicated by the warning light. The story ends with an engine replacement.

If I summarise this story, we may observe the following:

- the dashboard warning light did its job perfectly by alerting the driver to the fact that something untoward was going on;
- the driver understood the light's message and followed the procedures described in the vehicle's user manual;
- as for the mechanic, he sought out the cause of the fault indicated by the warning light. He therefore interpreted the signal;
- and finally, the company which had manufactured the car and was therefore responsible for the engine system, made the appropriate decision and replaced the engine at is own expense.

Right through this story, nobody passed judgement on the quality of the engine or the vehicle. The warning light drew attention to a malfunction, which happened to be real and serious, but this failure did not give rise to a negative assessment of either the engine, the vehicle or the brand. For it is a fact that an engine, a vehicle or a brand are evaluated using parameters other than dashboard warning lights.

In this story, everything hinges on the oil level beneath which the warning light is triggered, i.e. the danger level determined by the manufacturer. The indicator only measures the amount of oil in the engine and only lights up when this goes down beneath the threshold determined by the manufacturer, which is when the engine runs the risk of seizure. And so it is the manufacturer who determines where to place the danger level constituting the indicator's reference system. Responsibility for manufacturing indicators lies only with those in charge of the system (in this case, the brand's engine and more specifically those who developed, designed and tested the engine). The quality of an indicator on the dashboard is the sole responsibility of engineers in the development team but their technical competence in manufacturing dashboard indicators should not be confused with responsibility for the quality of the car system as a whole. The quality of the vehicle or the brand is not their problem[4]. A good indicator, i.e. a well-built, robust, reliable, clear indicator no doubt plays a role in determining a system's quality and is one element in the assessment of a system but it does not constitute, and does not as such carry out, an assess-ment of the system.

NOTES

3. It is only over the past fourty years that we have begun to use indicators to assess education systems, since some time in the Sixties in the 20th century (Bottani, 2005).

4. Concerning the factors playing a role in determining an indicator's quality, see Desmond Nuttal : *Choosing Indicators.* In: *Making Education Count. Developing and using international Indicators.* OECD, Paris 1994.

Building a set of education system indicators: an incomplete approach

To better understand the links between indicators and assessment, a look at the history of indicators in education will prove a useful exercise. It will show that elaborating education indicators was not a matter of linear development; on the contrary, at least four distinct phases can be observed, with different players being involved in both the worlds of research in education and education policy. We will also discover that this history is not involved with that of assessments on a large scale until its final phase. For many decades, discussion on indicators and indicator production was independent of performance assessments concerning pupils' skill acquisitions.

The '70s: the role of social sciences

The first attempt to build a set of indicators for education was made at the beginning of the '70s by the OECD which in 1973 published a document whose title announced the initiative's intentions: *A system of education indicators to guide public policy decisions*. To provide decision-makers with the information required to make the right decisions regarding education, it was necessary to produce indicators measuring the influence of education on social well-being. What factors should be considered in doing this? Internal or subjective consequences, i.e. consequences at the level of the individual or external consequences at the macro level, measured against social benefits such as economic growth, the integration of social groups, sharing common values, increased well-being? The working group believed that internal and external consequences could not be disconnected from education, while admitting that education has consequences both on the individual and beyond him, what we know as externatilities. In both cases, the consequences depend on the system of social variables shaping education systems such as a community's aspirations or collective objectives and therefore, the educational values a society wishes to promote. With this in mind, building an education system distinguishing between internal and external aspects of education was an absurdity[5]. All indicators are defined by their *"belonging to a social systems model, either as a parameter or a variable"* (Land, 1970). Therefore, if the distinction between inputs and outputs is not only problematic but worse still, totally without significance (the very terms of the report), the logical conclusion is that we should develop an organisational framework for a set of indicators on the consequences of education which is not based on measuring the internal and external efficiency of education systems.

What is more, the report raises a problematic issue in developing education indicators, namely, that when a set of system indicators is created, they have an indirect impact on the performance of education systems and the behaviour of their players: *"it should be remembered that the very fact of making measurements introduces a special kind of uncertainty: for those who are aware of being assessed modify their behaviour and this shift is difficult to identify and even more, to measure"*. Formulated as they were at the very beginning of education indicator history, these considerations show that from the outset, there was a general awareness of the stakes and issues to be confronted when building these indicators.

The group of experts responsible for drawing up this first OECD report on education indicators concluded by deciding to adopt a methodological approach which was unusual in scientific circles of the time, abandoning as it did the idea of developing a theoretical model of the education system. This type of approach would not have enabled the swift development of a set of education indicators. When policy-makers adopt an enlightened approach and wish to make informed decisions concerning education instead of the usual on-the-spot decisions, they need a tool providing instant information on the efficiency of the education policies they implement or guide. There was therefore great political pressure on the group of experts to deliver an operational set of indicators. The group realised that it could not initiate lengthy preliminary discussions on a universal model of education system because an agreement would probably never be reached and so it opted for an empirical approach based on the study of national education-policy objectives. This led to developing a set of 46 indicators but these were never calculated, given that the project's fundamental scientific ambition was

NOTE

5. Nevertheless, in education circles we still regularly come across an interpretation based on this distinction contesting the pertinence of indicators, even though specialists in the field of education have long since set it aside.

inconsistent with the available means and the interests of the government authorities which would have had to fund the initiative. And so the social science specialists were unable to see their project through to its conclusion. It was a failure.

The 80's: teachers and "education specialists" in action

The second phase took place in the years following the publication in the United States of the report entitled *A Nation at Risk* in 1983, concerning the state of primary and secondary education in the United States. This report gave rise to a large amount of discussion in countries around the world, or at least, in countries where education systems are the most developed, on the quality of education and how to measure it as objectively as possible. In such a context, it was necessary to provide highly reliable reference points to confirm or refute the existence of a crisis in the quality of education. The world of education was divided on this point; to a certain extent, it also found itself with its back up against the wall. The creation of a set of indicators was both a focus and a rallying point for part of the scientific community concerned with education issues and aspiring to determine the real state of health of education systems. It is worth noting that interest was no longer focused on the same approaches as a decade earlier i.e. it no longer concerned the impact of education on social well-being. At this point, subsequent to the crisis arising from the discussion on quality of education, the issue was of another nature, namely, identification of the information essential to understanding the performance or malfunction of education systems and their results.

A leading report of this period was *«Education Indicators. A guide for Policymakers",* published in 1986 in the United States and written by Jeannie Oakes for the Center For Policy Research in Education[6]. The aim of the report was to help decision-makers to *"understand the legitimate role (word for word) indicators might play in monitoring the condition of the education system, tracking changes over time, and anticipating future change"*. Oakes gives a definition of education indicators which was subsequently widely used; she also explains the main applications of indicators in detail, describes their most obvious limits and briefly reports on progress in the theory of indicators.

Oakes believes that there is a direct link between indicators and policy: education indicators mean something if they are useful in the political context. Which is why it must be explained how indicators are chosen and developed and how they can be used. It should be observed that Oakes does not associate indicators and assessment. However, she too draws attention to the political pressure which can build up around producing a set of indicators: *"It should be clear from the start that indicator systems are not neutral, they are not technological information systems impervious to political pressure. The choice of indicators to be developed, the aims they should serve, the type of data to be collected, the comparisons to be made – the stakes are not only technical, they are also political. We cannot be unaware of the political pressure resulting from the mere existence of a set of indicators"*. It is understandable that a declaration of this kind should upset the education statisticians of the time and turn some of these specialists against indicators.

Looking ahead to the subsequent phase, I feel that it is important to revisit Oakes' examples of pressure which publishing indicators can bring to bear: *"The greatest pressure brought about by indicators is felt by members of the teaching community, laying them open to public criticism as has never been done before by providing a surplus of information over which teachers have absolutely no control. It is therefore logical that they should react by exerting pressures to influence indicator selection and the level of data aggregation and analysis and to shapes the methods of data interpretation, presentation and publication. Once indicators are in place, teachers will be constantly on the alert and do their best to influence data in their favour and in favour of schools. This tendency will be all the greater if teachers have the impression that they have no say in the indicator development process or if information produced by the indicators is of little use to them. We can already observe this type of behaviour. For instance, in certain states* [author's note: of the United States] *which regularly collect indicators on education processes, we have found evidence of school officials prompting pupils to "exaggerate" their answers, particularly with respect to their educational*

NOTE

6. This centre is a research consortium for education policy to improve education, funded by the U.S. Department of Education, and combining Rutgers University, the Rand Corporation and the University of Wisconsin-Madison.

experience. Regarding other issues, informal teacher networks have spread the word among colleagues prompting them to underestimate data concerning salaries and overestimate information concerning workload in order to obtain more favourable policies in these two matters. These pressures would undoubtedly be proportional what to individuals feel they have to gain or lose with indicators"[7].

In the same vein, we could quote the report published in 1988 by the IEES (Improving the Efficiency of Education systems) consortium concerning teaching efficiency and effectiveness prepared by Douglas Windham[8]. The interest of this document, sponsored by the American agency for International Development (AID), lies in the fact that it was designed for developing nations. The proposed tool, a set of indicators, was intended to strengthen the education management, planning and research capacities in developing countries with the aim of improving the performance of their education systems. Two aspects call for emphasis here: first, the design of a set of indicators focused on education efficiency and effectiveness; and secondly, the use of the indicator tool in little-developed education systems. The first of these two aspects is to play a role in the subsequent phase of education indicator implementation, focusing on the internal efficiency of education systems and the second, in the fourth phase when OECD launches the World Education Indicators (WEI) programme, designed for developing countries, together with UNESCO and the World Bank[9].

The '90s: the goal of policy-makers

In the third phase, the players change; they are no longer the specialists in social or education sciences but the policy-makers themselves, those with the responsibility of management and change in education systems. Their appearance on the indicator scene takes place between 1987 and 1992 following the crisis and uncertainty surrounding the quality of teaching and education systems. Two countries play a decisive role here: the United States and France. Their OECD delegates succeeded in involving a substantial group of member countries in compelling OECD, whose education specialists resisted such a demand, to design and produce a set of education indicators capable of providing information on the quality of education systems.

Getting OECD to produce a set of international education indicators in 1992 was not an easy task. As forecasted by Jeannie Oakes who was one of the experts consulted by OECD, there were many sources of pressure aiming to stifle or modify the project right from the start. In the coalition of opponents, we find the following: education statisticians with scientific claims condemning the indicators' imprecision and the biased view of education they convey; representatives of teacher associations with political arguments contesting the existence of the education quality crisis, particularly in the public sector; a wide range of teachers or specialists in the education sciences engaged in pedagogical innovations and progressive educational movements, invoking ethical arguments condemning the governments' intent to introduce new forms of education standards based on new public administration techniques, public sector governance and administration performance management. In spite of this opposition, OECD managed to publish the first set of international indicators for education systems in 1992. Its aim was to provide decision-makers with robust, comparable information on the state of education systems in the broadest sense of the term (and therefore including the private sector). Comparable data on student attainment was not the main purpose. In the first version of *Education at a Glance*, presented in 1991 in the form of an unpublished report and discussed at an international meeting of indicator creators and decision-makers organised in Lugano in September 1991, there were no indicators on student attainment and results in terms of knowledge. It was following an intense discussion opposing policy-makers and scientists during the Lugano plenary sessions that the member countries mandated OECD with revising the prototype set of indicators to include a section on student attainment, using the very patchy data available on the international scene at that time[10].

There are two important points of reference for our subject in this third

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7. In the United Kingdom, the teachers' unions invited their members to boycott tests and participation in the PISA 2003 survey. This operation was a success because the British sample's response rate during this survey was lower than the level set by the OECD and for this reason, results from the United Kingdom were not taken into consideration for international comparisons.

8. This consortium is made up of the Florida State University, Howard University, the Institute for International Research and the New York State University at Albany.

9. Countries participating in the programme are referred to as WEI countries.

phase. First of all, there was absolutely no question of associating the creation of indicators with assessing the quality of education. The principal concern was to provide reliable information concerning crucial subjects for policy-makers who needed to manage the repercussions of the debate on the education quality crisis and the drop in the level of education along with the consequences for the budget of austere economic policies and the control of public expenditure. Assessment as such of education systems was simply not on the order of the day[11].

The most significant innovation in the OECD indicator programme was the importance given to the procedure for elaborating the indicators. Contrary to what is customary in international intergovernmental organisations like OECD, the working method adopted was both participative and democratic, based on systematic discussion with data producers so as to come to an agreement on the indicators to publish. The importance given to discussion had an indirect consequence of some significance: within a fairly short time, a worldwide network of specialists engaged in the production of indicators was set up, a fact which became apparent during the General Assemblies (a completely heterodox term in OECD jargon) concerning the project for international education indicators[12]. Thus, the first four editions of *Education at a Glance*[13] (1992, 1993, 1995 and 1996) were the product of an intense cooperation between hundreds of specialists in different disciplines, acting at multiple levels of education systems.

The 2000 decade: obsession with performance indicators and the triumph of comparative psychometry

The fourth and final phase, at least for the time being, goes from 1997 to the present day and is characterised by three milestones:

- a considerable improvement in the quality of data, which can be largely ascribed to statisticians taking on responsibility for indicators[14];
- the modification in 2002 of the theoretical framework used to guide the composition and organisation of OECD's set of indicators and;
- the launch by OECD of the PISA programme for periodic assessment of skills in the 15-year old age-group.

These three points have deeply modified the international scene with respect to education indicators, enabling new analyses and also breaching the dams which previously guarded against the fear of indicators being distorted and misused.

The most striking result of this phase is the increased importance given to performance indicators. There were 9 of them in the 2001 edition where a distinction was still made between a section dealing with «performance at individual and social levels, and on the labour market" (5 indicators) and student attainment (4); in the 2002 edition, they increased to 14; 15 in 2003; and 12 in 2004. With the 2002 edition, the section concerning the set of "performance" indicators which was the last item in the Education at a Glance index for some ten years, was moved up to take position as the first item. This change is not without signi-

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10. It was essentially a case of making the most of two wide-scale international assessments providing comparable data on the performance of pupils in different education systems: the second IEA survey on mathematics and the sciences (SIMSS, 1982-1984) and the IAEP II survey by ETS, in 1991.

11. Proof of this can be found in the collection of contributions from consultants mandated by OECD to moderate discussions during the Lugano conference in September 1991 where the decision was made to produce a set of international education indicators after realising that this was possible. See: *Making Education Counts: Developing and Using International Indicators*. Nobody mentions assessment.

12. Between 1989 and 1995, the INES (International Indicators of Education Systems) project organised three General Assemblies with the participation of practically all those concerned worldwide by the production of a set of international education indicators. The last of these events was held in 1995 at Lahti (Finland). Since then there have been no more General Assemblies concerning the international education-indicator project. From the formal point of view, this remark is not strictly speaking exact, since OECD organised a fourth General Assembly of the INES project in Tokyo in 2000, but this meeting was a General Assembly in name only, for participation per country was reduced to limited delegations and the indicator producers no longer participated. And so it was an intergovernmental conference by OECD standards which took place in Tokyo rather than a General Assembly.

13. This is the title of the collection of education indicators produced by OECD.

14. Among the technical factors contributing to the improvement of data, we observe UNESCO's adoption in 1997 of the ISCED (International Standard Classification of Education) revision, increased usage of ISCED in processing education statistics at the national level and the implementation of a statistics questionnaire common to OECD, UNESCO and Eurostat in 1995.

ficance: it demonstrates a deliberate effort to emphasise performance indicators and highlight the information regarding student attainment which OECD collected during a survey carried out in spring 2000 as part of the PISA programme. This change is a key turning point in the recent history of indicators. Since 1995, this had been the aim behind OECD's whole strategy regarding education. In an OECD document explaining the new organisation of indicators, the strategic management group had justified this change of focus by stating that *"it was now implicitly acknowledged that several important aspects of the development, performance and impact of education systems could only be assessed if we understood both the outcomes of learning and its relationship with inputs and processes at the individual and institutional level"*[15] It was following this innovation that the conceptual framework and organisation of education indicators was changed in 2002, without any truly democratic debate on the subject. All of a sudden, a decade after the publication of the first set of international education indicators which, after much hesitation and precaution, included five performance indicators labelled "experimental and temporary"[16], at the heart of the most renowned set of education indicators in the world, we find performance indicators based on data collected during a mass assessement programme designed to serve the cause and processed using specific psychometric methodologies imposed by an influential scientific community. In the introduction to *Education at a Glance* 2002, which is the first version of a set of OECD indicators to include indicators from the international PISA survey, the intention is explicit:

"OECD Programme for International Student Assessment (PISA), which governments launched to monitor student attainment regularly within an internationally agreed framework[17]*, now provides comparable information on the outcomes of education and learning as well as on key factors shaping these outcomes. Such information has long been a critical gap in the indicator set. PISA aims to provide a new basis for policy dialogue such that countries can work together to define educational goals that are both innovative and realistic, and that reflect judgements concerning the skills that are relevant to adult life. PISA is part of a shift in focus from education inputs and institutions to outcomes. The shift is designed to support policy-makers as they attempt to improve schooling that prepares young people for adult life during an era of rapid change and increasing global interdependence".*

In combining in the same conceptual framework and in a single set, indicators designed to monitor shifts in education systems, indicators relative to training institutes and educational service suppliers, indicators relative to curricula and the educational context in training institutes plus indicators on education performance at the level of the individual which OECD defines as indicators on individual participants in learning activities (this terminology is not without significance)[18], OECD falls into a trap of its own making, that of confusion between indicators and assessment. In doing so moreover, OECD is conditioned by its own production of data concerning student skills, including adult literacy, the other vast international survey managed by OECD between 1994 and 1998 together with Statistics Canada[19].

There are two issues here: the first, which was apparent from the beginning, concerns training the leaders and policy-makers to understand, interpret and use education indicators and statistics; the second relates to the existence of data of different

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15. See unpublished internal document DEELSA/INES/SMG(2001)12: Indicators of Education Systems: Scope *of INES Activities*.

16. These five indicators were developed using data from theIAEP (International Assessment of Educational Progress) survey of the ETS carried out in 1991 and the second IEA survey on the teaching of mathematics (SIMS survey) carried out between 1980 and 1982, which is more over a good indicator of the aridity of similar information available regarding education performance.

17. No indication is given concerning the procedure used to reach this international consensus.

18. See unpublished internal document: *Indicators of Education Systems: Scope of INES Activities,* DEELSA/INES/SMG(2001)12, prepared by the PISA project strategic management group.

19. In autumn 1995, OECD presented the results of the first ever survey concerning assessment of adults' literacy skills (IALS survey: International Adult Literacy Survey). The survey was published as a joint Statistics Canada and OECD initiative. It concerned the level of adult literacy in understanding written texts. It continued some previous research done in the '90s in the United States, but contained several innovative aspects, in particular, in interviewing the sample adult population at home in their personal environment. Subsequently to the first survey in which nine countries participated, two more studies were carried out in following years (1996 and 1998). The survey's final report gives the results for 23 countries (see OECD/Statistics Canada, 1999: Literacy in the information age. Paris). In addition, OECD continued to use IEA surveys and more specifically, the TIMSS and PIRLS (Progress in International Reading Literacy Study) surveys to develop its performance indicators.

natures within a same set of indicators, i.e. data on individual skills and knowledge alongside systemic data.

Concerning policy-maker training, realising that the volume of indicators had become unmanageable for decision-makers[20], in 1996 OECD decided to launch a separate set of indicators known as "Education Policy Analysis" , with the purpose of providing policy-makers with a straightforward, manageable system for interpreting and deciphering indicators. The initiative met with only partial success, for this set of indicators, which was supposed to be a tool for understanding, turned into a learned academic exercise providing indicator producers with the opportunity to compile scientific essays on their data[22]. Nevertheless, this exercise alone would never have helped decision-makers to understand indicators and use them correctly, as was subsequently demonstrated by the way political entities in several countries exploited PISA data with the complicity of those in charge of the programme[23].

With respect to the second issue concerning the way data of different natures and multiple units of analysis are lumped together, as stated by OECD, it is obvious that *"policy-makers wish to be informed about the knowledge and skills achieved by pupils in their country and know how this compares with their counterparts in other countries"* (internal document DEELSA/ED/CERI/CD(97)[24]. And yet the link between the test scores obtained in international surveys on pupils knowledge and the performance of education systems is far from obvious. For instance, matching tests to education programmes has always been a stumbling block for IEA (International Association for Evaluation of Educational Achievement) which has never managed to solve the issue, while OECD preferred to decide once and for all that tests would not be developed to reflect the content of teaching programmes. An OECD working group in the international indicators project (the A network) spent four years investigating the stakes involved but rather than analysing the relationships between pupil assessment and teaching programmes, it studied a strategy for the regular, fast and reliable collection of data regarding pupils' skills. The report delivered in April 1997 is the founding document of the OECD Programme for International Student Assessment (PISA). It details the structure and organisation of the means to assess knowledge, skills and qualifications of the 15-year old age-group, with no discussion of what this information on student literacy means with respect to education system performance. Even if we consider that the tests are unequivocal and unambiguous (which they are not), even if we accept that in the various education systems, they are conducted according to strict procedures and so are comparable (which is questionable), we cannot consider their outcomes to be perfectly comparable or that they truly reflect the quality of an education systems. These are currently perhaps the best possible results at the international level, with its funding mechanisms and international organisations where these assessment initiatives are decided, but they are not perfect and should be treated with great precaution. However, this begs a question: what are these tests supposed to reflect? What do these outcomes represent? What conclusions can we draw from them? These questions suggest that it is not sufficient to build a knowledge base, however reliable, to produce indicators to integrate in a system supposed to monitor the state of, and changes in, education systems. The database in itself is not the issue here (provided that recognised technical standards of quality in the area are guaranteed[25]) but rather, the automatic passage from the skills and competence database to indicators for integration in a device providing information on the

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20. The first set of international education indicators produced by OECD in 1992 is a 150-page bilingual volume; the second, produced in 1993, also bilingual, contains 300 pages; the third, published in 1995, is monolingual (a French version and an English one) and each volume contains 370 pages.

21. The publication's title has been slightly modified, but the concept has basically remained stable in that the aim is to produce a document analysing education policy based on indicators.

22. In the first 1996 version, the chapters refer directly to the corresponding edition of *Education at a Glance*, referring to them by name. This practice was subsequently abandoned.

23. The structure of the PISA test and the way OECD presented the scores facilitated a simplistic exploitation of data. See the criticisms on this subject in Bottani N. et Vrignaud P., 2005: La France et les évaluations internationales (France and international assessments). *Haut Conseil de l'évaluation de l'école*, Paris.

24. The terminology in this quote is specific to OECD which considers education systems as mere national institutions. In its studies, OECD often implicitly reduces education systems to State-controlled education measures.

25. See for instance the list of criteria proposed by Neville Postlethwaite in *"Monitoring Educational Achievement"*, UNESCO, Paris 2004, report no 81 in the IIEP (International Institute for Educational Planning) series *Fundamentals of educational planning*.

management, organisation and performance of education systems.

This amalgamation raises three issues :

- the first concerns the mutual compatibility of these data and the validity of including them in a single set;
- the second is related to the validity of the inferences suggested by matching data;
- the third concerns evaluating the system (the equivalent of branding in the commercial context), i.e. its efficiency, its effectiveness, whether its performance meets its objectives, the way it works compared to its size and resources with indicators of individual skills weighed against multiple factors on the basis of suppositions or precarious hypotheses.

This does not question either the pertinence of the usefulness of indicators per se, only the way they are interpreted and used.

Indicators in action

So far, I have concentrated on the international indicators produced by OECD as this set is emblematic: it was the first to be developed, it is one of the most famous and the statistical quality of the data used to build the indicators is remarkable. On the international level, there are nevertheless approaches which lead or could lead to alternative sets of education indicators, based on different value systems, on definitions other than the quality of education and which do not hide behind the cloak of technical and statistical perfectionism in their claim to neutrality. Along these lines, we could mention the indicators of human development worldwide published by UNDP since 1990 with its succession of economic, social and environmental indicators. The UNPD method has been widely discussed in specialist circles[26] for the framework of UNDP indicators is very different from the one adopted by OECD.

Another alternative set of education system indicators is proposed by EGREES (European Group of Research on Equity of Education Systems) on the equity of education systems as part of a project supported by the European Commission Directorate-General for Education and Culture[27]. This group not only elaborated a conceptual framework inspired by different theories of equity in education but also validated it by calculating a set of 29 indicators and proposing original approaches with a view to building education indicators based on an order of social values to demonstrate the impact of government systems on social equity[28].

Over the past fifteen years, different countries e.g. Canada, the United States, France, Switzerland, Belgium (Dutch-speaking community) have produced sets of education indicators designed for the steering and management (monitoring) of education systems. Certain federal political systems have also begun to produce sets of indicators at the regional level[29]. These sets are neither copies nor reproductions of the OECD set. The differences with the OECD model are sometimes considerable since these systems have been developed on the basis of other theoretical frameworks and designed according to either the education system's organisational structure (e.g. in France), or the priorities taken into consideration to organise the way it works (e.g. in Geneva), or according to the specific objectives of the education system (e.g. Tessin). Generally speaking, these systems have not been developed to assess education systems.

To round off this panorama, a few words on *L'état de l'École* (the state of education), the set of indicators produced annually by the French Ministry of Education since 1991 comprising thirty indicators based on the organisational structure of the French education system. In an article on *l'état de l'École*, Meuret discusses the impact of indicators on the debate surrounding education in France and observes that *"it is easy to see that for 10 years now, the debate on education in France concerns subjects which are not dealt with in this publication"*[30]. We are compelled to recognise that producing sets of indicators per se gives rise to no changes in education policy. There is no predictable outcome which can

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25. See for instance the list of criteria proposed by Neville Postlethwaite in *"Monitoring Educational Achievement"*, UNESCO, Paris 2004, report no 81 in the IIEP (International Institute for Educational Planning) series *Fundamentals of educational planning*.

26. See Jean Gadrey and Florence Jany-Catrice, 2005: *Les nouveaux indicateurs de richesse* (The new indicators of riches), Éditions La Découverte, Paris.

27. Socrates Projet SO2-610BGE.

28. See: EGREES, 2005: *Equity in European Education Systems. A set of indicators*. Department of theoretical and experimental pedagogy, University of Liège.

29. See the case of the Cantons of Geneva or Tessin in Switzerland and in a particular political context, the case of Italy where there are regions in the throes of producing their own sets of education indicators in association with a process of devolution and decentralisation of responsibilities in education matters in a system which was formerly ultra-centralised.

be laid down to greater transparency regarding the nature and performance of the education system, a plentiful production of data or improvement in the quality of information. The system may remain totally impervious to any changes or efforts, as Meuret observes. We should therefore have no illusions about the value of indicators and the importance they are given in education policy. It is policy which uses indicators and assessments and not indicators or assessments which shape or determine policy. Sometimes interests coincide but this coincidence is due more to chance or political pressure than to a democratically determined strategy aiming to improve education systems. A better knowledge of the system is not in itself an avatar of change. This will only occur if other ingredients are present. According to Meuret, what is lacking in France is *«a debate on education in which the users and more generally speaking, citizens would be allowed to participate"*. The content and design of the set of indicators also partly explain this failure: the lack of certain data (*"for instance on the quality of school-life"* says the author, *"considered irrelevant in the discussion on education among professionals"*) might explain the feeble impact of efforts to clarify and improve information.

At least at the education system level, the deciding factor for obtaining results with indicators appears to be their production and more specifically, the education networks' acceptance of the conceptual framework determining the selection criteria for indicators, the underlying hypotheses regarding changes in education and to cap it all, the indicators themselves. Given the circumstances, it would be difficult to reduce the production of indicators to an operation of the powers-that-be, or to turn it into an act of intellectual terrorism forcing the system users to adopt a foreign educational model with no regard for their preoccupations or aspirations[31].

■■■

The issue raised in questioning the role of indicators in education policy is confused by all that is at stake in performance assessment, and involves a crucial concern in education research: this science's freedom to accomplish its task. As it is, developing education indicators, whether at the international, national or even regional level, means coming to terms with the issues related to the use and objectives of this tool. Hans Jonas[32] suggests distinguishing between science, *"dedicated essentially to knowing our environment"*, and *"non-science, i.e. techniques, dedicated on the contrary to modifying reality"*. Can we really maintain that the use of indicators consitutes a neutral cognitive approach which does not aim to modify education systems? Do they belong to the realm of science or non-science as defined by Jonas? Is it not rather naive to claim that indicators are mere tools for acquiring knowledge with no incidence on the realities of education, on how the education system performs? Is the fact of producing a set of indicators, supported and encouraged by educational authorities, completely neutral?

The dichotomy suggested by Jonas cannot be justified. For the fun-

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30. Denis Meuret, 2001: "Regarding the contribution of indicators to the debate on education. A case study: *L'état de l'École"*, In: Education and training policies. International analyses and comparisons, no 3, Ed. De Boeck, Brussels.

31. A paradoxical example of such interference is to be found in Switzerland where the federal office of statistics (Office fédéral de la statistique - OFS) published at the beginning of August 2005 a report comparing education performance in Switzerland with the objectives adopted by the European Union concerning education in the context of the Lisbon strategy (see the European Commission's report "Progress Towards the Lisbon Objectives in Education and Training. 2005 Report".

Dear Sir/Madam,

For your information, we are enclosing the press release to be published by the Office fédéral de la statistique presenting the report entitled "The Swiss education system compared to the rest of Europe". (We do not have the report itself.)

If the media contact you concerning questions of rank, rating or any other sort of winners-list, we recommend that you do not respond. These questions are of no interest for this study and are difficult to understand on the mere basis of a press release.

On the other hand, we believe that it is important for the Swiss education system

a) to be assessed on the basis of objectives set in the framework of the Lisbon strategy adopted by the EU,

b) to be compared to the Euroepan average, and

c) to be measured against certain other European countries in particular.

This report shows that Switzerland's performance in all the areas mentioned by the press release is higher than the European average and that Switzerland has already reached or even exceeded the benchmarks set by the EU for 2010. It is obvious that in certain areas, some countries perform better than Switzerland and it is also quite clear that Switzerland should pursue its efforts to improve its education system.

32. Hans Jonas (1903-1993), German philosopher, pupil of Heidegger, delved deeper into this distinction in his work and more specifically in *The Imperative of Responsibility: In Search of Ethics for the Technological Age* (1979).

damental characteristic of physical reality, not only that in which we are immersed but also that of which we are created or which we create, lies in the fact that it can only be known if it can be modified. This is the theoretical principle we have inherited thanks to 20th-century progress in science. We also know that the principle applies to the humanities and thus, to our knowledge of education systems. Supposing we consider the following axiom to be valid: that no cognitive approach leaves the subject of its observation, measurement, analysis, comparison, deciphering, completely unscathed. There is no clear ontological divide between science and techniques, between cognitive reality and its modification. It is therefore impossible to attribute a distinct ethical status to each of these two elements and consider that we have unlimited freedom when it comes to cognitive processes and a different, limited responsibility when we apply knowledge to processes or acts aiming to modify reality. Indicators produce knowledge of education systems and the moment we design, implement or produce indicators, they modify systems. We could say the same of assessment. This astonishing situation does not however mean there is any similarity between indicator development and assessment programmes.

Unfortunately, our knowledge of how indicator development impacts changes in education systems is limited and vague. We have to concede that it does, that the consequences are probably many and varied but also that for the time being, we can go no further in our inferences and suppositions. The borderline between developing and building a set of indicators on the one hand and changes in education systems on the other is not impenetrable. It would be wrong to say that indicators do not influence education policies and the controllability of education systems or that there are no repercussions on this score. A set of indicators is not merely the fruit of a given education policy but nor is it completely beyond the scope of politics and therefore, of processes aiming to change the ortganisation and performance of education systems and administration techniques. Nevertheless, it is not easy to establish a direct link between developing sets of indicators and assessment of the quality of education. These are two different elements. They are not grafted in the same way on the trunk of education policy and reform. They do not serve the same purpose. Nonetheless, both elements (indicator production and assessment) have an impact on the performance of education systems without necessarily resulting from the same education policy. Neither can we exclude the possibility that there are affinities between these two factors and that one exploits or uses the other. The necessary strategies for extrapolating appropriate data for success indicators based on wide-scale assessments are complex, all the more so given that these assessments also raise significant reliability issues which are only partly resolved. For this reason, the link between wide-scale assessment of student attainment and the development of sets of indicators is not obvious and should be tackled with great caution[33]. ■

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33. On this subject, see the report prepared under the leadership of Andrew Porter and Adam Gamoran for the National Research Council: Methodological Advances in Cross-National Surveys of Educational Achievement. National Academy Press, Washington D.C. 2002.

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The state of education in France compared to other countries in the European Union or the OECD

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There are positive points in the assessment of the French educational system based on a set of international indicators of comparable data, such as pre-school development, and other more negative ones such as an insufficient budget dedicated to higher education. Some are common knowledge, others are less obvious. The current selection (some thirty indicators) is based on three publications - «Education at a glance» published by the OECD, various «Key data» published by Eurydice and Eurostat and the annual report on monitoring of the Lisbon Strategy. Some of the selected indicators are used in the European Union as benchmarks and are included in the objectives to achieve by 2010. They show an average situation in France concerning those leaving the education system with no qualifications, poor results regarding adult training and better than average results for reading skills in 15-year-olds (PISA evaluation), the percentage of students completing secondary education and the number of graduates in the maths, science and technology disciplines.

This article concerns the state of education in France in comparison to other European Union or OECD countries, based on the indicators for education to be found in the OECD publication "Education at a glance" or in the various "Key Data" published by Eurydice and Eurostat and annual reports on monitoring of the Lisbon Strategy. The latter has moreover defined five benchmarks.

Data comparability is not always guaranteed or possible, which occasionally complicates the task. In addition to which, each system demonstrates strong points in one area and weak ones elsewhere, thus making it difficult to give a summary.

The first section deals with indicators for which it is difficult to determine whether they concern strong or weak points but which reveal general information which should be remembered when conducting research. The second section takes a look at our country's strong points: those which are "common knowledge" and those which are less obvious.

In the third section, weak points are reviewed, once again distinguishing between those which are "common knowledge" and those which are not.

The final section deal with the results of the latest PISA survey and those of previous international evaluations such as PIRLS and TIMSS (for all these terms, refer to box "International indicators in education").

At the Lisbon European Council in the Spring of 2000, the European Union determined strategic objectives for improving European education and training systems. This is known as the Lisbon Strategy. This resulted in the member States agreeing to work together to establish common goals for achievement by 2010. Five benchmarks were thus established as the basis for improving education and training in Europe. The box "Indicators and benchmarks for monitoring the Lisbon objectives in education and training" gives detailed information on this point. Progress by European education and training systems in meeting these objectives has so far

been considered insufficient. This is the main conclusion of the Commission's 2006 annual report.

The 2008 edition of *The state of education* gives figures for three of these:

- early school-leavers and individuals leaving without a secondary cycle diploma (2006) as indicated in the third part of this article;
- the proportion of 15-year-olds showing weak reading skills (PISA), 2003 status and 2000-2003 comparison, with the results appearing in the fourth part of this article.
- adults having followed an education or training programme during the previous month, in keeping with the level of their diploma (2005) as indicated in the third part of this article.

Two other reference criteria are illustrated in the second part of the article: the percentage of individuals completing the second stage of secondary education, which should reach at least 85% of youngsters in 2010 and the percentage of "scientific graduates".

Comparative studies should be based on international nomenclature. In the present case, the ISCED (1997 revised version) is used (see box "Levels in education").

In this same box, information is given on how statistical and information indicators in the two publications *Education at a glance* (OECD) and *Key data* (Eurydice-Eurostat) are developed, their sources and working methods. In the case of France, different DEPP groups are involved, either by providing data or through participation in the development and decision-making processes. It is the quality and scale of this team work that has made this assessment possible.

Some general data

Expenditure per student[1]

In analysing expenditure per student, considerable differences in the French context are revealed depending on the level of education.

With an expenditure per primary school student of $ 5,365 (dollar value determined on the basis of purchasing power parity-PPP)[2] in 2005, France is below the OECD ($ 6,252) and European Union ($ 6,055) averages. France spends far less than the United States ($ 9,156), Japan ($ 6,744) and Italy ($ 6,835), but more than Spain ($ 5,502). Just Germany comes after the France ($ 5014).

Regarding secondary education on the other hand, France is well above the OECD average ($ 7,804) with an expenditure of $ 8,927 per student. Our country spends more than Germany ($ m), the United Kingdom ($ 7,167), Spain ($ 7,211) or Japan ($ 7,908) but less than the United States ($ 10,390).

In the case of higher education, expenditure per student in France ($ 10,995) is below the OECD average ($ 11,512) and far below the United States ($ 24,370) if expenditure linked to research is taken into account. It is higher than the European Union average ($ 10,474). This is including expenditure on research carried out by the major research organisations (CNRS, INSERM). If research is excluded, expenditure per student puts France below the OECD average ($ 7,673 versus $ 8,101) but above the European Union average ($ 6,990).

International comparisons for overall expenditure per student over the average period of higher education are also available: once again, France's performance is below the average ($ 44,202 for an overall average of $ 46,178) and still further behind countries like Sweden ($ 74,629) or the United Kingdom ($ 58,654).

Some subsidies however, both direct and indirect, granted by the French state to students or their families are not taken into account in expenditure for higher education, such as tax benefits (increase in the family income splitting) or expenditure not directly linked to the student status (housing subsidies). Comparing public subsidies for students on an international scale is extremely tricky since the actual spending supported by students or their families to finance higher education varies widely from one country to another.

The differences and specificities of the French context regarding unit costs according to the level of education are borne out by another resource indicator comparing national supervisory levels. The "student/teacher" ratio appears fairly high in France for the primary grades (19.3 in 2006 against an OECD average of 16.2 and 14.5 in the EU) and for hi-

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1. For more details about analysis of expenditure on education, see "OECD indicators of expenditure on education in 2005: trends from comparing education spending in France" (C. Ragoucy), in this publication.

2. The national currencies are divided by the purchasing power parity (PPP) index to convert them into Amercian dollar equivalents. The PPP exchange rate gives the amount in national currency which would finance the same range of merchandise and services in a given country as those purchased in dollars in the United States.

gher education (17.0 against 15.3 and 16.0). The reverse is true in secondary education: 11.9 students per teacher in France against an OECD average of 13.2 and equal to the EU average of 11.8.

Number of teaching hours

The number of teaching hours per teacher also varies widely. A primary school teacher in France does more teaching hours than on average in OECD or European Union countries (910 against 812 and 806). Only in the United States, the Netherlands and Ireland do they do more.

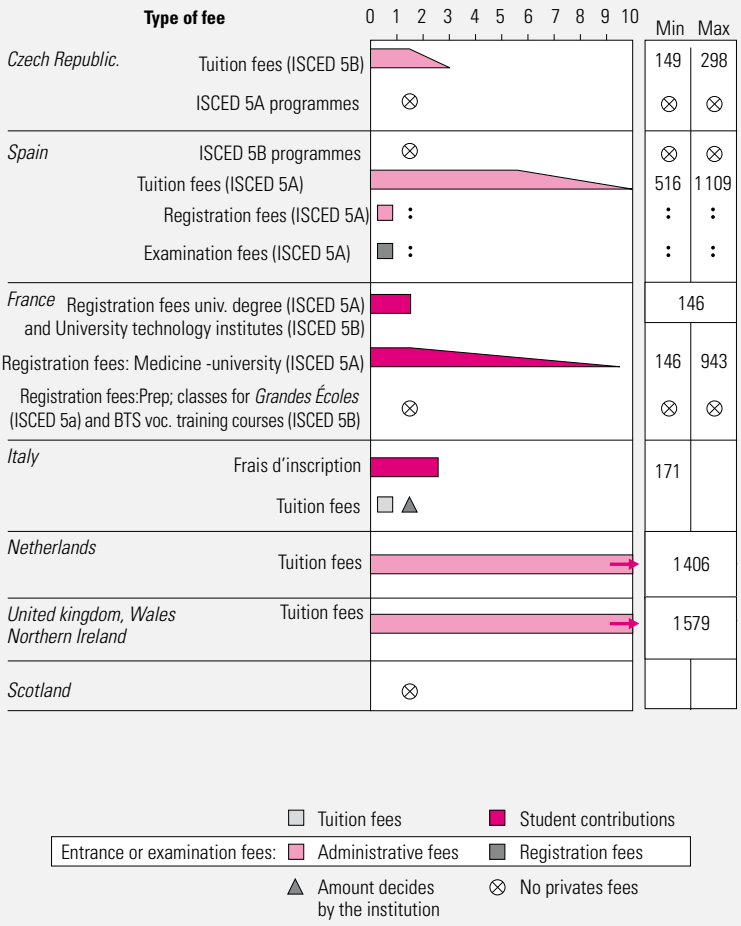
At college (or lower secondary in international terminology), the situation is reversed: 634 hrs. in France compared to 717 on average in OECD countries and 672 in the European Union, far behind the United States (1,080).

The situation is the same for the *lycée* (or upper secondary in international terminology): 616 hrs. in France compared to 667 on average in OECD countries and 634 in the European Union

The cumulative number of hours of instruction for 7 to 14 year-old students in public education

Together with the Netherlands, Australia and Italy, France is one of the countries with the highest cumulative number of hours of instruction (7,368 compared to 6,657 on average in OECD countries). This number is lowest in the Scandinavian countries (less than 6,000 hours), the situation in Germany being very similar.

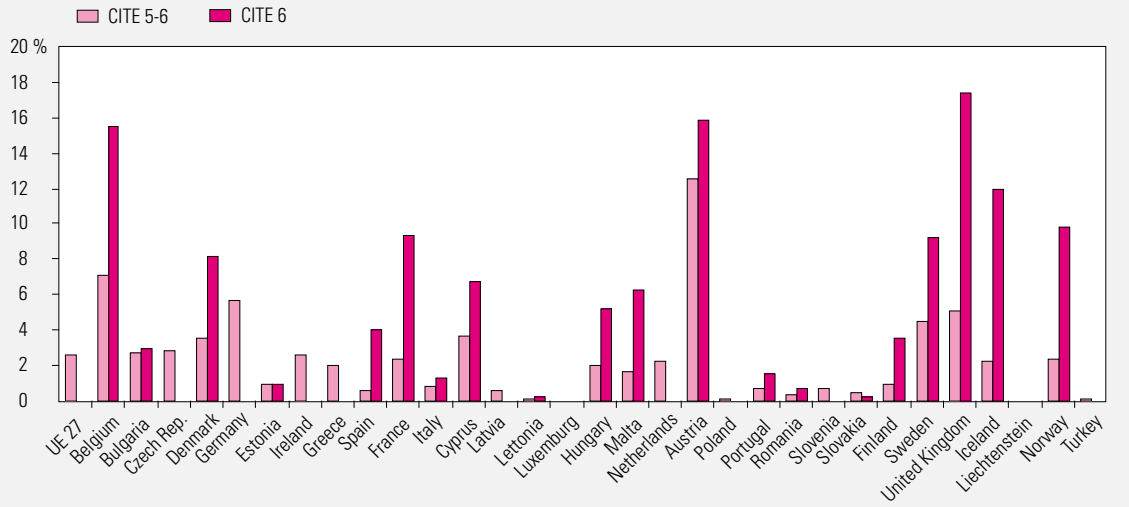
Graph 1: Level of tuition fees and other contributions, expressed in EUR-SPA. Full-time students seeking an initial qualification in day courses. Public or subsidised private sector (ISCED 5), 2005-2006



Additional remarks - Czech Republic: higher education institutions (ISCED 5) collect pre-registration fees (around 30 EUR-SPA), however, pre-registration is not necessarily followed by definitive enrolment. Spain: The level of fees varies from one autonomous community to another and within these, according to the programmes. The figures mentioned here for tuition fees (ISCED 5 programmes) are estimates based on the same amount of 60 credits but for two different types of programme (experimental or not) and in two distinct autonomous communities. France: only programmes coming under the authority of the Ministry for Higher Education and Research are taken into consideration. Institutions linked to other ministries are not included. In addition to fees determined at national level, each university can charge specific fees voted by the Board of Trustees (between 9 and 28 EUR SPA) to cover sports activities, the services of the SUMPPS (University Preventive Medicine and Health Promotion Service) and the SUIO (University Information and Orientation Service). Italy: the students must pay an additional residence tax, the amount of which is determined at regional level. United Kingdom (ENG/WLS/NIR): since 2006/2007 (in England and Northern Ireland) or 2007-2008 (in Wales), institutions are free to determine the level of tuition fees within the limits of the authorised maximum of 4,031 EUR SPA. United Kingdom (SCT): once they have graduated, most students having benefited from the support of the SAAS government agency reimburse a fixed amount of 2,977 EUR SPA (for those who began their studies in 2005/2006) before April of the year following graduation.

Source: Extracts from figure C10 of "Key data on higher education in Europe – 2007 edition".

Graph 2 - Percentage of higher education students (ISCED 5-6 and ISCED 6) bearing the nationality of a member state (EU-27), a candidate country or an AELE/EEE country, 2003-2004



Additional information - Belgium: independent private institutions and the German-speaking community are not included. Ireland: only full-time foreign students are included. The Netherlands: foreign students at level ISCED 6 are not included. Austria: foreign students at level ISCED B are not included.

Explanation The indicator includes all higher education students of member states, candidate countries or an AELE/EEE country other than those of the country providing the information. The denominator includes all students who are nationals in addition to all those holding the nationality of an EU-27 member state, candidate or AELE/EEE countries, studying in the country. The data concerning foreign students are based on nationality for most countries except Estonia, Ireland, Latvia, Romania and the United Kingdom who register foreign/mobile students according to resident or home country and not according to their nationality. Member states are the EU-27 countries, candidate countries are Croatia and Turkey. AELE/EEE countries are Island, Liechtenstein and Norway. Foreign students' numbers are available at http://www.eurydice.org

Source : figure ES of Key data in higher education in Europe - 2007 edition.

Teachers' salaries

By comparing teachers' gross salaries at the beginning of their career, after fifteen years of seniority and at the top of the scale, we obtain information on the career paths in different countries. Whereas teachers in the first stage of secondary education reach the top of the salary scale after 24 years of seniority on average in OECD countries, the same is true after 34 years of teaching in Austria and France and 38 years or more in Spain and Hungary. In France, novice primary and secondary teachers earn slightly less than the average earnings in OECD countries. On the other hand, their maximum salary is near of the average in OECD countries and equivalent to slightly less than twice a beginner's salary.

Registration fees in higher education

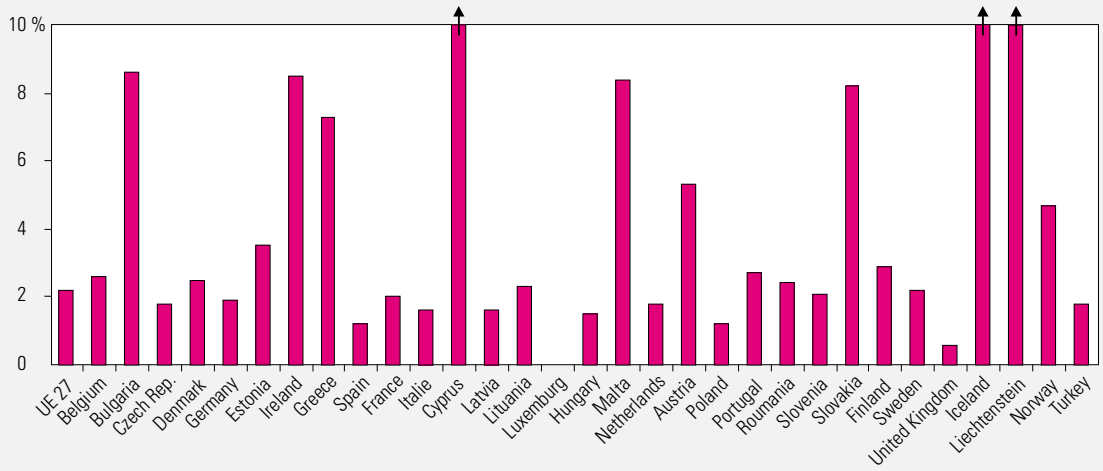
The situation in EU countries regarding registration fees for higher education varies very widely.

Concerning the initial years of 5A programmes, we thus observe that they are free of charge in Scotland and the Czech Republic whereas fees in the Netherlands and other United Kingdom countries are in the neighbourhood of 1,500 EUR-SPA. In France as in Italy, they are relatively moderate at 146 EUR-SPA except for certain health professions (such as psychomotricians where numbers are nevertheless limited).

The relatively large proportion of foreign nationality students in France, particularly in doctoral studies

The mobility of European students can be attributed to the harmonisation of programmes and courses but also bears witness to differences between countries in terms of educational offer. Some countries host proportionately more European students than others. In a given country, we can begin by comparing the foreign student population from a European Union country with the total number of host country students from European Union countries, including nationals of the host country. In these circumstances, Belgium (7.1%), Germany (5.7%), Austria

Graph 3: Percentage of higher education students (ISCED 5-6) pursuing studies in a member state (EU-27), a candidate country or an AELE/EEE country, 2003-2004



Belgium: data for independent private institutions is not included. Germany, Slovenia: ISCED 6 level is not included. Ireland: only full-time foreign students are included. The Netherlands: foreign students at level ISCED 6 are not included. Austria: foreign students at level ISCED B are not included.

Explanation: The number of students abroad is equal to the sum of the numbers provided by each host country for each nationality. This number is then divided by the total number of students for each nationality (including students resident in the country). The lack of data concerning the distribution of students by nationality in some countries leads to underestimating numbers. Thus data for foreign students are based on the nationality criterion for most countries. This means that students resident in a country who hold a foreign nationality are considered as foreign students when statistical data is collected. Estonia, Ireland, Romania and the United Kingdom register foreign/mobile students according to resident or home country and not according to their nationality. Candidate countries are Croatia and Turkey. AELE/EEE countries are Island, Liechtenstein and Norway.

(12.4%) and the United Kingdom (5%) are the countries which hosted the largest proportion of foreign students in higher education (ISCED 5 and 6) in 2004.

At the other end of the scale, Lithuania, Poland, Romania and Turkey are countries which hosted less than 0.5% of European students (ISCED 5 and 6).

At level ISCED 6 (doctorate), Belgium, Austria and the United Kingdom boast more than 15% of foreign European students. Compared to their total student population, these three countries attract the most students pursuing the course of research. If we consider the number of students, the picture changes. In this case, Belgium numbers some thousand students coming from EU-25, from candidate or from AELE/EEE countries, Austria hosts twice that amount and the United Kingdom more than 15,000. The countries' demographic weight in terms of students enrolled in level ISCED 6 programmes has an impact on the ratio.

Spain, France and Sweden, where the proportion is less impressive, nevertheless number between 2,069 (Sweden) and around 9,500 (France) foreign students enrolled at level ISCED 6.

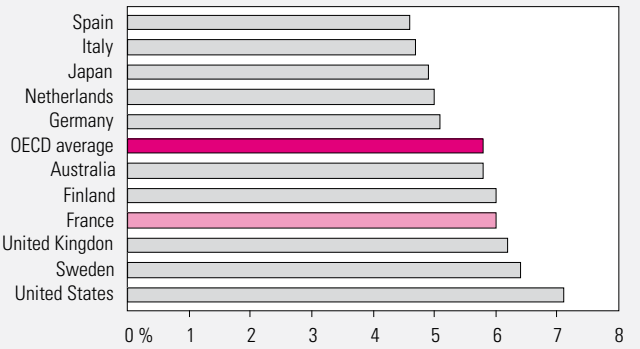
Not many French students study in another EU country

Student mobility is a major challenge in creating a European Higher Education Area. While demonstrating students' eagerness to make the most of all opportunities available in European higher education, it depends partly on the conditions of mobility, particularly financial, offered to students by the different education systems.

In 2004, 2.1% of the European student population, i.e. 370,208 students, studied for at least a year in a European country of which they were not a national. But student mobility is overestimated here. In applying the nationality criterion, we regard permanent residents of foreign nationality as mobile students and they are therefore included in the present data even though their presence is not directly linked to their student status.

In most other European countries, less than 3% of students were abroad in 2004. Spanish, Polish and British students are the least mobile: they were less than 1.2% to go abroad. At the other end of the scale, Greek, Irish, Maltese, Slovak and Bulgarian students are more mobile: they are between 7 and 10% to pursue their studies in another European country.

Graph 4 - Expenditure on educational institutions as a percentage of GDP, by level of education (2005)



Source : OECD, EAG 2008 - B2.2.

THE STRONG POINTS

The relative weight of school age youngsters

France conforms to the average for OECD countries, 19% of its population being aged between 5 and 19 years old. On the contrary, in Germany, Spain, Italy and Japan, the proportion is lower (around 15%). This fact needs to be taken into consideration when analysing a country's education expenditure in terms of percentage of Gross Domestic Product (GDP).

Strong points which are "common knowledge"

In France, the resources dedicated to education are quite considerable

In 2005, OECD countries dedicated on average 5.8% of their GNP to initial education. France is among the countries spending relatively more, with 6.0% of its GNP given over to education[3]. This is significantly more than Japan (4.9%), Italy (4.7%) and Spain (4.6%). On the other hand, this is less than the United States (7.1%) and North European countries like Sweden (6.4%).

Measuring a country's financial effort based on this type of ratio should be put into perspective using various other criteria: a more or less high ratio can be explained by the size of the school-age population, the proportion enrolled, the accepted expenditure per pupil or student[4].

Full-time education school expectancy

The proportion of enrolment is often given based on a synthetic indicator known as school expectancy[5]. France is in a good position here if only full-time education is taken into consideration: 16.7 years on average, compared to 16.2 years in OECD countries in general. Full-time school expectancy is particularly high in Denmark (18.2 years) and Finland (18.8 years) and lower in the United Kingdom (14.9 years) and the United States (15.2 years) where part-time education is more developed.

Total pre-school enrolment at 3, 4 and 5 years of age

In France, Belgium, Spain and Italy, the entire 4-year-old population is enrolled in school.

In South Korea, Switzerland, in the Netherlands and Finland and United States, less than 50% are enrolled.

Germany is at 96,8%, the United Kingdom is at 90, 1% and Japan at 83,4%.

Significant increase in numbers completing the second stage of secondary education

Today, completion of secondary education is considered to be the minimum requisite for access to professional life. The proportion of students completing or graduating from the second stage of secondary education[6] has increased significantly in France.

NOTES

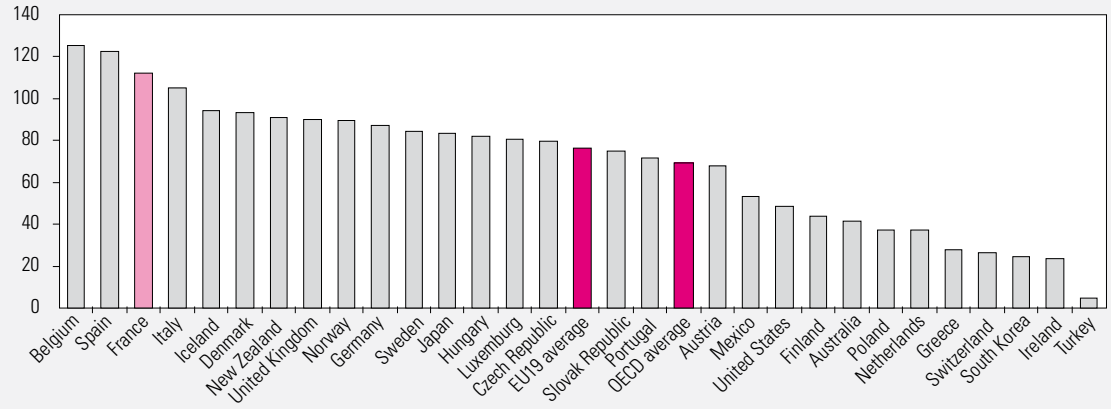
3. This indicator does not take into consideration expenditure on initial education. If continuing education is included, the internal expenditure on education in 2005 is greater than 6.9% of the GDP in France (metropolitan France and DOM [overseas departments]).

4. The unit cost for a given level of education is calculated by dividing total expenditure at this level by the corresponding number of full-time equivalent staff.

5. School expectancy is based on the sum of enrolment rates for each age group in a given year. The number of years children actually attend school in systems where access to education is on the rise is therefore underestimated.

6. The rate of graduation from second-stage secondary education (ISCED 3) corresponds to the proportion of a given age group claiming to be graduates at this level. The successful completion of the second stage does not necessarily involve a final exam. In France, this is the equivalent of education and qualifications such as CAP, BEP, *baccalauréat*.

Graph 5 - Overall school enrolment of 3 – 4 year-olds, 2006



Source: OECD (Table C2.1, EAG 2008).

This is clearly demonstrated by comparing the proportion of young individuals aged 25 to 34 to the 55 to 64-year age-group: we find a 30-point progression (82% against 52% in 2006).

France is therefore among the countries where there has been the biggest increase in second-stage secondary education graduates. If we compare the proportion of the 25-34 year-old graduates with the proportion in the 55-64 year age group, the former is 1.6 higher than the latter. The average for OECD countries is 1.42.

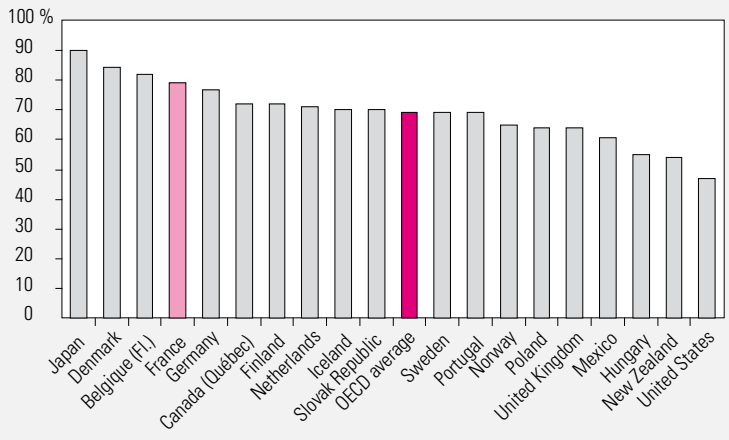
The rate in France is therefore appreciably higher than in Germany, the United States and the United Kingdom. Spain, Italy and Korea do better but their initial situation was considerably worse than in France.

So after trailing behind in this respect, France is now catching up with the more developed countries (the United States and North European countries).

Duration of higher education after the age of 17

The average number of years spent in tertiary education provides a synthetic indicator of rate of access to and enrolment in this education cycle. Generally speaking, in OECD countries 17 year-olds can hope to spend 2.4 years in tertiary education, as students or not, with a higher average in France (2.7), this also being above the average of European Union countries (2,5).

Graph 6 - Percentage of those entering higher education obtaining a diploma at this level (2006)



Source: OECD (Table A4.1, EAG 2008) and for France: DEPP survey on Baccalaureate graduates.

Lesser known strong points

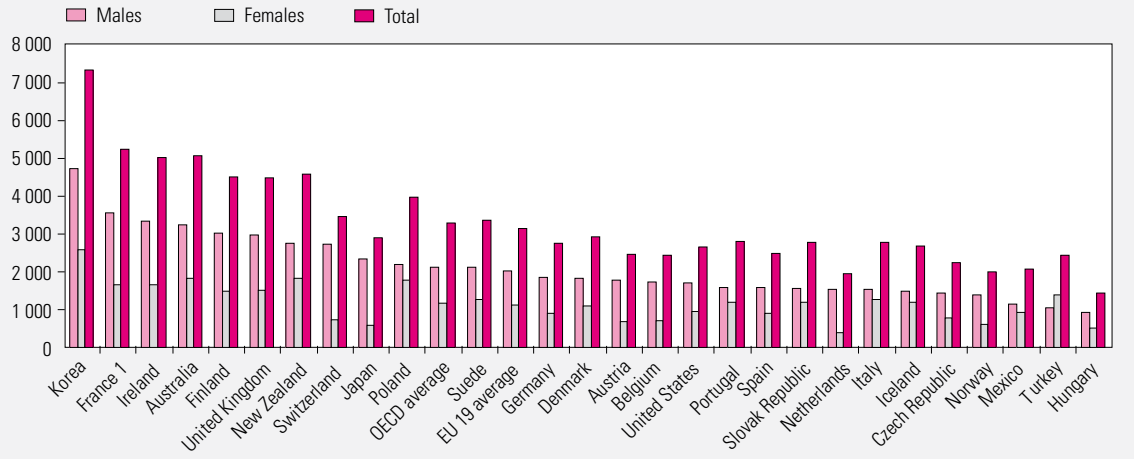
A large proportion of those entering higher education obtains diploma

In France, 79 % of those enrolling in a higher education cycle complete it with a diploma. This percentage is considerably higher than the average in OECD (69%). France does better in this respect than Spain, Germany and the United Kingdom.

The high percentage of "scientific graduates" in the 25-34 year age group

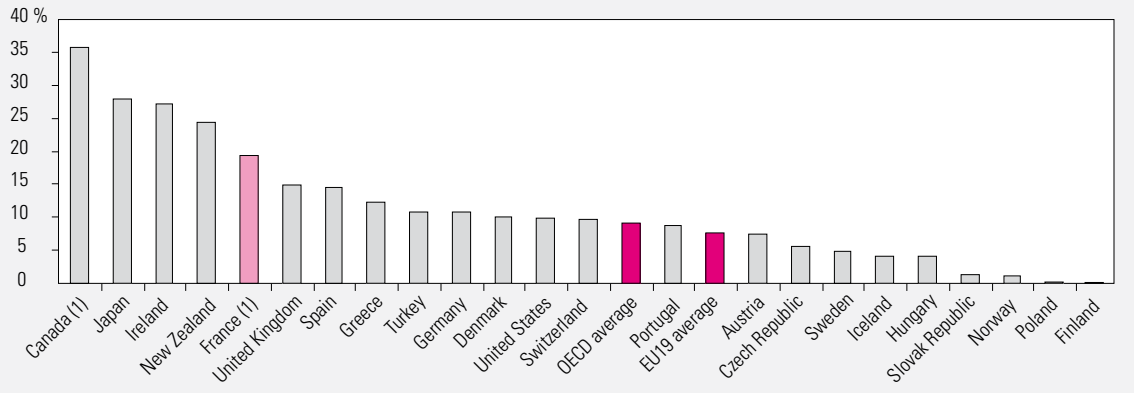
In spite of fears that scientific studies are becoming unpopular, France, along with South Korea, is the country with the highest number

Graph 7 - Science graduates, by gender (2006) - Per 100 000 25-to-34-year-olds that are in employment



1. Year of reference 2006.
Note: Science fields include life sciences; physical sciences; mathematics and statistics; computing; engineering and engineering trades; manufacturing and processing; architecture and building.
Countries are ranked in descending order of the share of the number of male science graduates in the total number of male and female science graduates in tertiary programmes.

Graph 8 - Percentage of graduates in short-cycle higher education, 2006



(1) Year of reference 2005.
Source: OECD (table A3.1, EAG 2008).

of scientific graduates in the 25-34 year age group.

A high level of graduates in short-cycle higher education

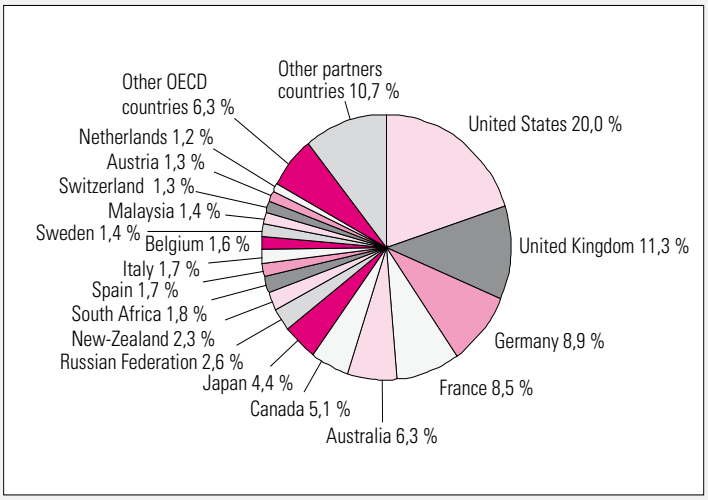
This cycle is named Tertiary 5B in international terminology (*cf.* box "ISCED presentation" below).

Along with Japan, New Zealand and Ireland, France is among the countries where graduation with a short-cycle higher education diploma is the most developed (19.3% of a generation in 2005 (no data for 2006)), far more so than in countries like the United States, Germany or Italy.

Advantages of a diploma in terms of employment and salary: substantial for men who are higher education graduates

There is a definite link between level of education and professional status, particularly in terms of salary. In many countries, education beyond the second stage of the secondary cycle secures particularly significant wage advantages. In all countries, graduates holding a higher education diploma earn considerably more than those with a diploma obtained at the end of the secondary cycle. Regarding countries where data on gross revenue are available, the wage advantage linked to studies at university level compared to secondary level varies from around 26% in Spain to 60% in the United States for the 30-44 year age group. In France, this advantage is

Graphique 9 - Distribution of foreign students in tertiary education, by country of destination (2006)



Source : OECD (Chart C3.2, EAG 2008).

substantial (33%) and is more marked for men than for women (42% against 35% in 2006).

A slight increase in attractiveness for foreign students

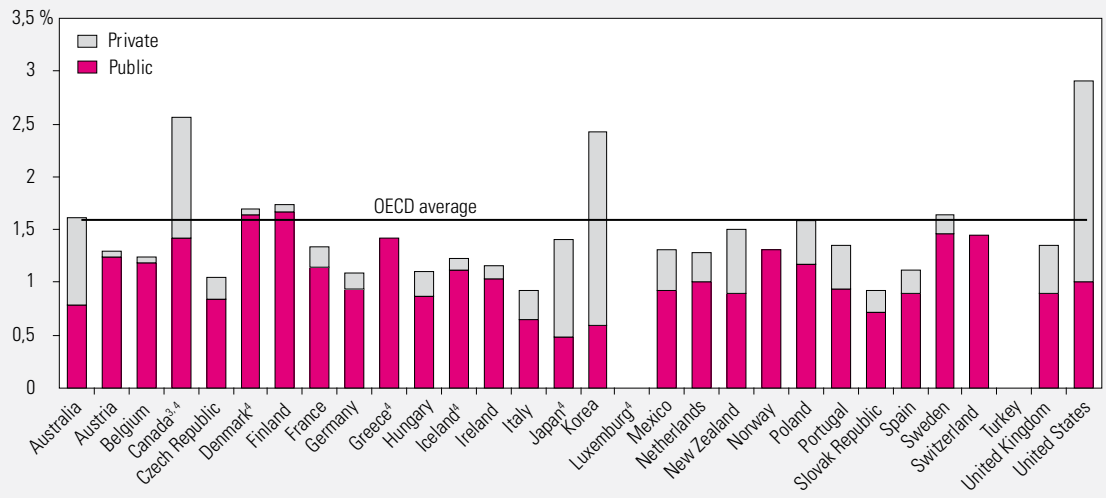
The following information completes the assessment in the paragraph dedicated essentially to analysing the condition of European Union students. In this instance, all countries and all foreign students are concerned.

In 2006, there were more than 2.9 million students pursuing their education in countries of which they were not nationals. 2.4 million were in an OECD country. These numbers increased very rapidly between 2000 and 2006. In OECD countries, there was a 54% increase. This is quite substantial and demonstrates significant progress in student mobility. However, it should be noted that the data currently available does not in actual fact reflect student mobility, since it does not distinguish students coming to a host country to pursue education from foreign students resident in the country. Work is underway to improve tools for quantifying the number of «mobile» students.

If we analyse the total number of students in every country in the world, the percentage of foreign students in France increased slightly between 2000 and 2006, rising from 7.5 to 8.6%. This is nevertheless way below the United States (20.0%) and the United Kingdom (11.3%) and Germany (8.9%). However, percentages in the United States and the United Kingdom dropped considerably between 2000 and 2006 (respectively 26.1% to 20.0% and 12.3% to 11.3%).

If Asian students are generally speaking by far the most numerous (45%) compared to European students (26%) in OECD countries, in 2005 in France, half the foreign students come from African countries, only 20% coming from Asia and 15.5% from the European Union.

Graph 10 - Expenditure on educational institutions in percentage of GDP (2006)



Source: OECD, table B2.4, EAG 2008.

The weak points

"Common knowledge" weak points

Very average expenditure for higher education

France spends a share of its wealth, measured in terms of Gross Domestic Product (GDP), which is close to the OECD average for higher education (1.3%) but far less than the United States, Canada and South Korea, less than Finland and equal to the United Kingdom (and Germany = no data for 2006).

Low expenditure per student

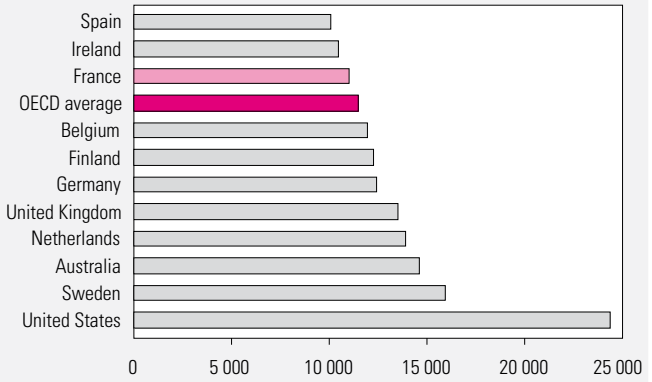
Although this information is presented in the general data, it can also be considered as a weak point. France spends a little less than the OECD average per student, more than Spain but considerably less than the United States and Sweden.

However, our country is around average if we consider the cumulative expenditure over the average duration of higher education since this is above average (*cf.* below).

A relatively high student/ teacher ratio

The level of supervisory staff (student/academic staff ratio) is an indicator of the amount of resources, in terms of academics, made available to students in higher education. It therefore gives an overview of resources made over to supervising students in a country but this information should not be confused with the size of classes. The number of teaching hours provided by each category of teaching staff, the number of teaching hours set aside for students, the different types of studies, options and even courses etc. are just some of the factors which influence the student/academic staff ratio and the size of groups. The weighted average in the European Union is of 15.6 students per teacher. However, the proportion of supervisory staff may vary by a factor of 1-3 from country to country. Countries with ratios lower than 12 are rare (Spain, Slovakia and Sweden). At the other end of the scale, in Greece, Italy, Latvia, Slovenia and Romania, the ratio is more than 20 students per teacher. All the other countries for which data are available are close to the European Union weighted average.

Graph 11 - Average yearly expenditure per student, including research and development activities (in thousands dollar-equivalent) (2005)



Sources: OECD (table B1.1a, EAG 2008) and The state of higher Education and Research in France, 2008.

A barely average situation regarding distribution by level of education for 25-64 year-olds

In spite of the considerable increase in enrolment and completion of secondary education mentioned above, France is still only just within the OECD average when we look at the situation of 25-64 year-olds. So the considerable increase in the level of diplomas observed from 1985 to 1995 means that France has merely achieved the average. Stabilisation of numbers continuing to baccalaureate level since 1995 will not improve the situation.

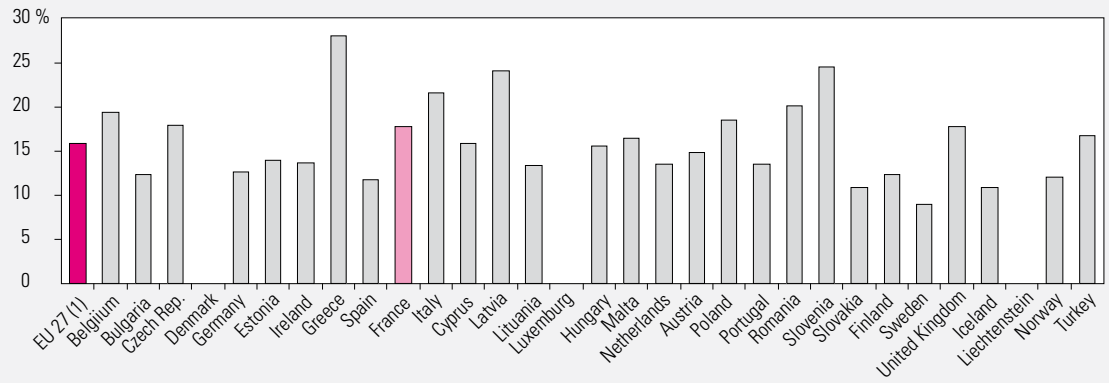
The impact of repeating a year

France is the country with the highest proportion of 15-year-old students having repeated a year at least once (38%). In certain countries, it is not possible to repeat a year (Japan, Norway) or the proportion of repeats is very low (other Scandinavian countries, the United Kingdom).

More difficult entry to the job market than elsewhere, particularly for the poorly qualified (25-29 year-olds)

The proportion of the unemployed[7] among the younger generations is relatively high in France, whatever the level of education, but rises sharply among the more poorly qualified. In 2006, this meant that around 11.0% of French youngsters between 20 and 24 were both non-schooled and unemployed, against an average of 7.3% in OECD countries. The proportion of unemployed is less among the 25-29

Graph 12 - Student/academic staff ratio in higher education (ISCED 5-6). Combined public and private sector, 2003-2004

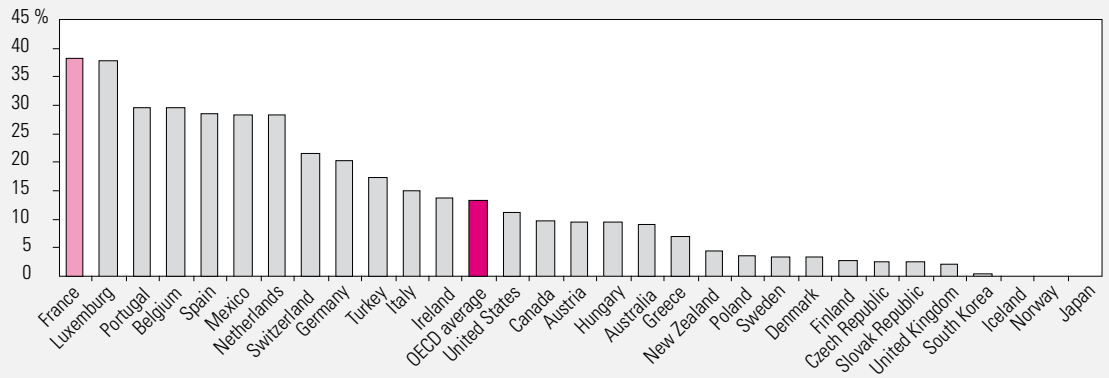


Additional information - UE-27: the information provided is an estimate. Denmark, Luxemburg and level ISCED 6 students from Germany and Slovenia are not included in the calculation. Belgium, Sweden, Norway: see figure C13. Germany, Slovenia: ISCED 6 level students are not included.

Explanation - The student/academic staff ratio is calculated by dividing the number of full-time equivalent students at level ISCED 5 and 6 by the number of full-time equivalent academic staff at the same levels. These data include staff whose main responsibility is teaching or research, and those whose job title designates professor, associate professor, instructor, lecturer or equivalent. Staff with other titles (e.g. dean, director, department head, etc) whose main task is teaching or research is included. Students who teach or who are teaching assistants are not included. Data concerning full-time equivalent students are provided by each country. In some countries all students are considered to be full-time since no part-time programmes exist.

Source: Figure C15 of "Key data on higher education in Europe – 2007 edition".

Graph 13 - Proportion of repeats among 15-year-olds, 2003



Source : OECD (PISA 2003, table A7.1, www.oecd.org/dataoecd/47/16/37363775.xls

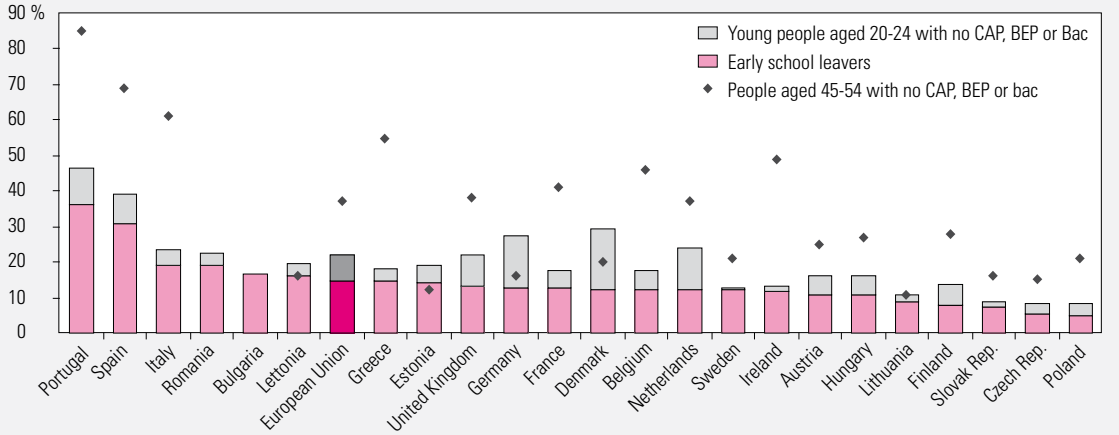
year-olds who have achieved second-stage secondary or higher education, 9.3% and 4.9% respectively for French youngsters but this is still slightly above the OECD averages (6.3% and 4.9% respectively). However, among youngsters who have not reached second-stage secondary education, the non-schooled and unemployed are considerably more numerous in France with a percentage of 16.1%, whereas it is only 12.5% in OECD countries as a whole.

A detailed analysis of the transition from school to employment reveals a fairly clear distinction between two groups. In some North European (Denmark, the Netherlands) or Anglo-Saxon countries (Australia, Canada, the United States, the United Kingdom), there is a large percentage of 15 to 19-year-olds both enrolled in school and with employment on the one hand, and a low percentage of non-schooled, unemployed among 20-24 year-olds on the other. The si-

NOTE

7. The proportion of unemployed is the ratio of the unemployed in a given age group against the total number of individuals comprising this age group. This is a more pertinent indicator than the unemployment rate, which may be very high for a given age group where the number of unemployed is shown against the number of employed, whereas, in actual fact, only a small percentage of an age group is concerned by unemployement since a large number of youngsters are still at school.

Graph 14 - Early school-leavers and individuals leaving without graduating from the secondary cycle (2007)



Interpretation: in France, 13% % of 18 to 24 year-olds who do not continue their education or vocational training have neither CAP, BEP, nor baccalaureate and are early school-leavers. In the same vein, 18% of youngsters between 20 and 24 have neither CAP, BEP nor baccalaureate, whether they continue their education or not (together with the benchmark of 82 % of second-stage secondary cycle graduates, this comes to 2006). In their parents' generation (born between 1947 and 1956), 4 out of 10 individuals are in this situation.
NB: not all member states could be represented on this graph.
Source: Eurostat figures based on community surveys on workforces (provisional data)

tuation is rather the reverse in other countries, often Latin, such as Spain, France, Italy, Greece or Belgium.

Early school-leavers and individuals leaving without graduating from the secondary cycle (2007) (source: The state of School, Lisbon strategy objectives for Europe)

In France, 13% of 18 to 24 year-olds as a whole do not pursue their education, have neither CAP (vocational training certificate), BEP (technical school certificate), nor baccalaureate and are "early school-leavers". In the same vein, 17% of 20 to 24 year-olds have neither CAP, BEP, nor baccalaureate whether they continue their education or not (with the 83% of second-stage secondary cycle graduates in France, this comes to 100). In their parents' generation (born between 1947 and 1956), 4 out of 10 individuals are in this situation.

Adults having followed an education or training programme during the previous month, according to the level of their diploma (2003)

In order for the population as a whole to enhance and update its knowledge, the objective of the Lisbon summit is to increase the proportion of adults between 25 and 64 following courses or training during the month preceding their questioning to 12.5% by 2010, whereas in 2005, it is at 10.8%.

In France, this proportion is 7.6%, combining all levels, but only 3.3% for poorly qualified individuals (without CAP, BEP or baccalaureate).

The Scandinavian countries, Great Britain and the Netherlands have the highest proportion of adults, particularly poorly qualified individuals, benefiting from such training programmes.

Less well-known weak points

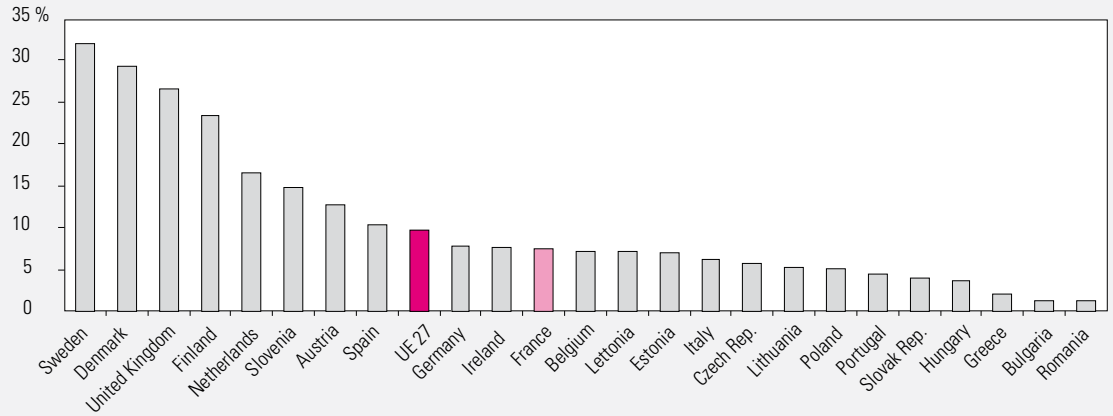
The low percentage of doctors

The mean average of doctors per generation is lower in France (1.2%) than the OECD (1.4%) and the European Union (1.6%).

A fairly weak increase in enrolment in higher-education

Following a sharp increase in the higher education headcount along with a significant rise in access to the baccalaureate and higher education between 1985 and 1995, numbers at this education level have risen very little since. Along with Canada and Germany, France is the country where they have risen the least, France's demographics hovering somewhere between Canada's (stability of the 20-24 year-old population) and Germany's (significant decrease in this population).

Graph 15 - Adults having followed an education or training programme during the previous month (2006)

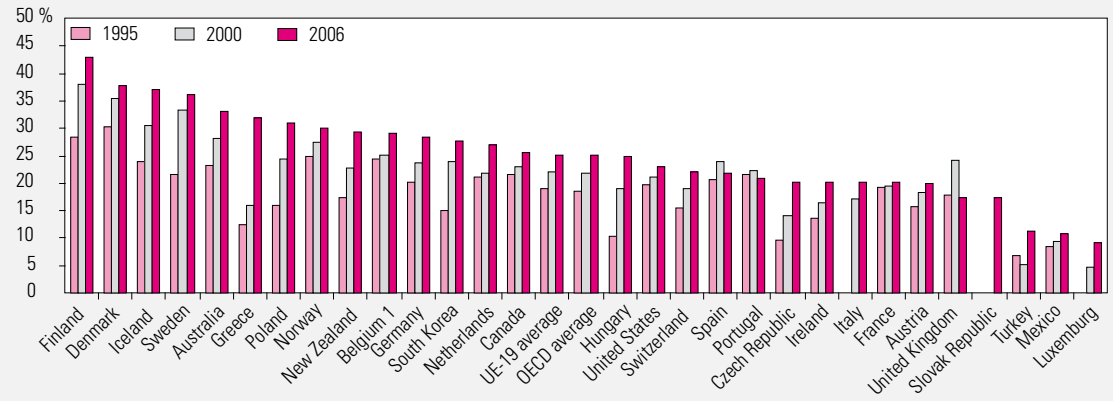


Interpretation: in 2006 in France, 7.5 % of individuals between 25 and 64 followed courses or a training programme during the previous month, all education levels combined (yearly average).

NB: not all member states could be represented on this graph.

Source: Eurostat figures based on community surveys on workforces

Graph 16 - Variation in enrolment ratios 20-29 years from 1995 to 2006



Source: OECD.

Countries like Sweden, Finland and the United Kingdom where the number of school-goers is high have progressed considerably more than France.

Low success rate in graduating from long-cycle higher education

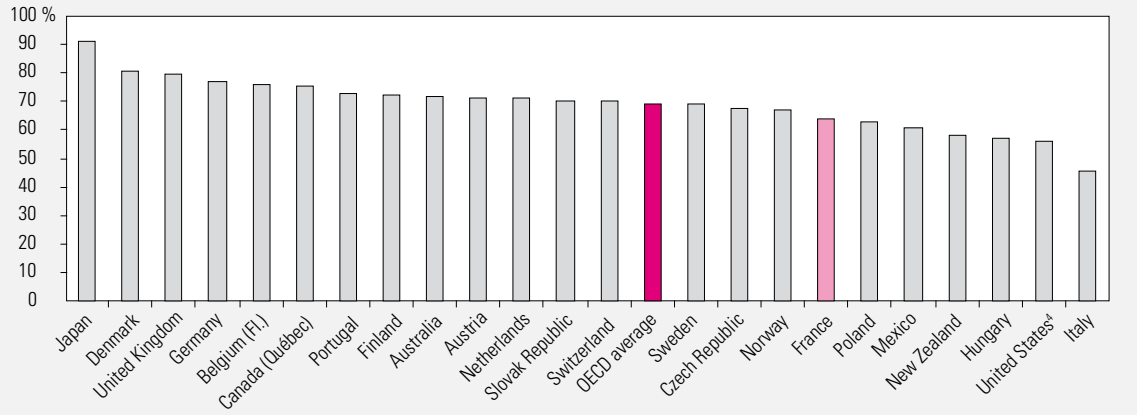
In France, long-cycle higher education (tertiary 5A in international terminology) embraces all university, engineering and business school (large and small) programmes. It should be noted that a large number of youngsters enrolling in a long cycle (15%) and who fail these long programmes, graduate with a short-cycle higher education diploma. Therefore, not all individuals who do not graduate with a long-cycle higher education diploma can be considered to have failed.

France (64%) is in an extremely bad position with respect to this indicator as it shows that our country is well below the OECD (69%) and well behind the United Kingdom (79%) and Spain (75%). It is on a par with Sweden (69%) and precedes the United States (56%).

Results of the 2006 PISA International Evaluation and information from previous international evaluations

Young French people, who have an average level in mathematics, reading and sciences, are weaker in English with a worrying trend of reduced performance in mathematics and reading

Graph 17 - Percentage of those entering long-cycle higher education graduating with a diploma of this type, 2005



Source: OECD (Table A.4.1, EAG 2008) and for France, DEPP survey on Baccalaureate graduates.

While the results in terms of education levels attained and qualifications obtained are a credit to the education system, they remain relative insofar as they sometimes depend on the degree of willingness of the educational policy. Therefore the idea is to complete this initial data by the results, now regularly available, of the international comparisons of the knowledge and skills of pupils who have reached education levels regarded as equivalent.

It is however important to point out the specific characteristic of international evaluations, whose purposes differ from those of national evaluations.

The former evaluate objectives common to the different countries, which is considered a necessity for the future citizen (the purpose being the integration of a young person at the end of compulsory education) while the latter are primarily based on programmes.

Thus, international evaluations do not directly assess the level of achievement of the programmes' objectives but provide information in addition to the evaluations of pupils' knowledge carried out at national level, notably by highlighting the strengths and weaknesses of our pupils in an international context.

In 1991, **children's reading literacy** was the object of a survey in approximately thirty OECD countries. For the 9- to 10-year-old population, France ranked among the top countries, alongside Italy and New Zealand, just behind Finland, the USA and Sweden. For the 14 to 15 year-old pupils, France was second behind Finland.

In June 2001, the PIRLS survey (Progress in International Reading Literacy Study) evaluated the ability of young children from approximately thirty countries to "understand and use the written language forms required by society or valued by the individual". The score of the CM1 pupils evaluated in France was significantly higher than the international average but in a median rank amongst comparable countries.

Renewed in 2006, this survey involved 45 countries including 21 European countries.

While France is above average for all the countries, it is now significantly below average amongst European countries.

In 2000, the OECD implemented the programme for international student assessment (PISA), aimed at evaluating to what extent 15-year-olds are "prepared to meet the challenges of today's knowledge society". Contrary to other international surveys, the PISA evaluation is not directly related to school programmes. Carried out every 3 years, it covers three domains: reading literacy, mathematical literacy and scientific literacy.

In May 2000, the entire generation of 15-year-olds was subject to a first cycle of evaluations, initially focused on reading literacy: the ability to acquire, interpret and react to different texts. France's score was slightly above international average, with a marked advantage for pupils already in lycée (higher secondary education). This situation was confirmed by the 2003 PISA survey. However, in 2006, a significant decrease in the performance of young French people was observed.

This worrying evolution, observed in reading skills in particular, is in line with that observed in French surveys.

Mathematical literacy and scientific literacy.

The results of different surveys carried out since 1990 can be used.

In 2000, the results of the PISA survey showed that the knowledge of young French people was considerably higher than average in mathematical literacy but not in scientific literacy. During the evaluation carried out in 2003, which put a stronger focus on mathematics, 15-year-old French people performed well in this domain, with a level similar to that of 2000. In 2006, a significant drop was observed in the performance of young French people, who are now among the OECD average. This trend is worrying because it is observed on all evaluation items and is mainly due to the increasing percentage of pupils in the lowest levels and the correlative decrease in the percentage of top-level pupils.

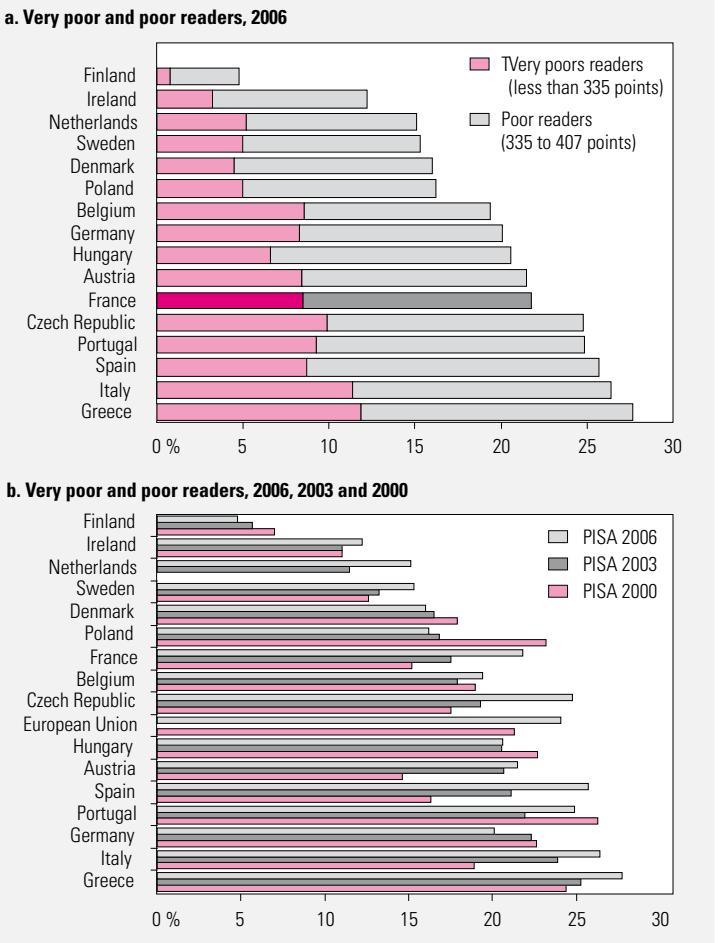
The 2000-2003 period marked a progress in their performance and ranking in terms of scientific literacy, which was maybe due to the fact that the scientific literacy test presented new exercises in 2003, the content and form of which seemed closer to the French norm and therefore more familiar to our pupils. This progress was not confirmed in 2006, the performance of young French people being on a par with the OECD average.

The 2006 PISA survey, like the previous ones, also confirmed the quality of the performance of young people from Finland and Asian countries (see chart).

In mathematics and science, the 1995 TIMSS survey had made it possible to compare the results of pupils from 41 countries. In *cinquième* or equivalent classes (second year of secondary education) 10 countries had a score in mathematics higher than that of France. In *quatrième* or equivalent classes (third year of secondary education), France came 7th in rank while Asian countries largely topped the list. In science however, the results were substantially poorer. The same applied at the end of secondary education, with our pupils faring better in abstract or complex domains than in the knowledge of physical and natural facts.

With regard to the **English skills** of 15- and 16-year-olds, the "European network of policy makers for the evaluation of education systems" carried out an evaluation in 7 countries in 2002, using the protocol already applied by 3 of these countries in 1996. Young French people performed worse in 2002 than in 1996 and were relatively mediocre, in particular in oral comprehension and written expression, which seems to demonstrate that education in France should focus more on communication situations than on grammatical precision.

Graph 18 - Proportion of 15 year-olds demonstrating poor reading skills (PISA).



Source: OECD estimate based on data from the programme for international student assessment (PISA) used in graph 02 on page 41 of "the state of Education", 2008 edition.

Proportion of 15-year-olds with poor reading skills (PISA), 2006 situation and 2000-2006 comparison

(source: "The State of Education", annual report on the Lisbon process)

According to the literacy tests of the 2006 survey, 8.5% of French 15-

year-olds are very poor readers and 13.3% are poor readers, i.e. a total of 21.7%, compared with 15.2% in 2000 and 17.5% in 2003.

The objective, at European level, is a 20% decrease in the proportion of the poorest readers between 2000 and 2010, i.e. 15.5% of 15-year-olds at the lowest performance levels in the tests of the PISA survey. Contrary to the European Union's objective, the situation deteriorated between 2000 and 2006 in many European countries, including France. The proportion of poor readers in the European Union therefore increased from 21.3% in 2000 to 24.1% in 2006.

Country ranking in the three domains evaluated by PISA 2006

European and international comparisons in the education domain have expanded significantly. However, one should always keep in mind that comparability problems remain, due to the varying quality of measurement tools, even though considerable progress has been made in the past few years. Furthermore, although rankings and lists generate a great deal of enthusiasm, they are not the most interesting aspects of these comparisons. They should be used to shed light on France's situation and performance so

Graph 19 - Ranking of countries in the three areas assessed by PISA 2006

as to fuel the debate on our education system by broadening the perspective. In this respect, the use of PISA results is a good example.

Standard indicator profiles seem very difficult to achieve. However, it is important to consider this diversity first and foremost as an asset. By restricting oneself to certain well-known characteristics such as the importance of pre-schooling, repeats or the difficult integration of young people, it is possible to compare Northern and Southern European countries. Conversely, for other characteristics, it is almost impossible to outline conclusive similarities.

The improvement of our education system requires the continued enhancement of the quality and pertinence of international indicators and the development of our knowledge of other education systems.■

Levels of education - International Standard Classification of Education (ISCED)

Level 0: pre-primary education.

Level 1: primary education, first step of basic education.

Level 2: lower secondary education, second stage of basic education.

Level 3: (upper) secondary education which can be adjusted according to subsequent programme orientation:

- ISCED 3A for access to type A tertiary education,
- ISCED 3B for access to type B tertiary education,
- ISCED 3C for direct entry on the job market.

Level 4: post-secondary, non-tertiary education, recently introduced in the ISCED 97 classification to differentiate programmes on the borderline between two levels, 3 and 5. In France, this would be the national diploma providing access to university studies (DAEU)

Level 5: first stage of tertiary education which, here again, may be adjusted according to subsequent programme orientation:

- ISCED 5A: theoretical content, 3 years' minimum theoretical duration,
- ISCED 5B: acquisition of practical, technical and professional qualifications leading directly to the job market This is the equivalent of tertiary technical institutes (IUT), tertiary level technical and vocational training (STS) and a certain number of education programmes in the health and social sectors in France.

Level 6: Second stage of tertiary education (leading to an advanced research qualification). This is equivalent to the French "3rd cycle".

International indicators in education

There are three publications describing the international indicators related to education. They are:

• *Education at a Glance* published by the OECD every year since 1992,

• The Lisbon strategy annual report: the European Commission's standing group on indicators and benchmarks produces a yearly document describing the indicators and benchmarks selected for monitoring the Lisbon strategy,

• *Key data on education in Europe*, published jointly by the European Union's Eurydice and Eurostat, the latest edition dating from 2005 and the next due in 2008, with a "Key data on higher education" being announced in 2007.

These publications have a wide readership in all the participating countries.

The way these indicators are designed, the sources providing all the information and figures, the organisations and working groups set in motion, the status of these information and statistical tools are often little known.

The purpose of this box is to give a few details on the subject.

Organisations and working groups

In the European Union (EU)

Eurostat, the statistical office of the European communities and competent authority for all member states' economic and social activity is the recipient of all statistical data collected by UOE (UNESCO-OECD-Eurostat) concerning education, and also assembles any other data specific to language teaching and to distribution at the national level of data collected by UOE.

The standing group on indicators and benchmarks: set up to advise the European Commission when the Lisbon strategy was implemented, this group has been working since 2002. It has recommended 5 European benchmarks to monitor education systems and is dedicated more specifically to improving the quality of current assessment tools.

Eurydice, which uses a network of national units, is the main EU tool providing information on the structures, systems, national and community systems and developments in the field of education.

Eurydice mainly prepares and publishes monographs on the organisation of education systems which can be compared and are regularly updated, comparative studies on specific topics of interest to the community and indicators in partnership with Eurostat.

There are also several working groups which, on behalf of the Commission, follow up the implementation and development of various surveys on subjects such as languages, or "Learning to Learn" and "Civility and Citizenship".

International indicators in education *(suite)*

In the OECD

As part of the INES project (Indicators of Educational Systems), for over 15 years the OECD has been collecting and publishing comparative data on the operation and impact of the education systems of the thirty member states it currently comprises. These elements are available in the publication entitled *Education at a Glance* which is based on data collected via the UOE questionnaires (UNESCO-OECD-Eurostat) in addition to that produced by the three INES networks (see below).

The project as a whole is organised around three working groups. Structural modifications will be implemented during 2007 but up until now, these working groups were organised as follows:

1) A group of national coordinators responsible for coordinating the different tasks of INES, discussing the content of the *Education at a Glance* publication, checking the coherence of the various indicators and suggesting changes in the published indicators.

2) A technical group comprising representatives from each member state, during meetings organised by OECD with the representatives of Eurostat, Eurydice and UNESCO (two meetings per year). The main tasks of this working group are to suggest and validate methods and instructions leading to improvement in the reliability and comparability of the indicators proposed, to advise on upcoming OECD publications, to participate in specific methodological studies (on the comparability of investments in higher education, for example) and to validate the values of these indicators in concrete terms prior to publication.

3) Three working groups known as "networks": "network A" handling education results (the PISA project is one of its outcomes), "network B" dealing with entry to the job market and the relationship between training and employment, and "network C" working on the characteristics of institutions and education systems.

Since 2000, the PISA project (Programme for International Student Assessment) has been assessing the skills of 15 year-olds every three years, using tools based on internationally defined standards. In 2000, 2003 and 2006, the three areas assessed were reading and understanding written language, mathematical and scientific literacy. The 2003 survey also included tests on problem-solving abilities. 80 countries now participate in this programme.

A large international project for assessing adult skills, PIAAC, is currently under preparation and should give rise to a survey around 2011. The European Union is part of this project.

In the IEA (International Association for the Evaluation of educational Achievement)

Other international surveys have been carried out:

• **PIRLS** *(Progress in International Reading Literacy Study)*, a study implemented by the IEA, investigates and evaluates the reading skills of young children (9-10 year-olds) in addition to their family and social environments; the first evaluation took place in 2001. 40 countries participated in the 2006 study.

• The **TIMSS** (Trends in International Mathematics and Science Study) survey was also devised and organised by IEA. The 1995 survey was a vast operation involving some 500,000 students and including 9 year-olds (Year 4 & 5), 13 year-olds (Year 8 & 9) and students in the final year of post-compulsory secondary education (Year 13).

Sources of statistics and more general information

By collecting data, the two organisations build databases which are used to calculate the *Education at a Glance* (OECD) and *Key data* indicators in addition to those selected for Lisbon strategy monitoring.

It should be noted here that the UOE (UNESCO-OECD-Eurostat) data collection is of fundamental importance since it assembles all the data provided by the three organisations in question.

In France, the DEPP is responsible for contributing to the various organisations described above and provides most of the statistical data for the UOE collection and the INES networks:

• the subdirectorate for statistical synthesis;
• the subdirectorate for performance in education;
• the subdirectorate for performance in higher education, research and innovation.

The French Eurydice unit, which handles numerous data collection initiatives relating to the national education system and its regulations, is also part of the European and international relations department of the DEPP.

The content and use of international indicators

The available OECD publications mainly concern statistical indicators for international comparisons whereas EU publications (Eurydice or Eurydice in partnership with Eurostat) make available both statistical indicators and information indicators comparing national structures and regulations.

To begin with, these publications were intended to increase knowledge of educational systems by comparing them but they have often become governance tools. This change was confirmed when the indicators linked to the Lisbon strategy were defined and values assigned to them. *The state of School*, 30 indicators on the French education system, which publishes international indicators every year, gives the values of these indicators in its latest 2008 edition (see pages 40 and 41).

Indicators and benchmarks for monitoring the Lisbon objectives in education and training

The monitoring framework, comprising **29 indicators** and **5 benchmarks**, was used to monitor progress in achieving 13 detailed objectives over the period 2004-2006. It was constantly modified both to improve its quality and to account for changes in strategy. A new list of 20 indicators was adopted (see list at end of box).

List of the 29 indicators used to monitor achievements in Education and training up until now (2003-2006)

(The indicators used to assess the five benchmarks on the performance of education are in bold type and are reformulated at the end of this list).

1. Age of teachers (percentage of teachers over 50 in primary and secondary education).

2. Number of young people.

3. Student/teacher ratio.

4. Completion of second-stage secondary education.

5. Percentage of students with poor results in reading (PISA).

6. Results in reading among 15-year-olds (PISA).

7. Results in maths among 15 year-olds (PISA).

8. Results in science among 15 year-olds (PISA).

9. Participation of individuals with low initial qualifications in education and training programmes.

10. Number of students enrolled in maths, science and technology disciplines in proportion to the total number of students.

11. Number of graduates in maths, science and technology disciplines in proportion to the total number of graduates.

12. Total number of university graduates in maths, science and technology disciplines (growth).

13. Number of graduates in maths, science and technology disciplines per thousand inhabitants.

14. Public expenditure on education.

15. Private expenditure dedicated to educational institutions.

16. Corporate expenditure in continuous professional development.

17. Total expenditure dedicated to educational institutions, per student, in SPA.

18. Total expenditure dedicated to educational institutions, per student, in comparison to GDP.

19. Participation in lifelong education and training programmes, 25 to 64 age group, everyone, low-qualification individuals.

20. Participation in continuing professional development, all companies.

21. Participation in continuing professional development, companies providing training.

22. Level of participation in education, students aged 15 to 24.

23. Proportion of early school-leavers in the 18 to 24 year-old age group.

24. Distribution of students according to the number of foreign languages learnt.

25. Average number of foreign languages learnt per student.

26. Entry/exit mobility of teachers and trainers, Erasmus + Leonardo.

27. Entry/exit mobility of Erasmus students and Leonardo trainees.

28. Foreign university students compared to the total number of students enrolled, by nationality

29. Percentage of students (nationals) enrolled abroad.

The five benchmarks in education and training

1. Limiting the proportion of early school-leavers to 10% (indicator 23).

2. Reducing the proportion of students with poor reading performance by at least 20% (indicator 5).

3. Reaching the goal of 85% of youngsters completing second-stage secondary education (indicator 4).

4. Increasing the number of graduates in the maths, science and technology disciplines by at least 15% with a simultaneous reduction in the imbalance between men and women (indicator 12).

5. Level of participation in lifelong education and training programmes, 12,5% of the adult population (indicator 19).

International indicators in education *(suite)*

The 13 detailed objectives

• **Increase the quality of education and training systems**

1. Improve education and training of teachers and trainers.

2. Develop the skills necessary for life in a knowledge society.

(- Improve reading, writing and arithmetic skills. - Update the definition of basic skills required in a knowledge-based society. - Sustain the ability to learn).

3. Give everyone access to ICT

(- Fit out schools, education and training centres. - Encourage teachers and trainers to participate. - Use networks and resources.)

4. Increase enrolment in science and technology disciplines.

5. Optimise use of resources

(- Offer better quality assurance. - Guarantee an efficient use of resources).

• **Facilitate access for all to education and training**

6. Create a propitious learning environment.

7. Make education and training more attractive.

8. Foster active citizenship, equal opportunities and social cohesion.

• **Create links between education and training and the world around us**

9. Promote links with the professional environment, research and society in general.

10. Develop entrepreneurship.

11. Improve foreign language teaching.

12. Increase mobility and exchanges.

13. Promote European cooperation.

The 20 core indicators for monitoring progress in achieving the Lisbon objectives in Education and Training

(new list ratified in 2007)

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 literacy.

7. Civic skills.

8. Learning to learn skills.

9. Upper secondary education completion rates of young people.

10. School management.

11. Schools as multi-purpose learning centres.

12. Professional development of teachers and trainers.

13. Stratification of education and training systems.

14. Higher education graduates.

15. Cross-national mobility of students in higher education.

16. Participation of adults in lifelong learning.

17. Adults skills.

18. Educational attainment of the population.

19. Investment in education and training.

20. Returns on education and training.

Nine core indicators – (1), (3), (4) (9), (14), (15), (16), (18) and (19) – already existed and were used in monitoring the follow-up of the Lisbon objectives in education and training. The remaining eleven indicators refer to areas where developmental work is on-going.

Sources:

http://eur-lex.europa.eu/LexUriServ/site/fr/com/2007/com2007_0061fr01.pdf

http://register.consilium.eu.int/pdf/fr/01/st05/05980f1.pdf

http://www.europa.eu/scadplus/leg/fr/cha/c11086.htm

OECD indicators of expenditure on education in 2005: trends from comparing education spending in France[1]

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The starting point for this study is a compilation of indicators on the financial resources invested in education, published by OECD in *Education at a Glance*. The present document highlights some of the trends emerging from a comparative look at education spending in France and offers various explanations. The trends are based on comparing the group of 19 countries for which national wealth, measured by GDP per capita, equals or exceeds the OECD average.
All data are for 2005. They were taken from *Education at a Glance* 2008, soon to be published by OECD.

Expenditure on education in the OECD indicators

The indicator of education spending published by OECD is slightly different than the indicator of domestic education spending used in France with the education satellite account. The OECD indicator tracks "expenditure on educational institutions" and – unlike France's indicator – includes neither spending on continuing education nor money spent by households outside of educational institutions, even if this private spending on goods and services related to education and/or living costs is publicly subsidised. The complex task of extending the OECD indicator's scope to include education expenses that take place outside educational institutions is currently under study by UOE (UNESCO-OECD-Eurostat) work groups. It is also receiving special attention from Eurostat as part of its efforts to find compatibility between UOE statistics and national accounting.

Finally, the OECD indicator of education spending includes a broader research scope for tertiary education than the indicator used with the French education satellite account.

Expenditure on educational institutions as a percentage of GDP

Education spending as a percentage of the gross domestic product (GDP) is the indicator providing the most global evaluation of the effort which national authorities actually dedicate to their education system. For each country, it measures the proportion of national revenue that authorities decide to allocate to education.

On average in OECD countries[2] in 2005, the proportion of GDP spent on education within the institutional scope was 5.8%.

NOTE

1. For the most part, this article is an updated version, based on the OECD indicators to be published in *Education at a Glance* 2007, of the article "Comparaisons internationales des dépenses d'éducation pour l'année 2000 : indicateurs de l'OCDE et position de la France" published in *Éducation & formations*, no. 68 (May 2004).

If we compare the percentage of GDP spent on education with national wealth (here GDP per capita) *(Graph 1)*, we do not see a strong relationship between these two indicators.

It should be noted that the countries at the two extremes in terms of GDP per capita – Luxembourg (69,984 USD/PPP) and Turkey (7,786 USD/PPP) – are not shown on the graph, as we do not have data on their education spending as a percentage of GDP. As a result, on GDP per capita the countries range from 11,299 USD/PPP for Mexico to 47,620 USD/PPP for Norway (i.e. ratio of 1 to 4.2); on education expenditure as a percentage of GDP they range from 4.2% for Greece to 8.0% for Iceland (1 to 1.9).

Among the six countries that devote the highest percentage of their GDP to education, three have a GDP per capita markedly higher than the OECD average – Iceland (8%), Denmark (7.4%) and the United States (7.1%) – and three have a GDP per capita markedly lower than the OECD average: South Korea (7.2%), New Zealand (6.7%) and Mexico (6.5%). In addition to these last three countries, Poland has a GDP per capita below the average, but its proportion of education spending (5.9%) is above the OECD average.

For the seven other countries with a below-average GDP per capita, education spending as a percentage of GDP is also below the OECD Average (5.8%), ranging from 5.7% for Portugal to 4.2% for Greece.

France is in the average range: very close to the average for GDP per capita with 29,644 USD/PPP, but above average for the share of GDP it spends on education, or 6%.

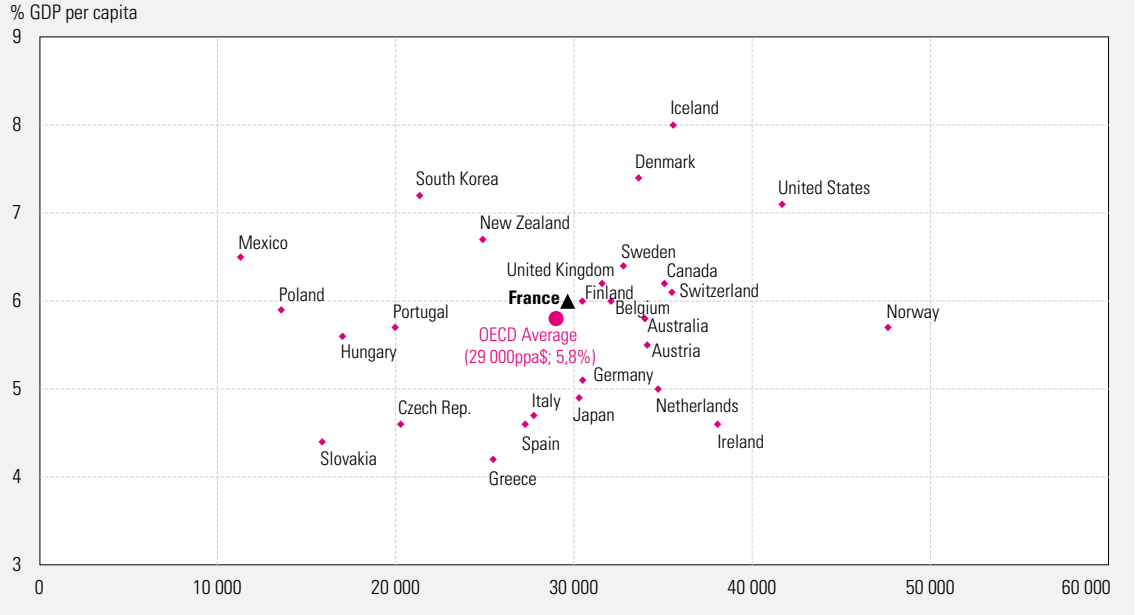
Among the 19 countries *(Graph 2)* whose GDP per capita is above (or slightly below) the OECD average, in a range of 27,270 USD/PPP (Spain) to 47,620 USD/PPP (Norway), 11 devote a proportion of their GDP to education that exceeds the OECD average.

In this group of countries, France ranks eighth together with Belgium and Finland (11th when all the countries are considered, and 17th in terms of GDP per capita). In other words, France is tied with Belgium and Finland. Aside from Korea, New Zealand and Mexico, which we did not include in the group of 19 countries, France is positioned behind three Scandinavian countries – Iceland (8.0%), Denmark (7.4%) and

NOTE

2. The «OECD Average» used in the tables and graphs of this article is generally the average published by OECD in *Education at a Glance*; otherwise, it is our own average calculated from the results of all the countries that responded to OECD for the indicator considered. We made an exception in calculating the OECD Average for GDP per capita in Graphs 1 and 13, calculating the average GDP per capita for 28 OECD countries, hence excluding Luxembourg and Turkey, for which we did not have the other indicator: education expenditure as a percentage of GDP. Note that for GDP per capita, the average of the 30 OECD countries is 29,659 USD/PPP; GDP per capita in France is 29,644 USD/PPP, very close to the OECD average but slightly below it.

Graph 1 – Expenditure on educational institutions as a percentage of GDP and GDP per capita (2005)



Sweden (6.4%) – and behind the two North American countries – the United States (7.1%) and Canada (6.2%). With regard to comparable countries in terms of economics and demographics, France is positioned behind the United Kingdom (6.2%) but ahead of Germany (5.1%) and Italy (4.7%), the latter two having a percentage below the OECD average.

The rest of our study is focused on this group of 19 countries (17 countries with a GDP per capita above the OECD Average, to which we have added Italy and Spain).

Annual expenditure per student by major level of education

We will start by describing France's position on the global indicator of average annual expenditure per student for all levels of education (specifically, from primary to tertiary and excluding pre-primary). Then we will compare the amount spent annually per student in the different countries, for each of the major education levels: pre-primary, primary, secondary and tertiary.

Average annual expenditure per student in primary through tertiary education (Graph 3)

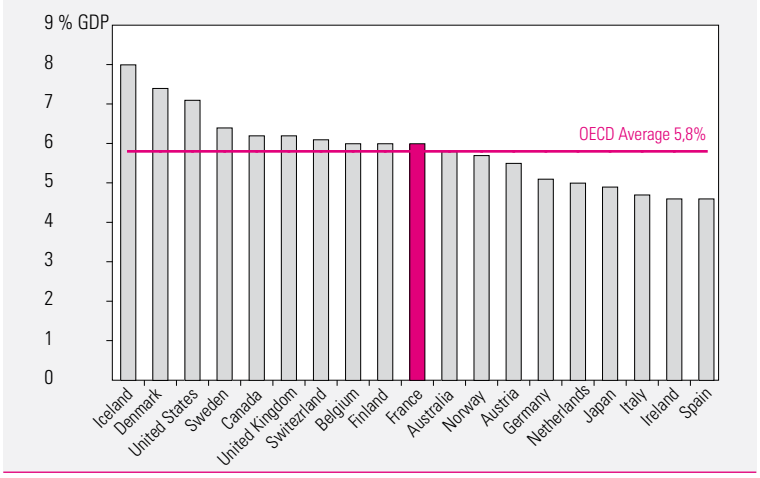
In general with regard to this indicator, only Spain (7,134 USD/PPP) and Ireland (7,108 USD/PPP), i.e. two of the 18 countries (Canada did not respond for this indicator), have an average expenditure per student for all education levels that is below the OECD Average.

With an average annual expenditure per student of 8,101 USD/PPP, France spends, per student, 1.1 times the average for all the OECD countries and ranks 11th among the 18 countries observed. The United States holds the number one position (12,788 USD/PPP), spending on average 1.6 times more than France per student. Switzerland (12,195 USD/PPP) and Austria (10,407 USD/PPP) are also well ahead of France, as are the three Scandinavian countries: Norway (10,980 USD/PPP), Denmark (10,108 USD/PPP) and Sweden (9156 USD/PPP).

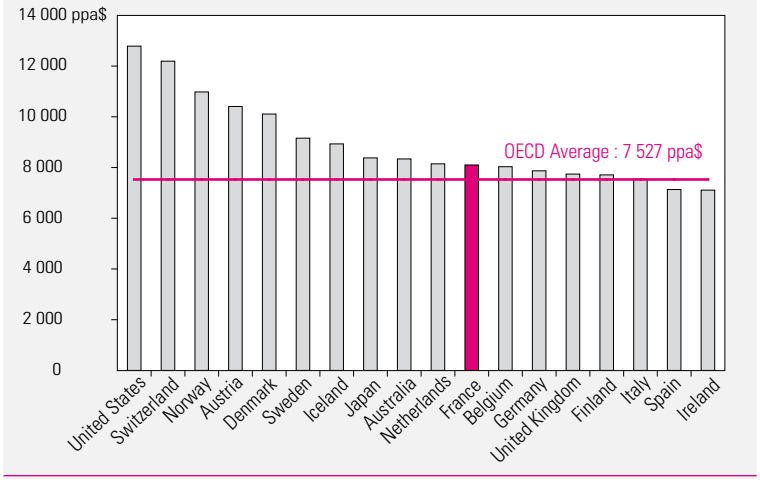
France is very close to the Netherlands (8147 USD/PPP) and Belgium (8034 USD/PPP) and is ahead of six EU countries: Germany (7872 USD/PPP), the United Kingdom (7,741 USD/PPP), Finland (7711 USD/PPP), Italy (7540 USD/PPP) and also Spain and Ireland, but by a maximum lead – relative to Ireland – of only 14%.

For nearly all the countries, and particularly for France, this distribution of average annual expenditure covers a wide range of situations, which depend on the major education level considered. The countries differ in their specific profiles for annual expenditure per student by education level.

Graph 2 – Total expenditure on educational institutions as a percentage of GDP (2005)



Graph 3 – Average annual expenditure per student, for primary through tertiary education, in USD/PPP (2005)



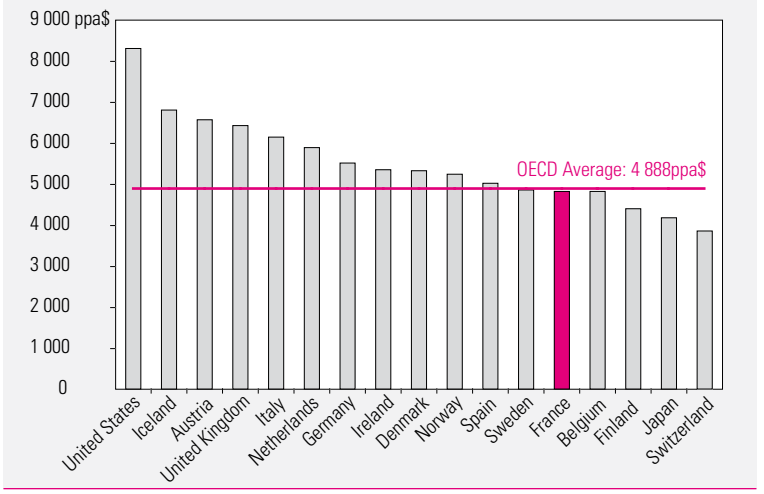
Annual expenditure per student in pre-primary education (graph 4)

The previous indicator does not include the pre-primary level of education. There are a number of differences between the countries in the organisation of this level; the organisational structures vary widely, making it difficult to compare their costs. The international methodology for this level includes spending on instruction, but not on childcare.

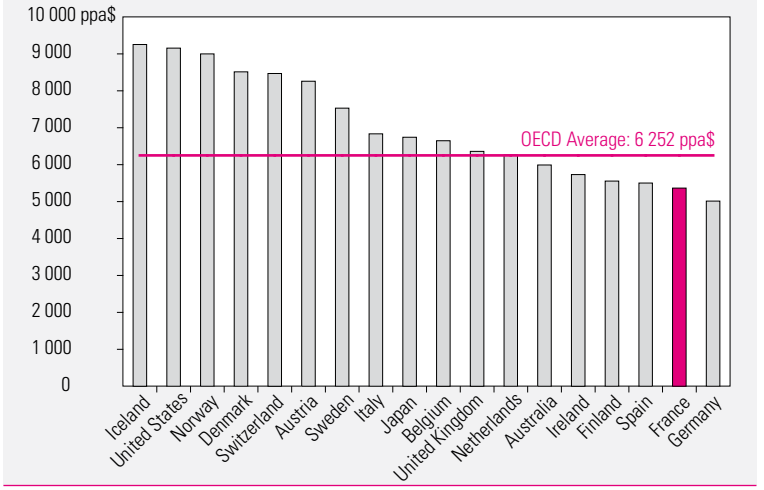
France, Belgium and Italy are the only three OECD countries that provide schooling to nearly 100% of the age set starting at age 3. Of the other countries observed here, Denmark, Japan, the Netherlands, Spain and the United Kingdom provide schooling to between 90% and 100% of the age set starting at age 4.

France ranks 13th among the 17 countries observed (no data were available for Australia or Canada). Its expenditure per student at this education level (4817 USD/PPP) is close to the OECD average (4888 USD/PPP), and is also close to the level of spending it allocates per primary student (5365 USD/PPP). Italy, in fifth place, has an annual expenditure per pre-primary student (6139 USD/PPP) exceeding that of France but also relatively close to the amount it allocates per primary student (6835 USD/PPP). Belgium (14th place) is in a different situation since its annual pre-primary expenditure is equivalent to that of France (4816 USD/PPP) while being well below the amount it allocates per primary student (6648 USD/PPP).

Graph 4 – Annual expenditure per student for pre-primary education, in USD/PPP (2005)



Graph 5 – Annual expenditure per student for primary education, in USD/PPP (2005) (18 countries)



Annual expenditure per student in primary education (Graph 5)

For this level of education, six countries have an annual expenditure below the OECD Average. France is situated in the lower part of the distribution, in second-to-last place, with an annual expenditure of 5365 USD/PPP, well below (by 14%) the OECD Average (6252 USD/PPP). Only Germany (5014 USD/PPP), in last place among the 18 countries shown, spends less annually per student at the primary level.

Iceland (9254 USD/PPP), the United States (9156 USD/PPP) and Norway (9001 USD/PPP) are at the top of the distribution, with expenditure per student representing 1.7 times that of France and – for Ireland and the United States – 1.5 times the OECD Average.

The seven countries holding the top positions include the three Scandinavian countries: Norway, Denmark (8513 USD/PPP) and Sweden (7532 USD/PPP). This group also includes Switzerland (8469 USD/PPP) and Austria (8259 USD/PPP), which are equally among the leading countries for their expenditure per student on

secondary and tertiary education. Italy is in eighth place, with an annual expenditure per student of 6835 USD/PPP, which is 1.3 times that of France; the United Kingdom (6361 USD/PPP) is in tenth place with an expenditure equivalent to 1.2 times that of France. By contrast, Finland's expenditure (5557 USD/PPP) is very close to that of France.

Annual expenditure per student in secondary education (Graph 6)

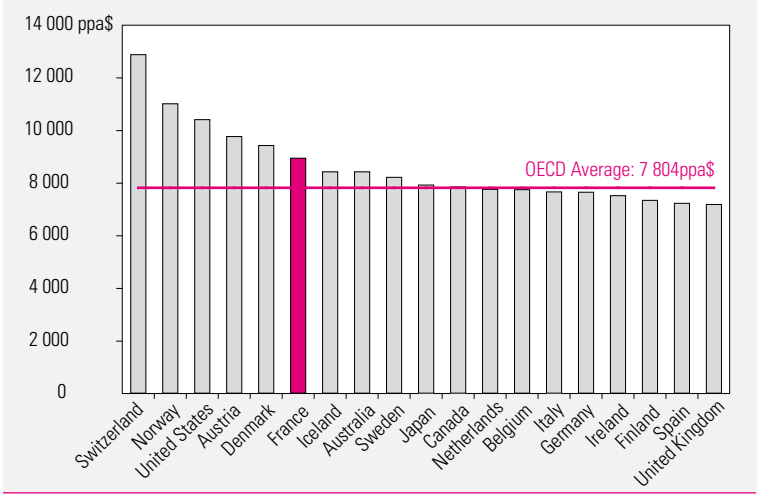
Switzerland holds first place, with an expenditure per student of 12,861 USD/PPP, which is 1.8 times the average expenditure of the country at the bottom of the distribution – the United Kingdom (7167 USD/PPP) – and 1.4 times France's expenditure.

Results from 13 of the 19 countries shown form a cluster, their expenditure per student lying in an interval of plus or minus 10% around the OECD Average (7804 USD/PPP).

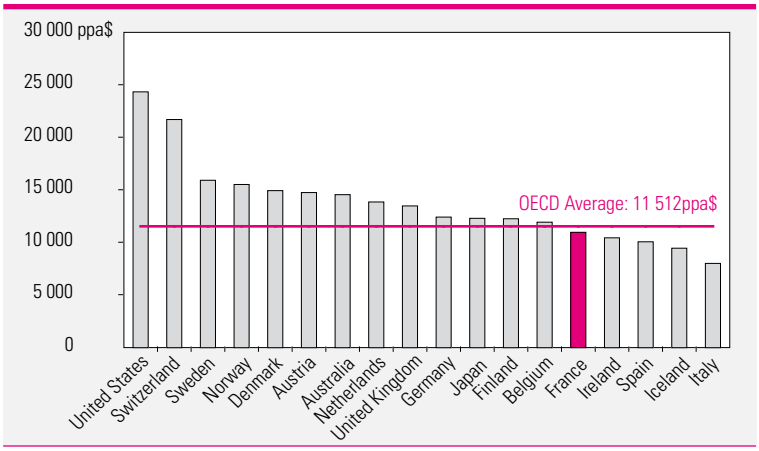
France is positioned just above this interval, with an average expenditure of 8927 USD/PPP, which exceeds the OECD average by 14%. In sixth place for this education level, France is behind not only Switzerland, but also two Scandinavian countries – Norway (10,995 USD/PPP) and Denmark (9407 USD/PPP) – as well as the United States (10,390 USD/PPP) and Austria (9751 USD/PPP).

Italy (7648 USD/PPP) and Germany (7636 USD/PPP) respectively hold 14th and 15th place, positioned slightly below the OECD Average. Ranking 19th, the United Kingdom is in last place with an average expenditure of 7167 USD/PPP.

Graph 6 – Annual expenditure per student for secondary education, in USD/PPP (2005)



Graph 7 – Annual expenditure per student for tertiary education, in USD/PPP (2005)



Annual expenditure per student in tertiary education (Graph 7)

For this level of education, France spends an average of 10,995 USD/PPP per student, slightly less than the average for all the OECD countries (11,512 USD/PPP). It ranks 14th among the 18 countries observed.

The top two countries – the United States (24,370 USD/PPP) and Switzerland (21,734 USD/PPP) – have a substantial lead over the other countries, with an average expenditure respectively 53% and 36% higher than that of the third place country, Sweden, and roughly twice the OECD Average. The ratio between the extreme positions for annual expenditure per student in tertiary education (3.0) is markedly greater than in primary education (1.8) and in secondary education (1.8), and also exceeds the ratio for the primary, secondary and tertiary levels taken together (1.8).

The three Scandinavian countries – Sweden (15,946 USD/PPP), Norway (15,552 USD/PPP) and Denmark (14,959 USD/PPP) – rank third, fourth and fifth with expenditures ranging from 1.4 to 1.3 times the OECD Average.

For this level of expenditure, the United Kingdom (13,506 USD/PPP)

and Germany (12,446 USD/PPP) are positioned above the OECD Average, occupying ninth and tenth place. Italy ranks last in 18th position, with an annual expenditure of 8026 USD/PPP per student, 0.7 times lower than the OECD Average.

Annual expenditure per student in tertiary education, excluding research (Graph 8)

The indicator of annual expenditure per student at the tertiary level – unlike the indicators at the other levels – includes spending on two main activities: teaching on one hand, and research related to teaching on the other. The previous graph showed the total tertiary expenditure, i.e. including research expenses. The graph below breaks down tertiary spending according to the two activities: teaching and the related research. This breakdown is available for 16 of the 19 countries (excluding Denmark, Iceland and Japan; data is however available on Canada – for 2004 and for public educational institutions).

For the 12 countries at the bottom of the 16-country distribution, the research portion of the total education expenditure per student lies in a range from 29% to 38%. In addition, these countries have the same ranking relative to each other on this indicator as on the indicator of annual education expenditure including research.

However, for the four countries at the top of the distribution, the percentage of research spending relative to the total education expenditure varies considerably. The United States and Canada, spending respectively 11% and 26% on research, are below the above-mentioned range; by contrast, Switzerland and Sweden, spending respectively 40% and 48%, are above it.

One consequence is that the annual expenditure per student excluding research in the United States is an outlier, largely exceeding that of the other OECD countries for all education spending, except research, per student. Another consequence is that the ratio between the distribution's extremes is even greater than for the indicator of total expenditure: a factor of 4 separates the United States (21,588 USD/PPP) and Italy (5314 USD/PPP).

For both the indicator of tertiary education expenditure per student excluding research (7673 USD/PPP) and the indicator of total expenditure (including research), France has a similar ranking (13th among 16) and a similar ratio (0.95) to the corresponding OECD Average.

The share of research spending in the indicator of annual expenditure per student, as evaluated by OECD, is calculated from the amount spent on research in education-related sectors, and this amount is divided by the number of students in the tertiary education system. The global evaluation of spending on education-related research is based on the "Frascati Manual" method and is published by OECD in *Main Science and Technology Indicators*.

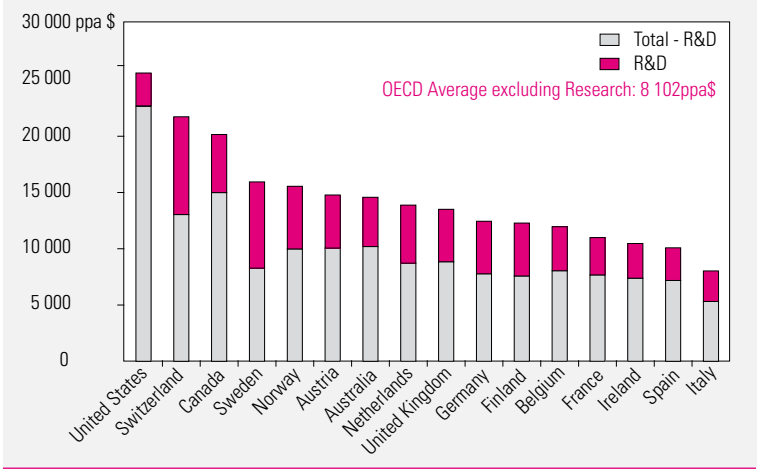
It should be noted that in France, around 45% of this expenditure (research lecturer salaries, current expenditure, investment), although characterised in this indicator as research spending in accordance with the Frascati method, counts as education spending in the methodology of the French education satellite account.

Hierarchies of annual expenditure per student by level of education (Graph 9)

Letting the annual expenditure per student equal 100 for primary education in all countries, we will now compare the relative spending index numbers for the other levels of education in the various countries.

On average in the OECD countries (those which responded for each expenditure level shown here), expenditure per student increases with the level of education. If we set the expenditure per student for primary edu-

Graph 8 – Comparison of annual expenditure per tertiary student on educational activities excluding research, and on research activities, 2005



cation equal to 100, the expenditure per student is 78 at the pre-primary level, 125 at the secondary level and 184 at the tertiary level. Therefore, on average for the OECD countries, spending per secondary student is 1.3 times higher than spending per primary student, and spending per tertiary student is 1.5 times higher than spending per secondary student.

The general hierarchy profile – higher annual expenditure per student at the tertiary than at the secondary level, and higher annual expenditure per student at the secondary than at the primary level – holds true in 15 of the 18 countries observed. However, these countries exhibit different degrees of variation depending on the level of education.

For pre-primary education, the average covers a wide range of national situations in the existing education systems. Only two countries spend slightly more per student at the pre-primary level than at the primary level: Germany (110) and the United Kingdom (101). For the other countries, the pre-primary spending index number ranges from 45 for Switzerland to 94 for the Netherlands. With an index number of 90, France is one of the few countries (along with Italy, Ireland, Spain, the Netherlands and the United States) for which spending per student in pre-primary education, while remaining less than that observed for primary education, is nonetheless close to the same level.

For all the countries considered – except Iceland – the secondary education index (base 100 for primary spending per student) varies between 109 for Sweden and 166 for France. This gives France the maximum ratio between the secondary and primary levels for average spending per student. Germany and Switzerland, with an index number of 152, have relative positions quite close to that of France. But France's position must be put into perspective by recalling that expenditure per primary student – the denominator of the index – is lowest in France, and second-lowest in Germany, of the 17 countries shown in this graph.

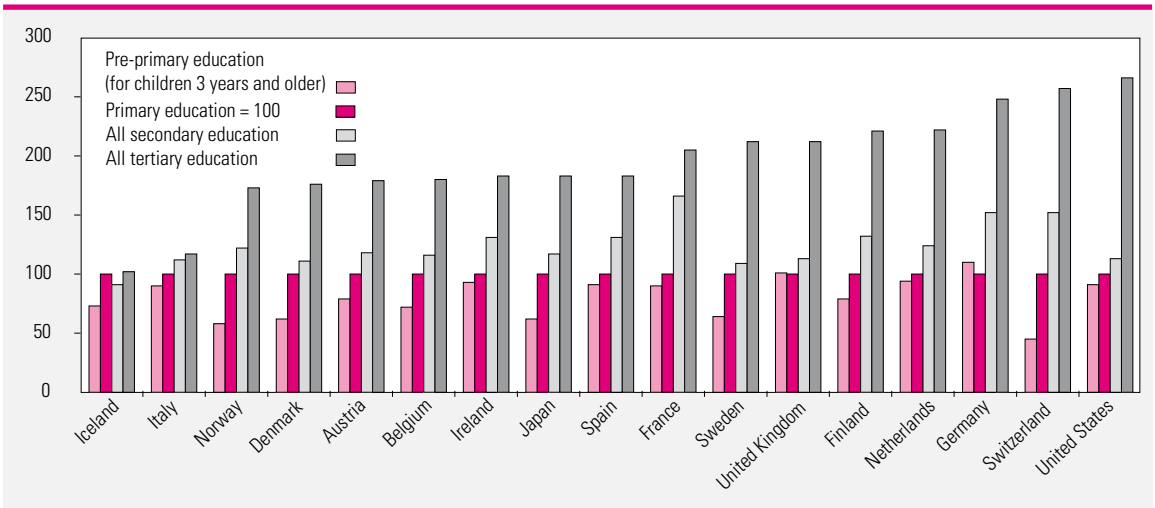
The index numbers for expenditure per student in tertiary education range from 102 for Iceland to 266 for the United States, with 117 for Italy. This means that the ratio of the tertiary relative to the primary level is 2.3 times greater in the United States than in Italy. With an index number of 205, France is 21 points above the index number calculated from the OECD Averages (184 for tertiary education).

If we now divide the index numbers for annual spending per student at the tertiary level by the index numbers at the secondary level, the results are 1.5 for the OECD Average and from 1.0 for Italy to 2.4 for the United States, with 1.1 for Iceland, 1.2 for France and a range of 1.4–1.9 for the other countries shown.

Thus France, which begins with a level of spending per student in primary education that is well below the OECD Average, has the following profile for expenditure per student: high between primary and secondary education, low between secondary and tertiary education, and above the OECD Average between primary and tertiary education.

By showing the profile of spending per student by education level and country, this indicator provides initial insight into the wide range of strategic national priorities set within the different education systems.

Graph 9 – Annual expenditure per student by level of education (2005)



Expenditure per student over the duration of studies, by level of education

Rather than the annual expenditure per student by level in the various countries, we will now consider the cumulative expenditure over the average durations of study in the different countries – i.e. the average theoretical durations of primary and secondary studies and the average calculated duration of tertiary studies. Spending over the duration of studies, in the various countries and for each major level of education was calculated by multiplying the annual expenditure per student by the average duration in number of years.

Despite its limitations, this indicator offers an additional coordinate for comparing education spending between countries: the duration of studies, which takes into account the specific organisation of each national education system. It therefore provides a logical complement to the insight gained from the previous indicator. We will examine it in three steps, looking first at primary and secondary education, then at tertiary education and finally, at the hierarchy by education level for this expenditure in the various countries.

Comparison of expenditure per student for the theoretical duration of primary and secondary studies (Graph 10)

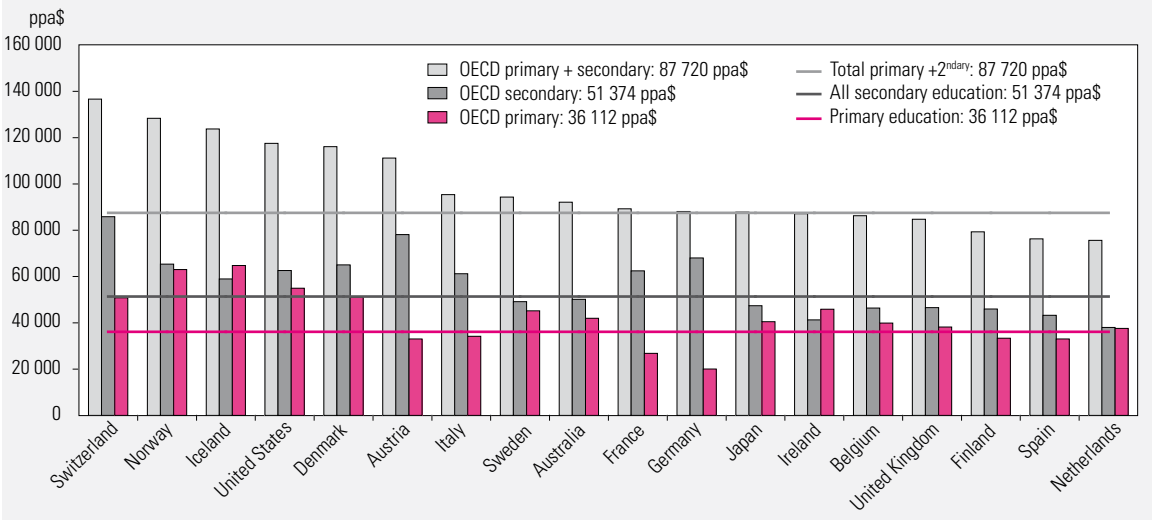
This graph shows the separated costs of primary and secondary studies on one hand, and the combined "primary + secondary" costs on the other. The combined "primary + secondary" duration largely corresponds to compulsory schooling in the different countries. Of the 19 countries selected, only Canada did not provide data for this indicator.

The duration of "primary + secondary" studies ranges from 11 years in the Netherlands to 14 years in Iceland. The duration in France is 12 years, but note that pre-primary education is not taken into account. In two thirds of the countries shown, the combined duration is more or less equally divided between the primary and secondary levels: 6 years in each for the United States, Sweden, Japan, Belgium, Finland, Spain, etc. In a few countries, there is a marked difference, for example in Germany (4 years at the primary level and 9 at the secondary level), Austria (respectively 4 and 8 years) and Italy (5 and 8 years), and to a lesser degree in France (5 and 7 years).

The cost of "primary + secondary" studies ranges from 75,604 USD/PPP in the Netherlands to 136,664 USD/PPP in Switzerland, corresponding to a ratio of 1.8, with an average of 87,720 USD/PPP for the OECD countries that responded on this indicator. Six countries stand out at the top of the distribution, exceeding the OECD Average by nearly 30% to nearly 60%. France, which ranks tenth among the 18 countries that responded, spends 89,280 USD/PPP, more than Germany (88,100 USD/PPP) by a small margin and slightly above the OECD Average (87,720 USD/PPP).

Examining expenditure over the duration of primary and secondary studies separately, we find that the

Graph 10 – Expenditure per student for the duration of primary studies and the duration of secondary studies, and for the combined duration of primary + secondary studies (2005)



results are more contrasted between countries due to the differences in duration of studies combined with the differences in annual expenditure per student. Thus, primary spending ranges from 20,055 USD/PPP in Germany to 64,778 USD/PPP in Iceland, corresponding to a ratio of 3.2; secondary spending ranges from 38,005 USD/PPP in the Netherlands to 78,132 USD/PPP in Austria, corresponding to a ratio of 2.3.

France, with an expenditure of 26,824 USD/PPP per student over an average theoretical duration of primary studies lasting 5 years – 25% lower than the OECD Average (36,112 USD/PPP) – is at the bottom of the distribution, ranking 17th among the 18 countries. But with an expenditure of 62,456 USD/PPP per student over an average theoretical duration of secondary studies lasting 7 years – 22% higher than the OECD Average (51,374 USD/PPP) – France is in the second third of the secondary education distribution, in seventh position.

Comparison of expenditure per student for the average duration of tertiary studies (Graph 11)

We now look at the OECD graph showing the total expenditure per student over the duration of tertiary studies as the sum of annual expenditures (for a given country, each section represents a year of tertiary studies, evaluated according to annual expenditure).

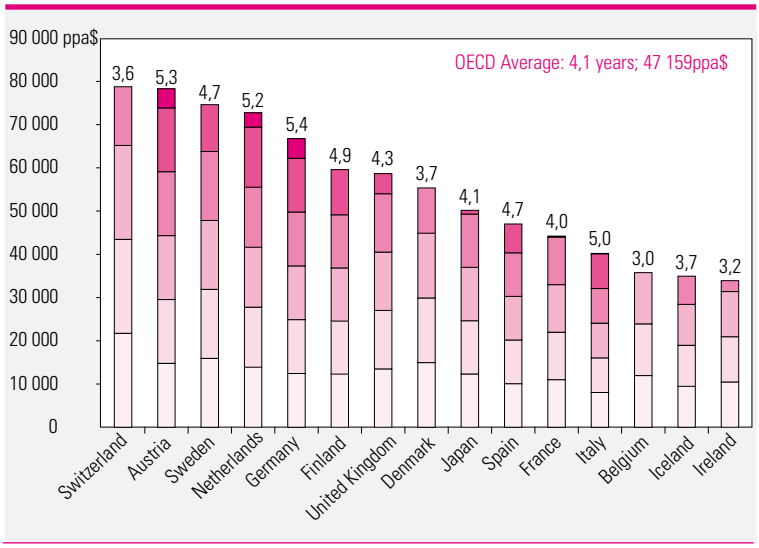
We immediately notice that data are missing for four of the 19 countries we selected: Canada and Australia as well as Norway and the United States, the latter two ranking first and fourth, respectively, for annual expenditure per student. Without these high-ranking countries, the value of the OECD Average has little meaning.

The duration of studies ranges from 3 years in Belgium to 5.4 years in Germany; France holds an intermediary position with an average duration of 4 years. Even when the absence of Norway and the United States is taken into account, the variation in the duration of studies redistributes the positioning compared to the annual expenditure ranking. Switzerland, given its very high annual expenditure and despite a rather brief duration (3.6 years), is at the top of the distribution. By contrast, Austria spends 78,308 USD/PPP due to its long duration (5.3 years) and is ahead of Sweden (74,629 USD/PPP over 4.7 years) and far ahead of Denmark, which ranks eighth with a cost of 55,348 USD/PPP over a duration of 3.7 years. Similarly, the Netherlands and Germany, with their long durations of study (respectively 5.2 and 5.4 years), have moved to fourth and fifth place. France, with a cost of 44,202 USD/PPP, ranks 11th among 15, surrounded by the same countries as for annual expenditure per student, well behind the United Kingdom (58,654 USD/PPP) and Germany.

The lack of data for the United States, Canada and Norway makes it difficult to comparatively analyse tertiary education spending in the various countries; the results would change considerably depending on the average duration of tertiary studies in these three countries, where annual expenditure per student is high. If the duration of tertiary studies in the United States was at the lower end of the observed range (3 years), based on current data the indicator of expenditure over the average duration of tertiary studies would still position the United States, with 73,110 USD/PPP, at the top of the distribution, but closer to Sweden and the Netherlands. If on the contrary, the duration was at the upper end of the range (5.4 years), the United States would spend 131,598 USD/PPP, clearly making it an outlier relative to the other OECD countries.

Graph 11 – Cumulative expenditure per student over the average duration of tertiary studies (2005)

(number of sections corresponds to the number of years studied)



Hierarchy of expenditure per student over the average duration of studies, by level of education and by country (Graph 12)

Similar to the approach used for annual expenditurein *Graph 9*, the expenditure per student over an average theoretical duration of primary studies was set to 100 for all countries in order to compare the relative spending index numbers for duration at the other education levels. This graph only takes into account the same 15 countries as the previous graph.

The graph shows that in 13 of the 15 countries – not including Ireland (90) or Iceland (91) – the expenditure per student for the duration of secondary studies is greater than for the duration of primary studies. The index numbers for the expenditure per student over the duration of secondary studies thus range from 90 (Ireland) to 339 for Germany, representing a ratio of 1 to 3.8. With an index number of 233, France ranks third of the 15 countries, far behind Germany and after Austria (233). This puts into perspective its position at the top of the distribution for the ratio of annual expenditure per student at the secondary level relative to the primary level.

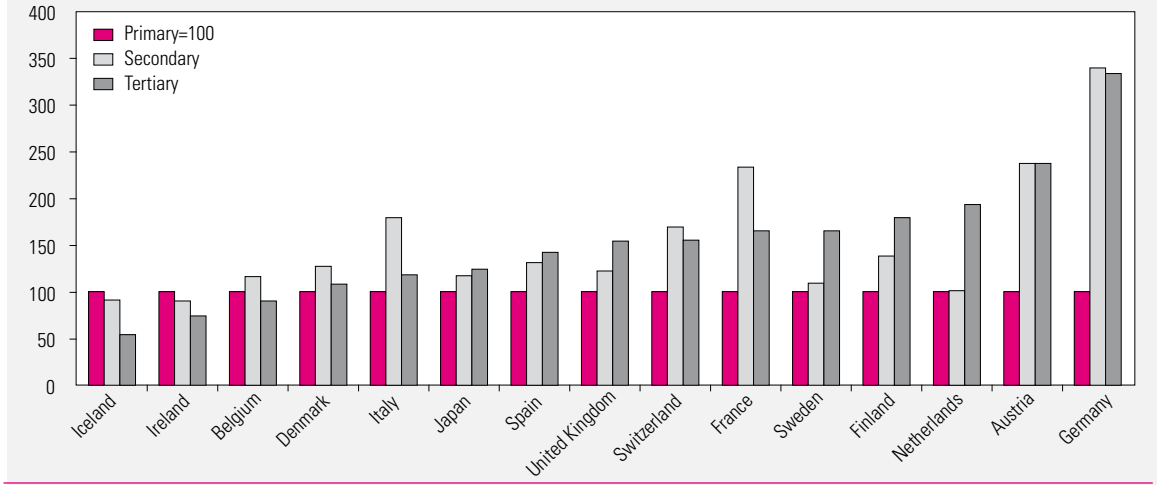
Similarly, spending per student over the duration of tertiary studies, for the 12 countries excluding Iceland (54), Ireland (74) and Belgium (90), is greater than spending per student over the duration of primary studies. The index numbers for the duration of tertiary studies thus range from 54 (Iceland) to 333 for Germany; here the ratio is 1 to 6.2. With an index number of 165, France ties for fifth place with Sweden, far behind Germany (333) – Germany also starts with a low annual expenditure per student in primary education – and far behind Austria (237), and behind the Netherlands (193) and Finland (179).

If we now divide the index numbers for spending per student over the duration of tertiary studies by those for spending per student over the duration of secondary studies, the results range from 0.6 for Iceland to 1.9 for the Netherlands. For seven of the 15 countries shown, this ratio is less than 1, which means that the annual expenditure per student for the duration of tertiary studies is less than for the duration of secondary studies. This is the case for France, which has a ratio of 0.7 and ranks 13th among the 15 countries, at the same level as Italy and ahead of Iceland. Both Germany and Austria have a ratio equal to 1, and thus an annual expenditure for the duration of tertiary studies that equals their spending for the duration of secondary studies, whereas they have an even greater ratio than France for spending over the duration of secondary studies relative to spending over the duration of primary studies. What distinguishes France in its profile of expenditure per student over the duration of studies by education level is less a matter of high secondary spending, which is even more pronounced in Germany and Austria, and more a matter of low primary spending – a trend also shared by Germany – as well as relatively low spending per student over the duration of tertiary studies.

Public expenditure on education in OECD indicators

The observations on the previous indicators relate to spending on educational institutions regardless of the funding source. Whether funding is

Graph 12 – Expenditure over the theoretical duration of studies by level (2005).



public (national government, regional and local authorities, other public administrations) or private (households, businesses, etc.) is a structural aspect of the education system that plays an important role in its economic and social impact: is the community's investment in education assumed by all members regardless of the beneficiaries, or is it assumed individually by the concerned beneficiaries?

Public expenditure on educational institutions as a percentage of GDP

If we re-create the map in *Graph 1*, this time comparing public expenditure on educational institutions as a percentage of GDP and national wealth as measured by GDP per capita *(Graph 13)*, we obtain a map in which the countries are as dispersed as in *Graph 1* but have changed considerably in their relative positioning.

The OECD average for public expenditure on educational institutions as a percentage of GDP is 5.0% (rather than 5.8% for the total expenditure).

For public expenditure on educational institutions as a percentage of GDP, five of the 11 countries with a GDP per capita below the OECD average – Poland, Mexico, Portugal, New Zealand and Hungary – dedicate a slightly greater percentage of their GDP to public spending on education than the OECD average, in a range of 5.4% to 5.1%. The six other countries of this group, including Italy and Spain, are well below the average and lie in an interval from 4.3% for Italy and Korea to 3.7% for the Slovak Republic. Korea, which funds a very large proportion of its education spending through private sources, ranks third in *Graph 1*, its total education expenditure representing 7.2% of its GDP, but on this indicator, South Korea is far below the OECD average, in 19th position among the 28 countries with available data.

The situation has also changed for the 17 countries whose GDP per capita is higher than the OECD average. Eleven allocate a higher percentage of their GDP to public expenditure on educational institutions than the OECD average. Not counting Belgium (5.8%), the top six countries include the five Northern European nations: Iceland (7.2%), Denmark (6.8%), Sweden (6.3%), Finland (5.9%) and Norway (5.7%), with France and Switzerland tied for sixth place (5.7%).

The countries for which the percentage of public expenditure on education is considerably below the percentage of total expenditure on education, relative to GDP, and which are below the average for this indicator, are the United States (4.8%) which drops from third to 11th place; Canada (4.7%) which drops from fifth to 14th place; Australia (4.3%) which finds itself 16th; and Japan (3.4%) which falls to last place.

Italy, Germany and Spain form a cluster, far from France, with 4.3%, 4.2% and 4.1% respectively, whereas the United Kingdom is right at the OECD average with 5.0%.

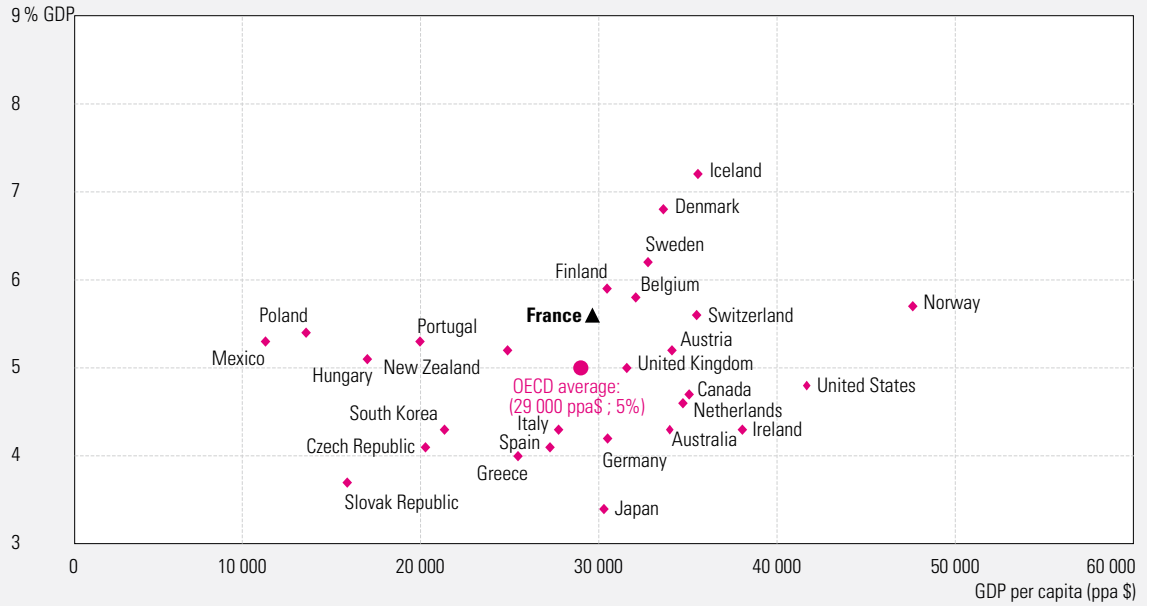
As stated previously, this aggregate of public expenditure on educational institutions includes all direct public spending on the institutions, together with a proportion of another public expenditure aggregate, that of

The different indicators of public spending

Currently, the levels of public spending used in the OECD indicators are as follows:

- **public expenditure on educational institutions.** This is the scope of public spending used in the aggregate «Expenditure on educational institutions as a percentage of GDP». In addition to the direct public spending explained below, this scope includes the share of public subsidies for education paid to households which households then use to pay tuition fees at educational institutions, as well as fees for ancillary services that are at the expense of households. In most countries, household subsidies are generally not highlighted, making it necessary to use a more or less realistic criterion to divide all the public subsidies for students and households into those used for educational institutions and those used for education-related expenses outside educational institutions. This indicator represents initial public funding for educational institutions;
- **direct public expenditure on educational institutions.** This indicator, offering solid measurement, equals the sum of public funds allocated directly to educational institutions for the three areas of educational activity: instruction and related activities, research and development, and ancillary services (e.g. housing and meals). This indicator represents final public funding for educational institutions;
- **total public expenditure.** This indicator equals the sum of direct public expenditure on educational institutions and all public subsidies for students and households, regardless of whether these subsidies are used for education-related expenses within educational institutions (tuition or fees for ancillary services) or outside educational institutions (related goods and services such as textbooks and supplies, individual tutoring, school transport and certain living expenses, etc.). This indicator represents total initial public funding for education..

Graph 13 – Public expenditure on educational institutions as a percentage of GDP and GDP per capita (2005)



public subsidies for students and households. The proportion corresponds to the share of public subsidies used by households to pay the various fees at institutions.

Respective proportions of public and private expenditure on educational institutions by level of education

This approach involves dividing public expenditure on educational institutions between direct public funding and private funding (by final funding entities, i.e. after transfers), for primary and secondary education *(Graph 14)* and also for tertiary education *(Graph 15)*.

It should be noted that spending on educational institutions is the only level of education expenditure for which data is currently available on the distribution of public and private funding.

Overall, the proportion of final public funding for the primary and secondary levels – which encompass compulsory education in all the countries – is on average higher (91.5% of the total expenditure) than for tertiary education (73.1%). We also observe greater uniformity in the proportion of public funding across the various countries, given that the distribution lies between 99.9% for Sweden and 81.8% for Germany, resulting in a ratio of 1.2. In contrast, national differences are more pronounced in tertiary education, with considerable variation in the proportion of private funding, i.e. education spending by private entities, primarily students and their families. At this level of education, the relative share of public funding ranges from 96.7% for Denmark to 33.7% for Japan, resulting in a ratio of 2.9.

Specific characteristics of the national strategies of public funding can be seen according to the level of education. Scandinavian countries have a high level of public funding for tertiary as well as primary and secondary education (note that we do not have Norway's data). For primary and

Initial funding, final funding

Initial funding is the funding before the current transfers between the various economic agents are taken into account. It thus represents the real costs assumed by each agent.

For example, public subsidies for households (e.g. scholarships/grants) constitute a transfer by the national government and local authorities to households. If these subsidies are allocated to the national government and to the local authorities which transfer them as part of the real costs assumed by public agents, and if the expenditure of households is evaluated before the transfers, i.e. before receipt of public subsidies, then the subsidies are considered initial funding.

If, on the other hand, public subsidies for households are included in the expenditure of households, and subtracted from the expenditure of public agents, they are considered **final funding**.

secondary education, Sweden ranks first with public funds accounting for a relative proportion of 99.9%, Finland ranks second (99.2%), Denmark fourth (97.9%) and Iceland sixth (96.6%). Scandinavian countries lead on tertiary education as well; Denmark ranks first with a public funding proportion of 96.7%, Finland ranks second (96.1%), Iceland fourth (91.2%) and Sweden sixth (88.2%). Thus, for primary and secondary as well as tertiary education, the contribution of households to spending on educational institutions is very low to non-existent.

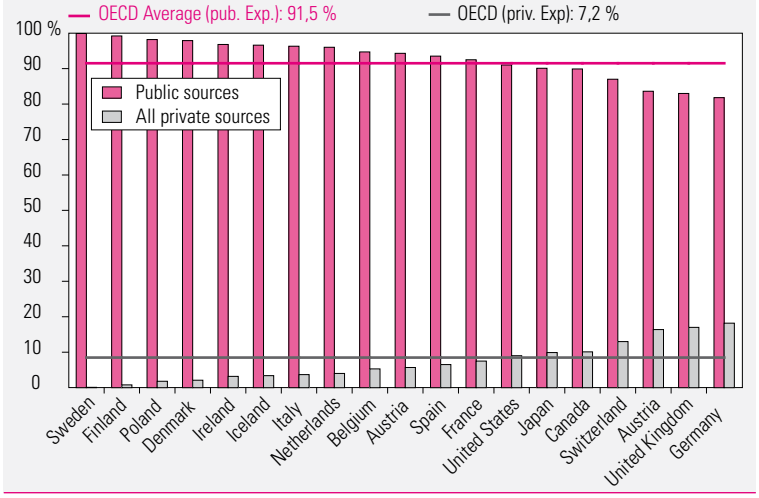
For tertiary education, Japan and the United States have a higher proportion of final private funding (respectively 66.3% and 65.3%) than the corresponding proportion of public funding (respectively 33.7% and 34.7%), despite the fact that for primary and secondary education, the relative proportion of their private funding (respectively 9.0% and 9.9%) differs little from the OECD average (7.2%). A higher share of private funding than the OECD average is also observed for Italy, the United Kingdom, Canada and Australia – in increasing order. In all four countries, the increase in tuition fees borne by households is a current issue. For three of these five countries (Canada, Australia and the United States), we do not have data for the average duration of tertiary studies and therefore lack the corresponding cost data as well (*cf. Graphs 11* and *12*).

For all countries with a relative proportion of private funding for tertiary education which exceeds the OECD average (26.9%), the proportion of private funding at the tertiary level also exceeds that for primary and secondary education, even when there is considerable private funding at the primary and secondary levels, as is the case in Australia.

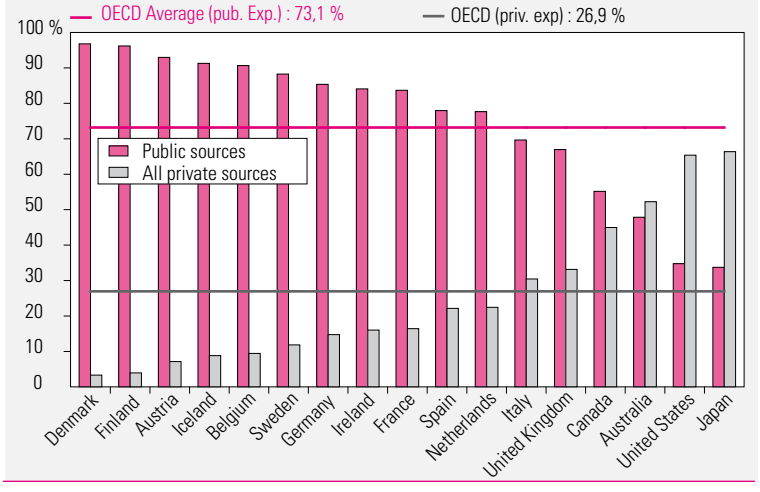
Only Germany has a lower share of private funding in tertiary education (14.7%) than in primary and secondary education (18.2%) due to the important role of businesses in funding the secondary education system.

In France, the proportion of public funding is only slightly higher than the OECD average for primary and secondary education (92.5% versus 91.5%), while it is higher than the OECD average for tertiary education (83.6% versus 73.1%).

Graph 14 – Relative proportions of public and private funding allocated to educational institutions, 2005
Primary, secondary and post-secondary non-tertiary education



Graph 15 – Relative proportions of public and private funding allocated to educational institutions, 2005
Tertiary education



Total public expenditure and public subsidies for the private sector

As stated above, the indicator of total public expenditure represents all public spending related to educational activities. It therefore equals the direct public expenditure on educational institutions, added to the subsidies paid to households which they then use for expenses within educational institutions or for education-related expenses outside educational institutions. OECD does not currently publish

an indicator for the amount of private spending on education by households outside educational institutions, which could be used to develop a comparable indicator of total private spending on education. Based on current available data, the various breakdown methods for total public expenditure only make it possible to characterise the internal structure of national mechanisms for public spending, in particular the proportions of direct public spending and public subsidies for households.

International comparison of the financial aid provided by public authorities to students or their families for education expenses is not very useful for developing a synthetic indicator.

To start with, a comparative evaluation of subsidy systems must take into account how national education systems are organised and funded. The proportion already covered by public spending which goes towards the education system itself, whether it funds education expenses (tuition, etc.) or expenses related to education or student living costs (free or reduced-price meals, housing, in some cases textbooks, etc.), considerably modifies the expenditure borne by students and their families.

Furthermore, public subsidy measures targeting students vary widely, are specific to each country and are not all considered in the same manner in international statistics. Thus, the various national mechanisms for household subsidies are difficult to cover equally in financial indicators. OECD work groups are currently working on this issue, and initial versions of new indicators have already been published.

Therefore, what OECD includes as public subsidies for households can be broken down into two major categories: 1) scholarships/grants and other benefits, and 2) loans. These two categories are considered by major level of education: primary and secondary education on one hand, and tertiary education on the other. As stated above, the scholarships/grants and loans addressed by this indicator include all public subsidies for households, regardless of whether these subsidies are spent on education within or outside educational institutions.

Public subsidies for the private sector in primary and secondary education (Graph 16)

At the level of primary and secondary education, nearly all the public subsidies for families consist of scholarships or benefits rather than loans. The proportion of scholarships in the total public expenditure on education is very small, given that the OECD average is 3.2% for scholarships and extremely small for loans (0.5%). In general, public funding for the primary and secondary level mostly consists of direct public expenditure on educational institutions *(cf. Graph 14)*. But in addition, a share of spending which varies according to country is dedicated to education-related goods and services (textbooks, work clothing, school transport, etc.).

Among the countries where direct public expenditure is accompanied by a public subsidy system for households in which scholarships constitute a considerable percentage of public spending on education, we find the three Scandinavian countries, already among the countries with the largest proportion of public expenditure on educational institutions *(cf. Graph 14)*. Denmark offers a system of scholarships representing 11% of its total public spending on education. Norway offers considerable financial aid for students as well, but distributes it equally between scholarships (3.6%) and loans (3.5%). Finally, Sweden's system primarily involves scholarships (4.9%), but also a small percentage of loans (0.9%).

Ireland offers its primary and secondary students considerable financial aid, exclusively in the form of scholarships (9.4%), even though the relative share of public spending

Public subsidies for students and households taken into account in the UOE (UNESCO-OECD-Eurostat) statistics

Included:

- **scholarships/grants** in their entirety, whatever their purpose.
- **loans** in their entirety, but on a gross basis, i.e. without subtracting or netting out any repayments made. This practice introduces accounting distortion when subsidies granted by countries whose subsidy system is mainly based on scholarships/grants are compared with those granted by countries whose subsidy system is mainly based on loans. The result is a relative over-estimation of subsidies in countries that mainly offer loans.
- **amount of family benefits,** provided that allocation is contingent on student status and not on age alone.
- **Specific financial aid** (housing, meals, transport, etc.), provided that allocation is contingent on student status.

Not included:

- **no fiscal measures are taken into account,** regardless of the corresponding mechanism and even if contingent on student status.
- **various benefits** (housing subsidies for example) primarily aimed at students, unless their allocation is contingent on student status.

on educational institutions is high in Ireland (96.8%, *cf. Graph 14)*.

Finally, although Germany and the United Kingdom both have a lower proportion of public expenditure on educational institutions than the OECD Average (respectively 83.0% and 81.8%, *cf. Graph 14*), they have very different positions on financial aid for primary and secondary students. With its system of scholarships/subsidies accounting for 0.9% of public expenditure on education, the United Kingdom spends 0.09% of its GDP on financial aid for primary and secondary students, whereas Germany, with a system of scholarships/subsidies accounting for 4.8% of its public spending on education, spends 0.14% of its GDP on this type of aid.

France is slightly above the OECD average, with 3.3% of its public spending on education dedicated to scholarships and subsidies for households (particularly the *allocation de rentrée scolaire*, or school expense allowance). These scholarships and subsidies account for 0.13% of its GDP, a proportion nearly identical to that of Germany.

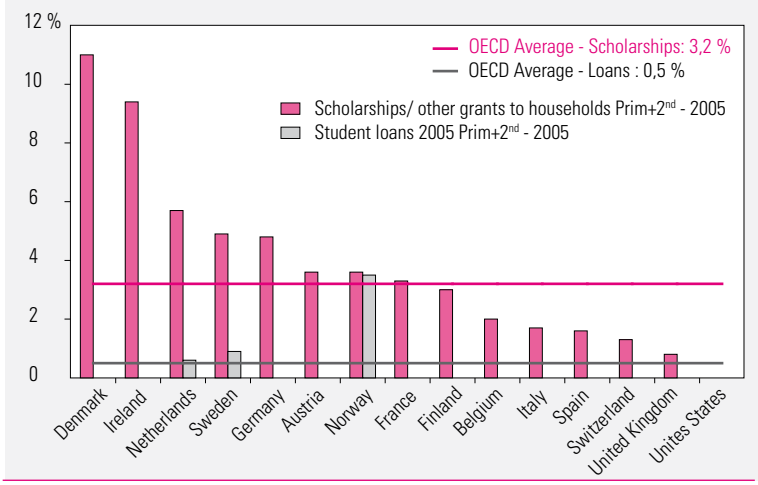
The United States does not have public subsidies for households at this level of education; primary and secondary schools receive 91% of their funding from public sources.

Public subsidies for the private sector in tertiary education (Graph 17)

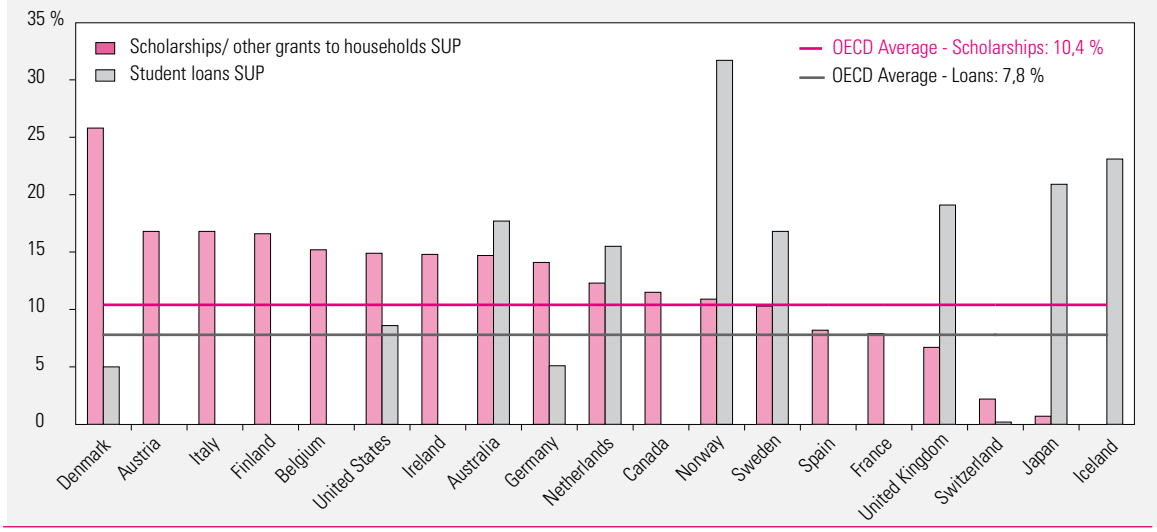
For tertiary education and despite the narrow scope of public subsidies for households taken into account in the OECD indicators, *Graph 17* shows the relative importance of this funding mechanism as a percentage of the total public expenditure; in eight of the 19 countries, these subsidies together represent more than 25% of total public spending on education.

If we consider only scholarships/grants and benefits, i.e. non-reimbursable aid, they constitute the sole component in the subsidy mechanism for eight of the 19 countries considered, including Austria, Italy,

Graph 16 – Scholarships and Loans to students as a percentage of total public expenditure on education
Primary, secondary and post-secondary non-tertiary education, 2000



Graph 17 – Scholarships/Grants and Loans to students as a percentage of total public expenditure on education
Tertiary education, 2005



Finland and Belgium, for which they represent more than 15% of total education spending. For Denmark, they alone exceed one quarter of the total public expenditure (25.8%); for eight other countries, they range from 14.1% (Germany) to 16.8% (Italy and Austria).

Only six of the 19 countries, including France (7.9%), are below the OECD Average (10.4%). France does not offer public subsidies to students in the form of loans. However, beyond scholarships/grants, financial aid to students and their families includes two types of housing subsidies – *allocations de logement social* and *allocations personnalisées au logement* – which concern one third of students and correspond to around 90% of the amount of scholarships/grants. Financial aid in France also includes tax benefits for families with children enrolled in tertiary education (fixed benefits and extension of the increase in family income splitting), which represent on average around 70% of the amount of scholarships/grants. If these subsidies were taken into account, the financial aid for families as a percentage of public spending on education in France would increase from 7.9% to around 17.5%.

For certain countries, student loans are an important component of the subsidies shown in this indicator. These loans are reimbursed at a later time under conditions which vary from one country to another. In four of the 19 countries, loans account for one fifth or more of total public spending on education at the tertiary level.

Norway has the highest proportion (31.7%), combining loans with scholarships/grants (10.9%). The next highest-ranking countries are Iceland and Japan, where loans represent respectively 23.1% and 20.9% of public spending on education. Iceland does not have a system of scholarships/grants, and in Japan, scholarships/grants are almost non-existent (0.7%).

In the United Kingdom, loans represent 19.1% of public spending on education and scholarships/grants, 6.7%.

This combined system of loans and scholarships/grants is also found in varying proportions in Australia (respectively 17.7% and 14.7%), Sweden (16.8% and 10.3%) and the Netherlands (15.5% and 12.3%); the proportion of loans is lower in the United States (8.6% and 14.9%), Germany (5.1% and 14.1%) and Denmark (5.0% and 25.8%).

As stated above, the OECD indicators always use the gross value of loans, without taking into account the subsequent repayments. However, work is currently underway to incorporate these repayments in the indicators published in *Education at a Glance*. ■

What do international assessments show about education systems' functioning?

An illustration with the question of grade retention

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Since several years, there has been a wide spread of the results from international students' assessments, such as PISA or PIRLS. However, for media and politics, attention is generally focused on the league tables, whereas these rankings of countries on a single and common dimension do not provide very instructive information. The enlightenment of the data of the international assessments implies a more detailed comparative approach than a simple ranking of countries. This article aims to use and to interpret the results from the international assessment in order to study a policy on education: in this case, the grade retention.

In France year-repeating has been an integral part of the education system for many years but the use of year repeating remains today an issue that "divides". For those directly affected, the pupils who repeated a year, the subjective experience of doing this varies but, objectively, it makes for a stigmatising event which disadvantages them over their school career (Cosnefroy & Rocher, 2004). This use of year repeating also divides the teaching profession which, while being objectively aware of the educational limitations of the practice, shows an undiminished conviction in its fundamental usefulness (Crahay, 1996). It is researchers, alone, who seem to be unanimous that it is simultaneously ineffective, expensive and, at the least, of uncertain impact (Holmes & Mathews, 1984; Sheppard & Smith, 1990; Jimerson, 2001).

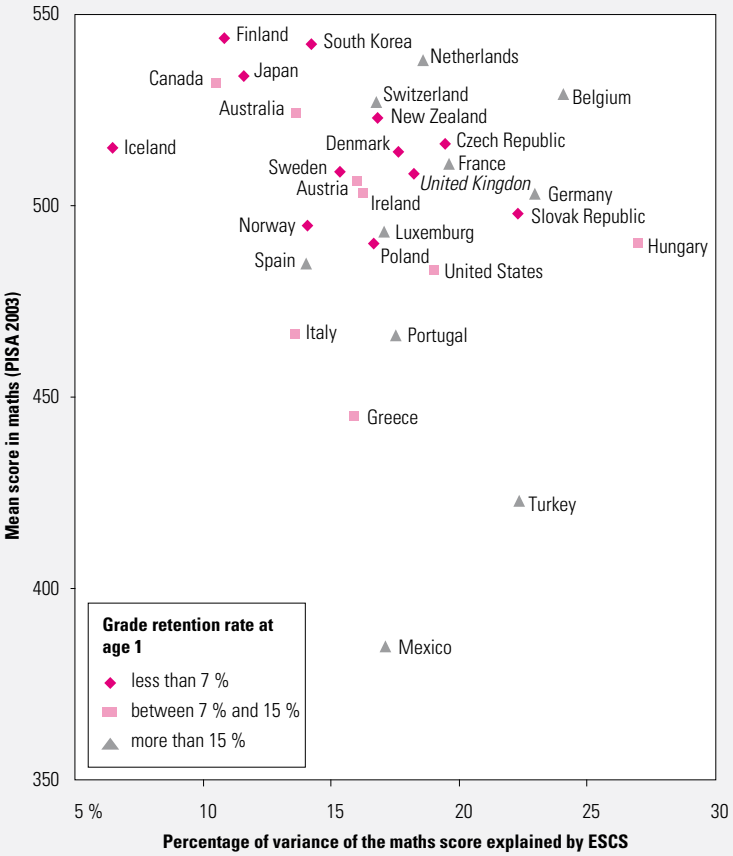
However, in spite of the many research studies pointing in the same direction, for many, year repeating remains a practice which is, even if not effective then at least necessary. Effective for the pupils having difficulties because it would provide a means for remedying their weaknesses. Necessary for teachers because it would reduce the diversity of level of performance of the pupils and so would make teaching more manageable. Finally, it appears that for some, it can be an incentive for the less motivated pupils. Yet there are countries where year repeating is exceptional, indeed not allowed, and where automatic progression to the next year is favoured (ie automatic promotion). This is the case for example in the UK, Ireland, the Nordic countries (Norway, Sweden, Finland, Denmark, Iceland) and Japan. Do pupils in these countries perform less well and have a higher spread of scores?

The PISA international attainment study is used in different ways to provide some evidence on the question of grade retention (OECD, 2004)[1]. In the first section, global results ~ performance and equity ~ are shown in relation with the grade retention policy. The second section is concerned more specifically with looking at the range of French pupils' scores: the performance of pupils "on time"[2] and

NOTE

1. PISA 2003 data are analyzed here because PISA 2006 data do not give sufficient information about students' careers.

Figure 1 - Mathematics performance and variance in maths scores attributable to socioeconomic status, by prevalence of grade retention in OECD countries



Note: Detailed data are in annex.

Source: OECD, PISA 2003.

"late" are compared on the international scale. Then, in the final section, a comparison of results from UK and France looks in more detail at the performance differences between two countries with contrasting policies on pupil progression.

INTERNATIONAL COMPARISONS

Figure 1 plots OECD countries' positions according two dimensions: the level of performance, with the PISA 2003 mean maths score, and the level of equity, with percentage of variance in maths scores attributable to students' socioeconomic backgrounds. The countries' position on this "map" is interesting in itself and shows well-known results: for example, Finland, situated in the north-west area, succeeds in combine performance and equity; at the opposite, Germany or Hungary, situated in the south-east area, have poor mean performance and high level of scores' disparities according the socioeconomic background.

An additional information is given on the map: the countries are distinguished according the percentage of "late" pupils at age 15. It can be seen that countries which have automatic progression generally have better results ~ in terms of performance and equity ~ than countries which use year repeating. Of course, this is a global pattern and not a deterministic link. Just because Finland or Japan have better scores and more equitable in mathematics in PISA and that, in contrast, Germany and France are below on this two aspects is not enough to condemn year repeating: many factors influence the average attainment of pupils and the equity level in a country (economic, social, cultural, etc). Furthermore, a policy like the practice of automatic progression is part of a larger whole. It implies, in fact, a different organisation of the school system, an organisation which itself can markedly differ between two countries accustomed to automatic progression, as for example, Finland and Japan. So, it is impossible to say that the attainment of Finish pupils would be lower if some of them had repeated a year. Equally, it is not possible to work out the change in French pupils' performance if year repeating were immediately suppressed.

These studies do, however, allow us to say ~ and this is an important result ~ that year repeating is not the answer to academic failure. To those who think that it is better to keep back a child rather than to "let them sink" in the next class up where their problems might get worse, there is an "alternative" model available to them from countries which favour automatic progression and in which we do not see a higher proportion of pupils in difficulty than elsewhere, indeed there are fewer. The results from *figure 1* also show that year repeating is not the best way of dealing with pupils' socioeconomic diversity. If we take the percentage of variance of the

NOTE

2. The term "on time" refers to pupils who have never repeated a year and the term "late" to pupils having repeated a year at least once during their school career.

PISA score attributable to the socioeconomic background, we see similar or lower levels in the countries that have automatic progression.

Position of French pupils on the international ranking

In France, whatever the stage in their schooling, pupils who are "late" have, on average, markedly worse results than pupils "on time" (*cf.* Cosnefoy & Rocher, 2004). This difference appears even more starkly in the PISA study. Indeed, the PISA study has the specific aim of assessing pupils of the same age, in this case, 15 whatever grade they are in. In France, at age 15, pupils "on time" are mainly in the first year of the academic *lycée* (49.6%) as well as in the vocational *lycée* (7.4%). Pupils who are "late" are still in the final year of *collège* (34.5%), some even in the second to final year (5.2%) if they have repeated two years. Note that a small proportion of pupils in this age group are ahead of time, that is in the second year of the *lycée* (2.2%) and that a tiny minority are very behind or are on a special course (1.1%).

Table 1 shows the ranking of French pupils in the international league table for mathematics by the school grade they are in at age 15. Overall, France, scoring 511, comes slightly above the average of the countries taking part. It is striking to see the differences in performance by school grade: French pupils "on time" at age 15 in the first year of the academic *lycée* get excellent results, better even than the Finns. In contrast, pupils who had repeated one year are at the bottom of the table, just above Greece. Pupils still in the penultimate year of *collège* (repeated two years) are at the level of Mexico, one of the poorest performing countries in the study. Pupils in the first year of the vocational lycée are a distinct group: they are not representative of pupils in that year as the great majority of those in this year group are generally at least one year behind. These pupils score below the international average and are fairly close to pupils who have repeated a year.

The international ranking of French pupils by whether they have repeated a year enables us to see the size of the differences in performance between these groups of pupils. More than one standard deviation separates pupils on time and one year late. Just on its own, the variable "lateness" explains

Table 1 - French students on the PISA 2003 mathematics' scale

1st year *lycée*, academic on time (age 15)	**564**
Finland	544
South Korea	542
Last year *collège* on time (age 14)	**540**
Netherlands	538
Japan	534
Canada	532
Belgium	529
Switzerland	527
Australia	524
New Zealand	523
Czech Republic	516
Iceland	515
Denmark	514
France (age 15)	**511**
Sweden	509
United Kingdom	*508*
Austria	506
Germany	503
Ireland	503
OECD Average	**500**
Slovak Republic	498
Norway	495
Luxemburg	493
Poland	490
Hungary	490
1st year *lycée*, vocational on time (age 15)	**486**
Spain	485
United States	483
Portugal	466
Italy	466
Final year of *collège* 1 year late (age 15)	**454**
Greece	445
Turkey	423
Second to final year of *collège* 2 years late (age 15)	**401**
Mexico	385

Table 2 - Distribution and score (average and standard deviation, PISA 2003) of pupils aged 15 in UK and France by year of schooling

	England			France		
School year	Percentage	Score in mathematics	Number of years of school	Percentage	Score in mathematics	Number of years of school
Grade 9				34,5 %	454 (72)	10
Grade 10	37,8 %	499 (91)	10	57,0 %	553 (73)	10
Grade 11	62,2 %	514 (93)	11			

close to 40% of the overall variation in performance of French pupils[3]. That leads, furthermore, to questions about what significance to give to the overall French average so great is the difference in scores between these sub-groups of pupils.

It is, however, important to note that the differences by whether a pupil has repeated a year are magnified since pupils in the final year of *collège* have not gone through the curriculum for the first year of the general *lycée*. So, part of the significant gap which separates these two groups can be explained by the education provided in the first year of the *lycée*. In order to quantify this effect, an additional sample had been selected, representative of the pupils from the final year of *collège*, whatever their birth year. These pupils participated to the PISA study as well. It can be seen that the gap between the "on time" pupils from the final year of college, age 14, and the "on time" pupils from the first year of lycée, age 15, is weak compared to the gap between "on time" and "late" pupils, age 15 (24 points on 110). This result shows that year repeating is not a "solution" to academic difficulties because the majority of one year repeaters will not be able to get back to the average attainment level of their schoolfellows.

Comparison of two different education systems as regards year repeating

In France, pupils aged 15 fall into two very different groups: the first consists of pupils who have never repeated a year, who do excellently; the other consists of pupils who have repeated at least one year during their schooling and who perform poorly.

The comparison of two education systems where pupil pathways were organised in different ways is difficult to establish in a proper way (Goldstein, 2004) but it gives interesting results. We will limit ourselves here to the analysis of the results from two systems which differ markedly on the use of year repeating during schooling, England and France.

So, in France, pupils start the first year of primary in September of the year when they are aged 6. Over the following years, some will end up repeating a year, others will not. This is why we see, for the same age, pupils educated to different levels of schooling. In England, there is no year repeating and yet pupils born in the same year are also to be found at different education stages. This is because entry to school depends on pupils' month of birth. So, for a given year of birth, pupils born in January to August start school in September and pupils born in between September and December start school in the following year, one year later.

Furthermore, French pupils born in the same year have spent the same number of years in compulsory schooling. In contrast, in UK, pupils aged 15, for example, are taught in two school grades and have not spent the same number of years in compulsory schooling. In addition to this, most British pupils start compulsory school in their fifth year.

Thus, PISA 2003 shows that, 37.8% of English pupils aged 15 are in Year 10 and 62.2% in Year 11 *(table 2)*. In France, we find, as noted above, 34.5% of pupils in Year 9 (final year of *collège*) and 57% in year 10 (first year of the academic or vocational *lycée*).

In line with what has been said earlier, in France the difference in score between grade 9 (final year of *collège*) and grade 10 (first year of the academic or vocational *lycée*) is very high (553 compared to 454). In England, on the other hand, there is a slight difference in mathematics between one year and the other. This result might seem surprising but it certainly does not mean that education in Year 11 brings no benefit to pupils. In fact this has to be seen as the logical

NOTE

3. This phenomenon is not specific to France. The same analysis had been conducted in two countries with high level of grade retention rate: in Spain (Box, 2003) and in French community of Belgium (Lafontaine *et al.*, 2003). Score differences between pupils "on time" and one year late pupils is also about one standard deviation in these two countries.

	Mean score in mathematics	Standard deviation	Percentage of 15-year olds who have repeated at least once*	Total variance in maths scores attributable to differences in ESCS
Iceland	515	90	0,0	6,5
Norway	495	92	0,0	14,1
Japan	534	101	0,0	11,6
South Korea	542	92	0,5	14,2
United Kingdom	*508*	*93*	*2,1*	*18,4*
Slovak Republic	498	93	2,5	22,3
Czech Republic	516	96	2,6	19,5
Finland	544	84	2,8	10,9
Sweden	509	95	3,4	15,3
Denmark	514	91	3,4	17,6
Poland	490	90	3,6	16,7
New Zealand	523	98	4,5	16,8
Greece	445	94	7,0	15,9
Australia	524	95	9,0	13,7
Hungary	490	94	9,5	27,0
Austria	506	93	9,6	16,0
Canada	532	87	9,7	10,5
United States	483	95	11,3	19,0
Ireland	503	85	13,8	16,3
Italy	466	96	15,0	13,6
Turkey	423	105	17,3	22,3
Germany	503	103	20,3	22,8
Switzerland	527	98	21,6	16,8
Mexico	385	85	28,4	17,1
Netherlands	538	93	28,4	18,6
Spain	485	88	28,6	14,0
Portugal	466	88	29,5	17,5
Belgium	529	110	29,5	24,1
Luxemburg	493	92	37,9	17,1
France	511	92	38,3	19,6

* Note: Countries are presented in ascending order according to the retention rate at age 15. The percentage of 15-year old students who have repeated at least once is based on students' responses to the PISA background questionnaire. Because these numbers are based on self-reports, they are a proxy for the countries' retention policies. ESCS is a composite index of the socio-economic backgrounds.

consequence of the choices made in the design of PISA which relates to "real-life situations" and not to school curricula. This finding is in accordance with comments made above on the learning gain from an extra year's education which, compared with other variables, is very small.

As regards the overall spread of scores for 15 years old pupils, the two countries are similar (standard deviation of 93 in UK and 91 in France). However, this dispersion is not made up in the same way in the each country. In France, results for pupils in grade 9 (final year of *collège*) tend to be low and narrowly spread (standard deviation of 72) and they are high and narrowly spread for grade 10 (first year of *lycée*, standard deviation of 73). The position in UK is different: average scores of pupils in grades 10 and 11 are similar and, within each grade, widely spread (standard deviation of around 90 for both grades).

Generalising from these results would point to the following conclusions. In UK, it is as if the variability in pupil performance was a "natural" feature of the system: from one education level to the other there are very high and very low attainers in the same group. In France, diversity of pupil scores does not seem to be handled in the same way: the use of year repeating means that the lowest attaining pupils make up a homogenous group and are educated to a lower level of schooling than the highest attaining pupils who do very well, amongst the "best in the world".

Comparing two countries having different ways of arranging education pathways sheds new light on the use of year repeating. Though, from the local viewpoint, year repeating is understood as a practice aiming at reducing pupil academic difficulty, at

the global scale, it offers a very different picture of the workings of the education system. At the same age, there are two major groups of pupils: those who have repeated a year, scoring very poorly, and pupils who have not repeated and forming an academic "elite". Given this, French schools seem to be organised around a series of selective tracks whereas the French system is organised on the basis of a single, common route up to age 15.

■■■

Recent international studies of attainment show that countries that use automatic promotion generally get good results and that the dispersion of their results is no higher than elsewhere. These findings do not support year repeating but do not allow a direct conclusion that it does not work. More specifically, the performances of pupils held behind are very markedly below those of pupils "on time". The gain provided by the education of one grade is weak in comparison of this gap. Finally, a detailed study of the results for UK and France shows that at the system level year repeating seems to play the role of a means for introducing "tracking" into the education system. Crossing these different points of view – from systemic to detailed analysis – gives much more interesting results than the rankings. ■

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Measuring literacy and the international assessment surveys: methodology is the answer, but what was the question?

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Descriptor (European Education Thesaurus):
Keywords: Literacy, international comparissons, psychometrics, IRM

The objective of this article[1] is to show the interaction between the methodological aspects and the manner in which literacy is conceptualised and defined in the interantional survey. First, to introduce the theme, we discuss the conceptual changes behind the international student assessment surveys, from the first IEA surveys to the IALS and PISA survey. Subsequently, we present the measurement model used in the IALS and PISA, which belong to the family of Item Response Modeling (IRM). PISA has privileged the so-called Rasch model, we discuss the consequences of this choice. Then we address an often overlooked technical point: that of the algorithm used to estimate the parameters. The procedure implemented results in an estimation, not of a value per subject, but a construction of the distribution of compentency in each subject; we focus on the consequences this approach has on the way in which the results are analysed. We then discuss the truly unidimensional character of the variable from the point of view of content and from a methodological point of view. We question the apparent contradiction that exists in terms of simultaneously considering the sub-levels and the global level. In conclusion, we come back to the way in which we interpret literacy such as it is measured in the PISA by comparing it with other surveys that aim to evaluate the same type of skills.

The international student and adult assessment surveys, and among them, the PISA survey, testify to the profound conceptual changes that have modified the purpose of these surveys during the last decade. Unlike the international surveys led over fifty years by the IEA[2], mainly based on the achievements defined on *curricula*, IALS and then PISA (OECD, 1999) have introduced the idea that it is more pertinent to evaluate skills suited to working and living in a post-industrial society; skills considered to be the product, the *output* of educational systems (Bottani & Vrignaud, 2005). This choice fits perfectly within the logic of American surveys on this theme (NAEP, YALS, NALS[3], *cf.* Johnson, 1992) and of the first international literacy survey (IALS[3]; Murray, Kirsch & Jenkins, 1998). Focusing on skills, rather than achievements, seems like the Columbus's Egg of international surveys. It has enabled the difficulties presented by the construction of a "meta-curriculum" (an indispensable operation for the first surveys implemented by the IEA from the 1950s onward) to be avoided, by broadening teaching content to include a wider range of skills in the consideration that every school systems' objective is to teach it.

From this viewpoint, we argue the interest of international surveys in general and the PISA survey in particular by the fact that they provide information about the very general, -transversal- skills that are required in most situations in everyday life and more particularly in professional life. Such as they are presented, these skills may be considered as interfaces between the initial training of which they are the product and the professional world where they are implemented. These skills carry meaning for various users, as much for researchers (economists, psychologists, sociologists and educational sciences) as for the decision makers of educational policies and the media. While

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1. A longer French version of this article was already published in *La Revue Française de Pédagogie*, INRP no 157 in 2006.

2. *International Association for the Evaluation of Educational Achievement.*

3. *National Survey of Education in Progress, Young Adult Literacy Survey, National Adult Literacy Survey, International Adult Literacy Survey.*

the advantage of this approach is that it presents a significant "ecological" validity through the broad spectrum of its use, its main drawback is the danger of reification to which this skill may give rise. In the context of psychometric evaluation, i.e. these surveys, the skills are, above all, constructs and cannot be separated from the way in which they have been made operational. To lose sight of this characteristic is to leave the door open for abusive generalisations or indeed extrapolations that do not really support the interpretation of the results.

This danger has long been identified and is well-known in psychology from problems linked to measuring intelligence. First to be criticised were intellectual aptitude tests for their simplistic character (a rather academic way of measuring intelligence) and for being socially biased (in particular, debates surrounding the possibility of composing "culture free" or "culture fair" tests; on this point see Vrignaud, 2002). Then, contributions from cognitive psychology showed that the unitary approach to intelligence, conveyed by the employment of a unique score (IQ for example), did not reflect, or at least did not entirely reflect the subjects' psychological functioning as has been widely demonstrated since the seminal works of Hunt and Sternberg (Huteau & Lautrey, 1999 for a review in French). The plurality of the processes and strategies implemented by the subjects to resolve the problems presented was not taken into account in the overall score. The variabilities, both inter and intra-individual, strongly compromised the pertinence of the interpretation of a unique score.

These criticisms and debates sometimes make us forget that composing tests has enabled the development of methods and concepts upon which the measurement of human sciences, and psychometry in particular, are based. The touchstone of evaluation in psychology and education is to distinguish between a proficiency and a competence. We observe a proficiency of a subject during an examination and we infer on the competence (Mislevy, 1994). Far from the naive representations that the idea of calculating a score might convey, we are seeking to estimate the competence of the subjects. It involves a process that calls upon numerous psychometric concepts and the estimation of competence obtained is as far from the simple calculation of a score by summation of the correct answers as the first studies in current research on cerebral localisations, which benefit from the most recent advances in cerebral imagery techniques, can be.

From the beginning, international surveys have been a laboratory of trial and development of the most sophisticated psychometric methodologies (a comprehensive presentation -in French- of international survey methodology can be found in Rocher 2003). It must be said that, in addition to the participants' desire to provide their users with the results that offer the best guarantees of reliability, these surveys presented worrisome methodological problems, such as providing an equivalence of the measurement in multiple linguistic and national contexts. As one can observe on reading the PISA Technical Manual (Wu & Adams, 2002), the methods employed are extremely sophisticated.

In fact, the PISA survey is a device for measuring literacy, and its results should be interpreted while bearing in mind the manner in which this skill has been constructed. Therefore, to explain what is and is not evaluated as a skill in PISA, it is useful to give and to discuss the methodological elements that construct and ensure this passage between the proficiency at a selection of tests and the competence of the populations of numerous countries. The objective of this article is to show important methodological advances that have been integrated to PISA to construct a solid measuring device and, at the same time, to show that the emphasis placed on the measuring device has perhaps left other questions surrounding the nature and measurement of skill in the dark.

Evidently, this presentation is technical, but it is precisely one of the crucial problems of these surveys that understanding the result, and their limits in particular, is linked to complex methodological questions. It's a challenge to present these methodological issues in a so short paper addressed to a large readers' community. We are taking the risk to appear confused for the statistical laymen and oversimplistic to the statistical experts. We apologize for these both defects.

The Item Response Modeling (IRM)

The main methods used in international student assessment surveys were developed in psychology or rather, psychometry. Today, we talk about "edumetry" to define a field equivalent to that of psychometry in the evaluation of education sector. However, this distinction remains at surface value, to the extent that the methods and concepts are very similar and, very often, the researchers who work and are published in one of the two fields, will equally work and be published in the other.

The measurement models

To introduce this presentation of the basic concepts of psychometry, we might underline that measurement, that is to say assigning magnitude to objects while respecting certain of their properties, has presented particular problems in psychology, which have led to the development of original solutions within this discipline. These methods have been grouped together in psychometry, which defines which methods to implement, from data collecting devices to the definition of reliability standards. The three, most generally-used measurement models are the classic approach (Lord & Novick, 1969), the *Item Response Modeling* (IRM) and the structural equation modeling. In treating the data of international surveys such as PISA, IRM is most frequently used.

Presentation of IRM

These models, grouped together under the generic term of *Item Response Modeling* (IRM)[4] – were created some fifty years ago (for a presentation see Hambleton & Swaminathan, 1985 or, in French, Dickes *et al.*, 1994; Vrignaud, 1996). It is important to point out that they were "invented" almost simultaneously and independently of each other: in Denmark by the mathematician Georg Rasch (1960) who was researching a model that would make it possible to compare the reading skills of students several years apart; in the United States, by the statistician Allan Birnbaum (1959, quoted in Birnbaum, 1968) who sought to improve the measurement models in psychometry. These models profoundly renewed the psychometric approach because on the one hand they offer a unitary framework in which to consider all psychometric concepts (presented above in relation to the classic model) and on the other hand, they offer a new framework in which to interpret the test results by situating the subjects proficiency in relation to the tasks and not in relation to the proficiency of other subjects. These models, are probabilistics.

IRM is based on the research of a mathematic model of the item's functioning, enabling the relationship between the difficulty of the item and the skill of the subject to be represented. In general, the logistic function is used. The more general model comprises three parameters that model the item's functioning: "b_i" the difficulty of the item, "a_i" the slope (discriminatory value of the item), "c_i" the "random" response parameter usually called guessing.

The explanation of the item's difficulty and of the subject's skill by a same latent variable explicitly justifies the comparison between items and subjects. The parameters of difficulty will make it possible to compare the items among themselves. The parameters of skill enable the comparison of subjects and groups of subjects. Thus, all operations to compose tests and to interpret the results, which require the items and tests to be equivalent, or to compare different populations, will be facilitated.

How many parameters should be used to model skill?

The issue of the model's number of parameters has often been discussed. With the options retained having consequences on the statistics' validity and the presentation of the results, these choices have repercussions on the treatment of international surveys. Thus, in the treatment of the PISA survey, ACER *(Australian Council for Educational Research)*[5] employs a model derived from the Rasch model implanted in its CONQUEST software. To explain the functioning of the item, this model only comprises the parameter of difficulty while the ETS *(Educational Testing Service)* draws on a model with two parameters (difficulty and discriminatory value) or even three (the guessing parameter) by using algorithms of estimation implanted in its BILOG software (Zimowski, Muraki, Mislevy, & Bock, 1996) – for an example of the treatment of the IALS survey, see Yamamoto, 1998). This difference in choice of the number of models' parameter can be explained by at least four reasons. First, historical reasons, work on IRM was introduced to the ETS following the studies of Birnbaum (1968) resumed and developed by Lord (1980) who, from the start, introduced a model with two and then three parameters

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4. In English, the term: *Item Response Theory* (IRT) is more widely used. However, the term "model" seems more appropriate in that, it is a matter of considering the behaviour of a subject answering an item rather than constructing a psychological theory of the subject's behaviour, as H. Goldstein & R. Wood (1989) remark.

5. ACER, the main organisation at the head of the consortium that oversees PISA, ETS has been the organisation overseeing the treatment of data from American surveys (NAEP, etc.) as well as several international enquiries, IALS, in particular.

while the studies of ACER followed the Rasch approach, as the software constructed by this organisation shows (Titan then Quest: Adams & Khoo, 1994). Next, reasons linked to the items' format, PISA comprises polytomous items (The answers may be subject to coding according to the levels of success). This item format is easy to treat with the Rasch model (the parameter of difficulty is splitted into two parts: one representing the general difficulty of the item and the other representing the passage from one level of difficulty to another) whereas estimating of the parameters of difficulty of such items is not so easy using the model with two parameters. The choice of the number of parameter has a several consequences on the rest of the treatments. The procedure of ordering the items in terms of their difficulty is simpler and more coherent if the discriminatory value of the items is identical which is the case in the Rasch model. On the other hand, the use of the Rasch model requires an additional condition of validity: the assumption of equal discriminatory value of the items. This condition is generally verified *a posteriori* if the test fits with to the Rasch model, this supports the assumption that there is no need to introduce an additional parameter to take into account the discriminatory value of the items. The test of this assumption of equal items' discrimination would be worth of deeper development in the PISA manual. When using a two parameter model, the existence of differences in discriminatory value between the items could render this grading less univocal. This point will be discussed more deeply in regard to the interpretation of the scale.

Issues of measurement bound to literacy survey

Differential Item Functioning

Finally, one of the essential phases in the study of equivalence in terms of the different linguistic and/or national versions is the identification of *differential item functioning*, or "DIF" for short (for a presentation in French, see Vrignaud, 2002 or Rocher, 2003, in the context of international surveys). The DIF is a difference in how well two groups of comparable subjects do in relation to an item regarding the construct measured by the test. Thus, DIF is a nuisance as it's revealing biases bound to the use of a measurement device in different cultural and/or linguistic contexts. The DIF[6] may focus on every characteristic of an item: 1) its difficulty, 2) its discriminatory value. Recourse to a model with a single parameter simplifies the approach to this question. But two issues lack explicit answers. The first one is the validity of DIF studies applied to translated items. The procedure to identify DIF have been elaborated and validated in the context of national DIF studies. The aim of these studies was to compare the proficiency of different groups (e.g. gender, ethnicity,…) against a main dominant group in favour of which it could be hypothetized that the test was biased. The test scrutinized for DIF is the same for all the group studied. That is not the case when we study translated tests. As is pointed out by Sireci (1997), it's not possible to ensure that procedures to identify DIF are effective when dealing with different linguistic versions of a test. The second one is the number of groups involved in the DIF study. The original procedures to flag items suspect of DIF was developed in the context of gender or ethnic bias that implied to compare the proficiency of two groups (the favoured vs the disadvantaged) or at most less than ten groups. In international survey there are ten or more groups implied. The consequences of appliying DIF procedures in such a multiple comparisons procedure on the sensibility and the robustness of the detection of flawed items has not been completely drawn.

Conditional independence

In IRM, the estimation of the value of the parameters of difficulty is performed under the hypothesis of conditional independence. Conditional independence is reflected in the assumption according to which

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6. While the difference of success of an item is, in the same way, in favour or disfavour of the same group across all of the subject grades, the DIF is said to be "uniform". The uniform DIF focuses only on the difficulty of the item. There is a difference in favour of the same group at every level of skill. While the difference in success changes according to the subjects' proficiency level (for example, the difference is in favour of a group for the weakly performing grades and in disfavour of the same group for the strongly performing grades) we speak of "crossed" DIF. Crossed DIF focuses on the discriminatory value of the item, which is more discriminating in one group than in another. While we can easily visualize the psychological significance of a uniform DIF, that of a crossed DIF may be more tricky.

a subject's answer does not depend on his/her answers to other items in the test. The success of a subject in relation to an item depends only on their skill over the latent trait measured by the item and nothing else (and especially not their answers to the previous items). It is often difficult to test the assumption of conditional independence.

However, numerous test situations where, by construction, the condition of conditional independence is not respected can be identified (Vrignaud, 2003). Thus, in the evaluation of literacy, it's often demanded that several questions be answered on a same text. This manner of proceeding is justified by the fact that the subject's investment, both cognitive and temporal, in appropriating the complex object -in this instance, a text-, must be executed as effectively as possible. In English, the term "testlet" is used to refer to such exercises including several items. Generally, we do not take into account the bias inferred by this dependence in the treatment of international literacy survey results (Dickes & Vrignaud, 1995). Although, these bias do have non-negligible effects as the research on 'testlets' has shown (for example, Wainer & Thissen, 1996). If we cannot retain the hypothesis of conditional independence, then we must introduce a specific parameter representing the conditional dependence between the items involved as the particular probability of success relating to these items; their interaction, as suggested by Harvey Goldstein (Goldstein, 1980). Recently, H. Wainer, E.T. Bradlow, and H.L. Wang (2007) have proposed an approach for testlets and develop a Bayesian algorithm for the estimation of the parameters of this model that is implemented in the software SCORIGHT (Wang, Wainer & Bradlow, 2005).

Assessing skill in the context of IRM

IRM was presented by its advocates as a renewal of the measurement theory. G. Rasch argued that the estimation of the items' difficulty and of the subjects' skill were independent, which according to him was the basis of the concept of specific objectivity (Rasch, 1977). Whatever the item sat by the subject, one would obtain a same estimation of their skill. Whatever the groups of subjects to which the item was administered, one would obtain a same estimation of its difficulty. This idea has often been considered as not very "realistic" and furthermore, seems to have hindered numerous studies as we may observe in a summary of the developments of the Rasch Model (Fischer & Molenaar, 1995).

IRM defines the skill of the subject as their probability to resolve items of a given difficulty. The skill is therefore defined in relation to tasks and not in relation to other subjects. The parameter of the subject's skill defines their zone of competence, which could be associated with the items' parameters of difficulty: a subject demonstrates a high probability to succeed to all the items in his/her zone of competence. The definition of the zone of competence requires that a decision be made concerning the threshold of probability selected, in order to consider that the subject is clearly mastering the task embodied in the item. Might we consider that a threshold above 50% is a sign that the item may be resolved by the subject or would it be better to consider that only a threshold of close to 100% can reflect a real understanding on the subjects' part? For example, in educational evaluations in the United States, the threshold of 80% is generally retained (Kirsch, 1995). This threshold has the advantage of guaranteeing a quasi certain probability of success, but its severity may be deceiving in terms of the subjects' actual success. Indeed, the probabilities are high that the subjects succeed other items of a greater difficulty that those included in their zone of skill. A second problem is that of the definition of skill in terms of the items' content. To say that one subject is capable of answering all of the items of a given difficulty is to refer to the operational definition of these items. This definition might appear simple when the content of the items lends itself to it: for example, the complexity of arithmetic operations, the number of inferences to perform to conduct an analysis. Nevertheless, this type of analysis often appears simplifying with regard to the models of resolution proposed by cognitive psychology (Rémond, 2006).

The construction of the scale of skill in the surveys that use the IRM is essentially based on the regrouping of items by their indicators of difficulty. Thus, in most international surveys, several levels (usually five) of skill are defined. The interpretation of each of these levels is then developed by the cognitive analysis of the items graded at this level. This system of definition of a skill essentially psychometric, even if it comes in the guise of cognitive psychology. Such a system has been particularly developed by Kirsch and colleagues in the NAEP then IALS and PISA surveys (see, for example,

Kirsch, Jungeblut & Mosenthal, 1998). This approach presents two major drawbacks.

The first is to be partially tautological: this item is easy because a large number of subjects answered it correctly and therefore it corresponds to operations of a weak level.

A second drawback is the difficulty of determining the level to which an item belongs. Indeed, we take the parameter of difficulty into account, not by itself, but by researching what level of skill is required to understand an item of this level of difficulty.

Therefore, an item will be graded in the category that corresponds to the level of skill making it possible to obtain a 75 or 80% (in general) likelihood of success. However, the subjects that have an inferior level of skill, still have a high probability of succeeding if their skills are close to the divide separating the grades. The quality of this separation may be assessed by the discriminatory value of the items. Hence the importance of the issue of the number of models'parameter discussed supra. If all the item presents the same high discriminatory power then the slope of the items are steep and a small increase in competence is associated to an important increase in the probability of succeeding the item in their difficulty zone. Such items can be reliably affected to a skill level. If the discriminatory indexes present a wide range of variation, then the allocation of the items is function of their discrimation power. The weak one cannot be reliably allocated.

Bytheway the information provided by these levels appears to be relatively vague and imprecise in that the divides are arbitrary by nature: the fact of being graded in a level of skill does not in any way mean that the subject is not capable of functioning at different, higher levels of skill. Interpreting the levels is not always easy because sometimes, some of the levels consist of few items (generally the higher levels). And, in particular, the interpretation in terms of cognitive functioning is not founded on the analysis of tasks and processes, but rather appears as a derivative of the psychometric measurement model.

In PISA, the different levels of skill have been defined in such a way that the subjects whose parameter of skill has a value close to the inferior marker have a 50% likelihood of succeeding in the items at this level; those whose parameter of skill has a value close to the higher marker, have an 80% likelihood of succeeding in these same items. By construction, it is therefore certain that a subject does not only succeed in items that correspond to their level and – at least for the subjects close to the higher marker – they have a non-negligible likelihood of succeeding in those of the higher level. Again, it is not a question of listing the method's deficits without recognizing the benefits; to begin with, those that define the skill in relation to the tasks and not in relation with other subjects as in the classic psychometric approach. It is also important to underline the care with which these operations have been performed and the clarity with which they are explained in the *technical manual* (Turner, 2002). However, we cannot ignore the risk of arriving at a reification of the notion of the levels of skill, which, according to the user's who did not have access to all of the technical sources, may appear to be more objective than they are in reality.

Estimating the model parameters

The estimation of IRM parameters is a significant operation (an excellent and exhaustive presentation of this matter can be found in Baker, 1992). Assessment of fit of the model to the data is performed at various stages during the estimation of the items' parameters of difficulty and the subjects' skill. Upstream, the IRM models depend on numerous conditions of validity: unidimensionality, conditional independence of the items, and, for the Rasch model, equal discriminatory value of the items. These conditions are sometimes difficult to ascertain and verify. Thus R.K. Hambleton, H. Swaminathan & H.J. Rogers (1991) list some twenty procedures to ascertain the possibility of applying the model to the data. Also, we can quote the research led by Stout's team (Bolt & Stout, 1996, Shealy & Stout, 1993, Nandakumar, 1994) at the University of Chicago, which has made it possible to find the most effective conceptual contexts for testing these hypotheses (unidimensionality, conditional independence, differential item functioning). It is regretful that this team's work is absent in the treatment of international surveys.

The algorithm of estimation used in PISA is the result of the American statistician D. Rubin's work on the so-called "EM" algorithm (*Expectation-Maximization*; Dempster, Laird & Rubin, 1977; Rubin, 1987 & 1991). Rubin operates a reversal of perspective concerning the estimation of the subjects' skill. Rubin considers that the position of the subject over the latent variable is fundamentally a missing value. Indeed, skill is only

known conditionally in the subject's answers to a reduced number of questions: those included in the test that they have sat for and including the case where they have answered all of the questions on the test. In the context of IRM, this formula has led to the algorithm of parameter estimation being re-thought by using the EM algorithm (Bock & Aitkin, 1981), a procedure implanted in the BILOG software designed for IRM parameter estimation (Mislevy & Bock, 1990; Zimowski *et al.*, 1996). R.J. Mislevy and his colleagues (Mislevy, 1987, Sheehan & Mislevy, 1990, Mislevy *et al.*, 1992) perfected this approach by introducing descriptive data about the subject's context *(background variables)* to the estimation algorithm in order to render the estimation of the subjects' parameter of skill more robust. It is a matter of estimating the subjects' skill conditionally in relation to the answers they have given to the items they have answered (therefore, without including the missing items by construction of the booklets and the terminal omissions) and conditionally in relation to the variables describing the subjects' characteristics. It is important to specify that the score of a subject's skill is conceptually a non-observable value and that its estimation refers not to a single parameter but to a distribution. Conditionally, we infer -with a varyingly strong guarantee-, the distribution of a subject's parameter of skill with these characteristics and this pattern of response to the items from the subjects' answers and characteristics. We do not know the true value of the parameter of skill, but its distribution. To reinforce the strength of this estimation, several draw in this distribution of so-called plausible values are carried out, the average of which will be a better estimation of the subject's skill. This procedure is presented in more details in the *technical manual* (Adams, 2002).

This approach suggests several commentaries. First of all, it is certain that it takes theoretical concepts of psychometry seriously and even that it takes them –in a particularly elegant manner-, to the extreme. At a theoretic level, it is also certain that these procedures make it possible to ensure a stronger and more rapid estimation (accelerated convergence) of the subject's parameters of skill. It has also being demonstrated that it enabled a more accurate estimation of the countries' averages in the case of international surveys. The strong points of this algorithm are also the source of its weak points: the distribution of parameters depending on more prolific information, this introduces new sources of bias in the estimation (for example, the subjects' characteristics). It will be necessary to ensure accuracy of information concerning the subjects' characteristics and their equivalences in the different national contexts. Equally, it multiplies the conditions of validity. *Last but not least*, this estimation procedure ends in a selection (five in PISA) of plausible values for each subject. According to publications on this approach, the theory is a major asset to psychometric thought and the procedures seem to give strong results for the estimation of IRM parameters. Moreover, it should be noted that this procedure, developed by the ETS researchers for American surveys such as NALS and YALS (and adding procedures specific to the BILOG MG software) then for international surveys (see, for example, IALS: Yamamoto, 1998) has been implanted in the CONQUEST software edited by ACER (Wu, Adams & Wilson, 1997) while this group was responsible for the treatment of PISA data. The recourse to the distribution of plausible values is now generalised in international surveys (see, for example PIRLS: Gonzalez, 2001).

The fact of estimating the skill of a subject using five plausible values and not a unique score has significant implications on the way in which the analyses are conducted. The dispersal of these plausible values is as important as their average. The statistical analysis, therefore, should be entirely developed from different plausible values and not from a single value or a summative of the values. For example, if we want to calculate the correlation between a variable of context (the student's parents' profession and their social category, or "SES") and skill, we must calculate this correlation for each of the five plausible values provided for each subject and then create an aggregate of the five values obtained for the correlation. The dispersal of the indicator's values should be used for the significance tests. We will find descriptions of the procedures enabling this aggregate in the publications addressing multiple imputation methods (see Schafer & Graham, 2002 for a recent review). We cannot be sure that the researchers performing secondary analyses from the PISA data have completely integrated these procedures to their analyses to obtain the estimations that are unbiased by the indicators altough these elements are presented very explicitly and clearly in the *technical manual* (Adams, 2002).

The unidimensionality of literacy: artefact or reality

IRM has been the subject of numerous criticisms. The most fundamental being based on its realistic capacity to represent the functioning of the subjects who answer the items. Thus, Reuchlin (1996) contests the continual character of the model, which presumes that a subject can always succeed in an item. An item's answer is discreet in character. Answering a difficult item correctly is not unlikely for a subject of weak skill, it is simply impossible. A less radical challenge focuses on some of its properties, especially unidimensionality.

Unidimensionality of the latent variable leads us to assume that the interindividual differences are only differences in force and that the differences in the difficulty between items are only quantitative. Thus IRM substantiates the idea that whatever the subject's level of competence may be, he/she uses similar processes and strategies to answer the items. This criticism has already been brought against the scores, the global character of which does not provide information on the underlying processes and strategies (Huteau & Lautrey, 1999).

The most essential issue is the consideration of different dimensions and consequently of several skills explaining the proficiency of the subjects in relation to the items. If we consider three scales, the relationship between their scores may be situated between two extremes: 1) there is no relationship between them, 2) the relationship between the dimensions is such that there is no need to distinguish them: they are measuring the same skill. In case no. 1, the dimensions are orthogonal (the correlations are null), the results of each scale must be presented and interpreted separately. In case no. 2, the correlations are close to 1, there is no cause to interpret the dimensions separately, the skills measured are completely redundant and if we had to distinguish between them it would be by a semantic artefact that would consist in naming them differently. Most of the time, the data sits between these two poles. The question then is to decide from what point the relationship between the dimensions might be estimated as being sufficiently weak to consider that the dimensions measured correspond to different skills. This question has been at the heart of most debates on psychological aptitude models since Spearman and then Thurstone. The dimensionality of skill in literacy is part of such a debate. We seek to know if the results can be presented on one or several scales. However, the pertinence of a discussion appears, in the case of international literacy surveys, distorted, for reasons pertaining to the reliability of the measurement, IRM hangs on to the fact that the tests are strongly unidimensional. Unidimensionality is both the structure sought and the condition of validity (assumption) of IRM. Indeed, the basic IRM require the condition of unidimensionality: we must explain relationships between items (estimated by their parameters), those between the subjects, as well as the relationships between the items and the subjects with one single latent variable.

The solution retained for the interpretation of PISA is to consider five scales: three literacy scales, one mathematics and one science. We are only interested in the scales of literacy. According to the report's authors, these three scales are distinguished by the operations to which appeal (on this point see Rémond, 2006): 1) find the information, 2) develop an interpretation, 3) reflect upon the texts' content. The distinction between these three scales and the allocation of items to each of them is the result of expert judgment and the results of the data analysis. The values of the correlations between the scales, published for the three literacy scales in PISA 2000, are very high (> .89 ; *cf.* Adams & Caspersen, 2002) and, in many of the cases, would be considered as sufficient to incorporate the three scales into one. Such is, furthermore, the case, as certain results are estimated on a global scale, which is itself considered by hypothesis as unidimensional because it matches the Rasch model well. Therefore, we can legitimately question the validity of distinguishing three scales since a model comprising a single scale perfectly takes the data into account (according to the decisions taken by the statisticians on the fit between the measurement model and the data).

Discussion

This general review of the measurement model in international surveys in general, and in the PISA in particular, highlights several points. First, the sophistication of the methods used, the care taken to resolve the sensitive problems that psychometric evaluation presents. Although all of these elements are presented in the *technical manual* (Adams & Wu, 2002), we might question the reality of their accessibility to potential PISA users, in that psychometry,

at least at this level of complexity, is not necessarily part of the common foundation of knowledge of the entire community of users. This might cause certain users to wrongly use the data, as underlined in relation to the consideration of plausible values in secondary analyses.

A second point is that, despite the care taken to address these methodological issues, certain solutions remain unsatisfactory with regard to the sophistication of the rest of the structure. Among the most technical aspects, we have pointed out the violation of the condition of conditional independence. The question of dimensionality appears to be more central and therefore more troubling in that it is directly related to the nature of the construct and to the presentation and interpretation of the results. This leads to a more general interrogation about the conceptual nature of the skill evaluated. On this matter, it is important to point out that Goldstein and colleagues (Goldstein, 2004; Goldstein, Bonnet & Rocher, 2007) have shown, by applying the structural equation models to English and French PISA data that they were not unidimensional, but at the very least they were bidimensional. The gap to unidimensionality is a sign that there are flaws in the measurement device and its consequences on the definition of skill should be taken into consideration.

If the hypothesis of unidimensionality is kept, then the skill is certainly a broadly transversal one and the varying levels of its comprehension may be considered as the product of the educational systems. However, is not such a de-contextualised variable (since it should not factor in the different linguistic and cultural contexts) a sort of general protean success factor liable to be interpreted and expressed many ways? The results of a study conducted on the comparison between a prior literacy survey performed on adults, IALS and PISA, also drive one to question the nature of the PISA scales. The IALS survey comprised three scales defined according to the content of the document (prose, document and quantitative literacy). Several of items (15) of IALS' 'Prose' scale were integrated to PISA. It was, therefore, possible to compare the two types of approach to literacy: that of IALS and that of PISA. This comparative study was conducted by Yamamoto (2002). Despite the numerous bias making comparison between the two scales difficult, Yamamoto came to the conclusion that the correlation between IALS'and PISA's prose literacy scales is .83. This more or less corresponds to the order of magnitude of the correlations between IALS' or PISA's sub-scales. We can conclude that these two surveys, although they consist of differently interpreted subscales, globally measure the same skill.

Equally, we might question the fact that this factor may, to a large extent, have similarities with intellectual aptitude-type variables, namely verbal reasoning. In another survey, conducted in the context of a European project (Vrignaud, 2001), we observe a close correlation of ".70" between a vocabulary test (WISC III vocabulary subtest) and a national reading evaluation test for two countries (England and Italy). Although the intensity of these correlations is not sufficiently important to assimilate the skills evaluated by the two types of tests, it is nevertheless sufficiently elevated to draw the hypothesis that a relatively significant part of the reading skill (almost half of the variance) is explained by a vocabulary test. Vocabulary tests are the best indicators of verbal reasoning and even of reasoning in general (elevated correlation with the overall IQ score). These reading tests, therefore, also measure a very general verbal skill. At least for the higher PISA levels, which, according to their definition, require that the subjects perform operations of inference, we might question the fact that verbal capacity to reason is measured just as much as the capacity to extract information from a written text.

The second question focuses on the unidimensionality of the construct measured. The recourse to three dimensions, even if it is interesting from a conceptual point of view, does not appear fully convincing from a psychometric point of view. The aggregation of all of the items in a single latent variable is a point that does not exactly plead in favour of using several sub-scales. The constraints of the measurement model are such that they lead to the elimination of all of the eventual causes of differences in unidimensionality, which would be in violation with the use of IRM. We might consider that this reduction will take effect from the moment the items are selected. Consequently, the world of items runs the risk of eliminating the information that tells of qualitative differences supporting other aspects and not just the quantitative differences that consist of arranging the countries averages on an axis. We can also question the pertinence of explaining the differences between subjects in a uniquely quantitative manner for subjects of low skill for whom the situation is better qualified by the term "illiteracy" than by that of "low literacy level". It is more heuristic to

seek to qualify these situations of illiteracy by identifying their causes rather than quantifying them. The survey on the literacy skills of French adults: *"Information et Vie Quotidienne"* (Information and Everyday Life) (Murat, 2005) comprised a specific module for the subjects identified as being in a situation of illiteracy and aiming to diagnose the causes of this illiteracy.

PISA's chosen method of skill evaluation is not exempt from scientific and ideological questioning. Indeed, we remember the debates on measuring intelligence and the Binet's wit. We run the risk of declaring: "Literacy? That is what our test measures!". How can we be certain that the items (the task) are sampled in a way that truly covers the field? Are we not running the risk, as in the intelligence tests, of over representing or indeed only representing the tasks that relate to school learning and the dominating cultural environment as they are conceived and validated in some countries and of assisting the terrible drift that has occurred in aptitude testing with part of the work of Terman, as raised by Blum and Guérin-Pace (2000)? There is a risk of ideological drift in considering these skills as autonomous and objective when they are strictly dependant on a measurement model.

If we choose an approach to skills, then it is necessary to define the skills in terms of their respective fields; this is the only way to validate the interpretation of psychometric measurement because it enables us to verify the extent to which the field of skill is covered by the tests constructed. This approach has been the subject of an international survey conducted by the OECD: the DESECO programme (1999). It involved asking different experts: philosophers (Canto-Sperber & Dupuy, 1999), ethnologist (Goody, 1999), psychologist (Haste, 1999), economists (Levy & Murnane, 1999), specialists in educational science (Perrenoud, 1999), how we might define the necessary skills required to live and succeed in the modern world. This type of work could make it possible to define the skills evaluated on theoretical not only psychometric bases. The validity of the construct and its interpretation would be further validated. Unfortunately, it would appear that the results of the DESECO have not been integrated to the thoughts on international assessment surveys.

The drawbacks of IRM are partially recognized but its advocate argue that it's the best approach in regard to the state of art. This is only partially true. We reminded in this paper that IRM are fifty years old, that the algorithm EM used to estimate the parameters is thirty years old and that the whole approach used has been elaborated about twenty years ago. In psychometrics like in other sciences, this time is a very long one in terms of new developments. We pointed at the use of Bayesian algorithm to estimate the IRM parameter for testlets. Bayesian algorithms are now widely used in different fields needing estimation of statistical parameters (Gelman, Carlin, Stern, & Rubin, 2004). One argument to keep the old IRM approach for the data treatment is the aim of time comparisons (for example between the PISA rounds) and that it is simpler to treat the new data using the same approach than the preceding one. This drawback can be easily avoided as previous data have been carefully archived and can be treated using a new approach. If we pursue this line of reasoning this we lead to imagine that in half of a century we shall always use the same methodology even if it has been proven that it is obsolete. Bytheway, we put the emphasis on the simplistic representation of skill carried on by unidimensionality. Other models are widely used in psychometrics for example Structural Equation Modelling (SEM) or Hierarchical Linear Modelling (HLM). These models can throw new lights on the international comparison of skill. For example, these approaches allow for multidimensionality and they offer a different frame to consider the between countries variability. It's worth noting that SEM and HLM have already introduced Bayesian algorithm for the estimation of the model parameter (see for example Arbuckle, 2007 for SEM and Browne, 2005 for HLM).

To take in consideration new developments in the measurement field, to open to different measurement model giving new insights in the data, to operationalize the skill in a way avoiding reification, will help to keep results of student and adult international surveys at a high standard of quality that can be expected for an essential tool used to pilot educational systems in numerous countries. ■

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Adult skill assessment: emerging methods

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The assessment of adults is a complex area, whose emergence is fairly recent. An adult is not assessed at home as a student in his classroom. The first large-scale assessment of adults in France a certain extent has shown the difficulties that could meet: according to this survey (IALS), 40% of adults 18-65 years in France were facing great difficulty in literacy in 1994. Methodological expertises have questioned the reliability of the survey, justifying the withdrawal of France for the survey. This article presents one of these works, showing the importance of conditions of data-collection: using best-suited procedures, the proportion of people in difficulty falls to 15%. This shows the need to build a protocol that maintains the motivation of respondents, limiting the length of the test and adapting the difficulty of exercises at the person's ability, for example. These results are particularly important in view of the development of the survey PIAAC, provided by the OECD in 2011.

Assessing pupils' skills for statistical purposes is a widespread and ancient practice. The DEPP has organised this kind of survey for many years at different levels of the education system. International organisations such as the IEA (International Association for the Evaluation of Educational Achievement) or OECD (Organisation for Economic Cooperation and Development) have launched multiple evaluations to compare the results of pupils between the different countries. This practice is less common for adult assessments but this domain is currently undergoing significant development. Thus, in 1994, Statistique Canada and ETS (Educational Testing Service) organised the international IALS survey (International Adult Literacy Survey) on adult literacy[1] skills, subsequent to similar operations in the USA and Canada. Other countries were involved in this survey in 1996 and 1998, the results of which were published by the OECD (OECD 2000). In 2003, the ALLS survey (Adult Literacy and Life Skills) was carried out in several countries, based on the main principles of IALS. Since then, the OECD has launched the PIAAC programme (Programme for the International Assessment of Adult Competencies), which should result in the implementation of a survey in several dozen countries by 2011. France is of course encouraged to take part in this process.

Although France was one of the first countries to participate in IALS,

NOTES

1. The French neologism *littératie* derived from the English "literacy" refers to the ability to understand and use written information in daily life, in the workplace and in society with a view to attaining personal goals and extending one's knowledge and abilities.

2. The IVQ survey we are about to discuss is the result of a collaboration between several organisations: ANLCI (French Agency against Illiteracy), CGP (National Economic Planning Agency), CREST (Centre for research in economics and statistics), DARES (Research and social studies Directorate of the French Ministry of labour), DEPP (Evaluation, Forecasting and Performance Directorate of the Ministry of national education), DGEFP (General Delegation for Employment and Vocational Training), DGLFLF (General Delegation for the French language and the languages of France of the Ministry of Culture) DIV (Inter-ministerial Delegation for Urban Affairs), INED (French Institute of demographic studies), INETOP (French Institute of work and vocational guidance studies), INSEE (French Institute for statistics and economic studies), ONPES (French Observatory of Poverty and Social Exclusion). Several academic research teams were also involved in designing the assessment tests.

in 1994, French results have raised a lot of questions: France's international ranking was very poor and newspapers have published leaks alleging that 40% of French people are illiterate. A number of methodological problems emerged during audits, justifying France's withdrawal from this survey and the ALLS survey. This is why the authorities concerned by the subject[2] decided in 2000 to focus on a national approach to develop our knowledge in this very particular domain. A specific survey (*Information et Vie Quotidienne*, Information and Daily Life) was designed and first conducted in the field at the end of 2002. With a primarily methodological purpose, this initial collection demonstrated the feasibility of this type of survey and was followed by a larger-scale operation at the end of 2004. The IVQ survey should be renewed in 2010, which will be an opportunity to measure skill evolution.

The proximity of the IVQ 2010 and PIAAC 2011 operations raises questions about possible convergences. The PIAAC survey is in line with IALS, with certain countries who took part in IALS wanting the 2011 results to shed light on the evolution of their population's skills. The IVQ process was partly designed to analyse the shortcomings of the IALS survey in terms of assessment and collection methodology, detected during the many audits conducted. What is the impact of methodological choices on the results? To what extent can the lessons learnt from IVQ be transposed at international level and help develop PIAAC? How to combine two French operations so close timewise and relating to approximately the same theme but with perspectives and methodological choices that will probably remain slightly different? All these questions lead us to review the differences between the two processes and revise our analysis of a specific protocol of the 2002 IVQ survey, enabling us to bridge the gap with IALS.

IALS AUDIT

Despite France's withdrawal from the IALS survey, several newspapers published an alleged result from this survey: 40% of the people living in France are illiterate. In fact, this was the result of one of the three scales of the survey, i.e. the understanding of *Continuous Texts or Prose*, the results of the Schematic *Texts and Quantitative Texts* scales being slightly better. In addition, the OECD's definition of people in difficulty only partially corresponds with the notion of illiteracy and is based on the more complex notion of skill scale, based on item response models and which we will introduce subsequently. The questions are ranked by difficulty on a scale ranging from 0 to 500[3]. The easiest of these questions are isolated, i.e. those with a difficulty parameter lower than 225, described as "level 1"; the upper threshold of level 2 questions is 275; level 3 is 275 to 325, etc. A person's score is the level of difficulty of a task he or she has an 80% chance of successfully performing. Thus, a person with a 250 score has an 80% chance of successfully performing a task of this difficulty; he has considerably more than an 80% chance of successfully performing a level 1 task; however, he has significantly less than an 80% chance of successfully performing a level 3 task. This person will be considered "level 2". Thus, "level 1" people are those with an 80% chance of successfully performing a task at this level, i.e. among the easiest ones of the questionnaires. There are therefore marked differences within this population, between those who generally successfully perform the most difficult level 1 tasks (but far less often those ranked at level 2) and those who hardly manage to successfully perform the easiest tasks. However, as the OECD wording focuses on the great difficulties afflicting these people, their very low skill level may explain the use of the term "illiterate". Furthermore, France was markedly behind most other countries who took part in the first wave of the survey: the proportion of people in difficulty on the *Prose* scale was 21% in the USA, 14% in Germany, 13% in the Netherlands, for example. These rather surprising results led to a number of studies, which justified France's withdrawal from the survey (Dickes and Vrignaud 1995, Blum and Guérin-Pace 1999, Blum and Guérin-Pace 2000, ONS 2000, Vrignaud 2001). The main lessons learnt from these studies will be reiterated hereafter, after which those that were used for the creation of the IVQ survey will be examined in more detail.

NOTE

3. It should be pointed out that, in the item response models, the values are in fact partially arbitrary and can be changed by any linear transformation. In practice, the scale is defined unequivocally by setting the average and standard deviation of the distribution (for example, in the case of PISA or TIMSS which use this type of method, the international average is 500 and standard deviation 100). Thus, the 0 value has no particular significance and of course does not correspond with the easiest item or with the least skilled person…

The sampling was based on the list of telephone numbers and route sampling to solve the problem of unlisted numbers: the telephone number referred to an address and, by following specific instructions (i.e. take the second street Northwards on the right, then the second building on the left, etc.); the surveyor determined the house or flat to be surveyed. The surveyor could replace the house or flat in case of failure to contact the household after several attempts. The response rate of the survey poses a problem: 45% of the households refused to respond. In addition, significant bias within the sample, notably in terms of qualification, is insufficiently corrected by the sampling weight calibration carried out. The treatment of people with a poor command of the French language is also rather vague and this is even truer in certain other countries such as Germany, where all those surveyed spoke German. In the case of IVQ, the use of INSEE's master sample, derived from the census, guarantees a better representation of the sample obtained.

IALS was a fairly long survey: the booklet proposed to the person surveyed included fifteen tasks. The test could take up to two hours. In these conditions, it was difficult to maintain the attention and motivation of the person surveyed throughout the questionnaire. Furthermore, the surveyor's situation was somewhat uncomfortable as he had nothing to do, which increased the stress in those surveyed and their feeling that they only had limited time to complete the tests, even though the instructions stated otherwise. The use of a computer-aided personal interviewing technique (CAPI) in IVQ ensures more natural interaction between surveyors and those surveyed. In addition, as the tests are taken one after the other, on separate sheets, it is possible to stop the survey before fatigue affects the person's responses. Above all, comprehensive information was collected on each test, as opposed to the limitations of the IALS data.

The presentation of the survey was also very important. The reference to the Ministry of National Education on the booklets seems to have triggered unpleasant memories for many people and contributed to giving the survey an academic aspect unlikely to sustain the motivation of those surveyed. As a result, IVQ defined an approach protocol as neutral as possible, avoiding as much as possible describing the exact content of the survey. Specific situational questions were also introduced in the guidance module to make the assessment process more easily acceptable to people in difficulty.

A correction grid had been designed for the tests but it was subject to a lot of criticism. Admittedly, it was very crude: there are generally only three possible codes in the file: right answer, wrong answer, no answer. However, the examination of the data and questionnaire feedback showed that there is a fairly significant ambiguity in the correction and that a re-examination of the responses for more detailed analysis was sometimes useful. The tests were often very ambiguous and it seemed possible in many cases to give a right answer other than that determined in the instructions. It is also possible that the alternation of simple and difficult questions may have led to the feeling that there were trick questions among the most obvious exercises, resulting in more subtle responses than anticipated. This is why it seemed important for IVQ to collect responses as detailed as possible, the use of CAPI making it possible to immediately transcribe them. A coding operation was then carried out while the use of the original responses was still possible.

Certain confusion was also observed between the wrong answer and no answer. It seems that people skipped certain tests relating to themes which did not interest them. Even more frequently, the persons interviewed interrupted the survey before the end, because of the duration and commitment required. The coding and processing are therefore fairly vague: in some cases, "no answer" will be regarded as a failure while in others an actual lack of information, although the distinction is not always pertinent and coherent from one person surveyed to the next.

Alain Blum and France Guérin-Pace, as well as Pierre Vrignaud did a lot of research on the international comparability of the survey. They highlighted many translation problems which may often have made the French version questions more difficult. However, beyond the quality of the translation, they call into question the possibility of designing a single-dimensional measurement enabling comparisons between countries. Many factors can trigger what we shall refer to as cultural bias and make a specific question more difficult from one country to the next, while the opposite will apply on another test. Statistical techniques can detect these discrepancies but the treatment required is not obvious: remove the "problem" items (but what divergence threshold should be tolerated?) or recognition of the multi-dimensional nature of the domain under examination. These

Table 1 - Breakdown of 15 year-olds and entire population according to the IALS skill level in France

Ligne		Level 1	Level 2	Level 3	Levels 4 and 5
1	15 year-olds, PISA	13	40	38	9
2	Entire population, IALS	41	34	22	3
3	Over 26s, IALS	27	35	32	6
4	26-45 year-olds, IALS	35	37	25	3
5	Over 45s, IALS	59	28	11	2

Sources: OECD 2002 (line 1), National Centre for Educational Statistics (line 2), INSEE (lines 3 to 5).
Interpretation: 13% of the 15 year-olds in France, according to PISA 2000, are at the lowest skills end of the *Prose* scale.

questions, crucial in the context of an international survey, will not be developed hereafter, because IVQ is not designed for outside of France for the moment.

IALS and PISA

The OECD carried out a study which can be used indirectly as an audit of the IALS results (OECD 2002). In 2000, representative samples of the 15 year old pupil population in 32 countries took reading assessment tests (PISA survey). These tests included a number of items derived from the IALS survey (however the items proposed were sometimes significantly different from the version proposed in France in 1994, as the Swiss version was used). Using these items, a psychometric anchoring of PISA data was carried out on the IALS scale[4] (Yamamoto 2002).

The averages by country obtained for 15 years old pupils in 2000 do not closely match those obtained by young people under 26 in the IALS survey. Sweden in particular, the number one country according to the IALS survey, appears at mid-table for PISA, while Germany, which performed well under IALS, obtained poor results in the assessment of 15 years old pupils. France appears among the average of the PISA survey and the table above is a reminder of how much the IALS results are different. While 41% of the French population was at the lowest literacy level according to the IALS survey (27% for those under 26: we will tackle this discrepancy later), this figure dropped to 13% of 15 year old pupils in the PISA survey. Unless one assumes our education system has improved exponentially, in particular from 1994 to 2000, this gap raises questions on at least one of these two results.

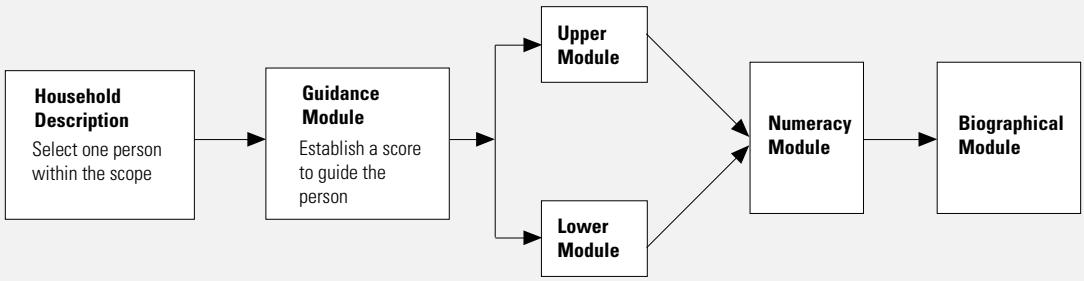
NOTE

4. More specifically, the Prose scale of IALS, relating to continuous texts (as opposed to the tables/charts or quantitative data dealt with by the other two scales).

The IVQ survey

The IVQ survey is a result of the collaboration of institutions concerned by adult skill assessment and academic research teams. Two tests were organised at the end of 2000 and mid 2002 to check, after the setbacks of the IALS survey, that this type of interview was possible. Work document no. 0202 of Insee's Collection Methodology series *"Information and Daily Life Methodological Survey Tome 1: test 1 assessment"* presents in greater detail the context of the survey and the studies carried out on the first test. On this test as well as the second one, an address was made during a conference on statistical methodology in 2002 *(Adult performance in reading tests: how to separate motivation and skills?)*. At the end of 2002, the survey was launched on an initial sample of 4,000 households.

One of the key principles of the survey is the adaptation of the tests to the individual. Thus, a person is selected amongst 18 to 65 year-olds living in the household. If the person immediately claims to be illiterate, the surveyor insists and mentions the verbal comprehension test; if the person does not speak French, he or she will only be asked biographical questions. Otherwise, he or she will be issued with a guidance module with simple word reading and comprehension questions on a short text. If the person's results are insufficient, he or she will take the tests of the ANLCI module; otherwise, he or she will be offered the test of the Upper module, followed by numeracy questions, aimed at assessing basic arithmetic and logical reasoning skills (once again, the level of test difficulty is adapted according to the answers to a few simple questions integrated into the guidance module). Subsequently, information is collected on the family, the educational and professional history of the person surveyed, their reading habits and possible difficulties in performing certain tasks of daily life, for those with a mediocre test performance. The surveyor has the possibility at any time of changing the module,



if the survey is not going well (time restriction, tests too easy or difficult etc.). Due to a computer problem, this possibility has had harmful consequences: the data from the abandoned module has been irretrievably lost and it is therefore difficult, for example, to make sure that the person was in difficulty on the Upper module at the time of the reorientation.

The guidance module and the ANLCI module were developed by J.M. Besse's PsyEf team (University of Lyon II). The EVA team (University of Rennes and Ste Anne Hospital) of C. Charon and C. Meljac created the numeracy module (and the final questions of the guidance module) while C. Chabrol (University of Paris III) and P. Vrignaud (INETOP) designed some of the Upper module tests. All the members of the steering committee were also involved in this design process.

• The guidance module is limited to a TV programme page but includes several stages. Initially, rather vague but non academic situational questions are proposed (difficult to encode, they are not taken into account in the guidance score), which facilitates the person's acceptance of the assessment principle (What is it? What is its purpose?), followed by word identification questions (names of TV shows or guest) and a comprehension test on the evening film.

• Numeracy questions are problems made up of one or two sentences, posed verbally so as not to cause any interference with literacy. The reading of two numbers and three short exercises are integrated into the guidance module and condition the passing of the test itself, made up of 13 questions ranked by difficulty: those who only succeed in one question at the most start with the chain of questions from the beginning, while those who succeed in at least two questions go directly to question 8. After three mistakes, the questions stop. The taking of this module is independent of the reading results.

• The lower module, called ANLCI module due to the collaboration with this organisation, starts by a verbal comprehension test, after which the person is given a "dictation" (this very academic term is of course not used, instead it is referred to as a shopping list) and word identification and text comprehension questions based on a support from daily life (music CD).

• For the Upper module, 5 texts have been selected in addition to the verbal comprehension test in common with the ANLCI module. It specifically relates to various supports: an extract from an article on reconstituted families, a page from the Guide du Routard travel guide, a text on the death penalty by Victor Hugo, tables and charts on road accidents and a story on a football game (this text was only used if there was enough time). Furthermore, one third of the sample was proposed a series of six exercises derived form the 1994 IALS survey, which should make it possible to compare the results with different collection protocols in this article.

It should be noted that as much effort was focused on the creation of a reliable collection protocol as the development of tests adapted to the general public. The CAPI treatment of the questionnaire facilitated the collection of information and enabled more natural relationships between the surveyors and those surveyed. In addition, the responses are precisely identified and above all it is possible to collect two types of information in order to assess the level of motivation of the person interviewed: the time he or she devoted to answering the questions (time measurement is computerised) and a behaviour observation grid completed by the surveyor (was the person stressed? Angry? Was he or she helped? etc.).

The biographical module included information on:

- the person's social background (parents' qualification and profession),
- the education career, mother tongue and reading language,
- events from the person's youth (death, illness, financial situation etc.),
- the professional status and use of written materials in the workplace,
- reading habits (books, newspapers),
- strategies used to get round difficul-

ties in everyday life for the persons who have taken the ANLCI module.

The analysis of this first survey, with a primarily methodological purpose, was satisfactory (Murat, 2004). A decision was made to quickly repeat it at the end of 2004, on a larger sample in order to refine the analysis. Several modifications were made to the protocol to take into account the problems encountered during the analysis. In particular, the difficulty in classifying those whose skills are around the illiteracy threshold resulted in the development of an intermediate module between the Upper module and the ANLCI module, designed for those with average results in the guidance test. This modification undoubtedly improved the skill measurement process but makes the results of the 2004 survey difficult to compare with those of 2002 (Murat, 2005). This experience illustrates the importance of the observation protocol: a fairly minor change can have a major impact on the results.

IALS-IVQ COMPARISON

A fairly accurate comparison between the IALS and IVQ methodologies was made possible in the 2002 survey, by the use of identical tests derived from the IALS survey. It is therefore possible to measure the impact of the changes made to the data collection process, assuming that the dimension measured is fixed. More specifically, 6 tests made up of 16 questions were repeated, using tests already selected for the PISA survey. Conversely, the 1994 formulations were retained to improve comparability, even though analyses cast serious doubt over their quality (although PISA opted for a corrected version). In addition, out of the 16 items, only 13 were part of IALS's *Prose* scale (the other three belonging to one of the other two literacy aspects: *Schematic texts* or *Quantitative texts*). Even though it would probably be possible to develop a scale common to the 16 items, as strong correlations exist between successes in the different questions, we were forced to eliminate these items to apply the 1994 methodology.

However, the fact that the tests were repeated identically is not sufficient to guarantee result comparability. The translation problems highlighted by the audit did not disappear and doubt remains over the international comparability of the data. Furthermore, the modification of the way the tests are taken can result in a change in the nature of the task required[5]. For example, the IALS survey used written methods to collect information whereas in IVQ the person answers verbally. This difference is important and, depending on the question, does not have exactly the same consequences. The impact will probably be limited if the expected answer is short; conversely, for a long answer, the use of the oral language focuses the assessment on comprehension and removes part of the problems caused by potential expression problems, which are more obvious in written tests. It is therefore important to ensure test comparability, which will facilitate the measurement of the effects of change on the collection protocol.

To what extent is the IVQ collection protocol different from that of IALS? Several points have been improved, notably to take into account the impact of the subjects' motivation on the results.

- *Guidance procedure*: in the IALS survey, part of those surveyed (less than 5% in France) ended the assessment test after the preliminary booklet: they successfully answered a maximum of one out of the six questions proposed, which put an end to the test. These subjects are of course classified at the lowest level of the skill scale. In IVQ, there is also a guidance process which orients the person towards a module adapted to persons in difficulty (ANLCI module) or towards the proper IALS tests (or the original test that we have designed but which will not be examined herewith). Certain assumptions will be necessary to integrate the persons oriented towards the ANLCI module into the IALS scale.
- *Shortening of the tests*: instead of 15 exercises, only 6 were proposed. As the tests are restricted to only one of the three scales measured in IALS, this choice has little impact on the reliability of the results. However, it lightens the test procedure and ensures that the person interviewed does not switch off.
- *Test segmentation*: each exercise is proposed successively, not with all the others in the form of an exercise book. The attention of the person surveyed is therefore focused each time on the questions asked, thereby avoiding the risk that the interviewee may go from one exercise to the next in order to choose those he or she likes. Unlike IALS, in IVQ partial "no answers" are

NOTE

5. The form of the tests is a key element to be taken into account when interpreting the results, particularly as part of international surveys: for example, contrary to public belief, the results of French pupils are generally better on MCQs than on open questions, compared with other countries (DPD 2002).

negligible. It is also possible to interrupt the test[6].

- *Coding of the answers*: the answers provided on the IALS exercise book were then summarily encoded in the form of: "No answer" / "Right answer" / "Wrong answer". In light of the ambiguity of certain questions, greater detail, in particular for wrong answers, would have been preferable. This is why, in the IVQ survey, the surveyors were asked to clearly encode the answer of the person surveyed (some answers were however pre-encoded). It is therefore possible to apply several types of correction[7]. This note focuses on that which corresponds with the 1994 IALS instructions. These instructions were generally deemed overly strict in light of the ambiguity observed on certain questions.

- *Interactions between surveyor and the person surveyed*: the use of CAPI and segmentation give the test a slightly less artificial aspect. Thus, the surveyor can hold the concentration of the person interviewed and remind them of the instructions when they have not been clearly understood. Training sessions however emphasised that these interactions should be in keeping with the strictest neutrality so as not to directly or indirectly influence the answers of the person surveyed.

- *Motivation indicators*: two types of indicators on the way the test is taken have been selected. On the one hand, the time spent by each person on each exercise, which will provide an indication of the person's commitment. On the other hand, an observation grid is also filled in by the surveyor for each exercise, indicating the reactions of the person interviewed. These indicators have not been used in this note, due to their incompatibility with the IALS methodology.

Out of the 2,086 people who responded to the IVQ survey[8], 682 were supposed to take the IALS tests[9]. Out of these 682, 25 did not take the test. Special difficulties were pointed out for 6 of them (they claimed they could not read or speak French): wrong answers will be allocated to all IALS tests (in accordance with the procedure followed in 1994), which will naturally result in their classification at level 1 of the scale. For the 19 others, the reason invoked for refusing the tests does not seem associated with reading problems (time constraint, wary of surveys etc.): these people will be temporarily ignored and allocated a score according to their socio-demographic characteristics[10] at the end of the procedure (once again, similar to the 1994 procedures).

Of the remaining 663 people, 63 were oriented towards the ANLCI module (and therefore did not take any of the IALS items; this group also includes the 6 previously mentioned people who claimed they could not read). Among the 600 who took the IALS tests, 53 interrupted the test and, due to a computer problem (see note 6), only their answers to the guidance test remain. In the end, 547 people took all the IALS tests.

The results we are presenting are sensitive to the assumptions made for those who did not take the IALS items. The choice of classifying them directly under level 1 (or allocating them with wrong answers across the board) can be justified for those oriented towards the ANCLI module, as they had difficulty with the guidance test. This choice may seem too harsh for those who interrupted the test: these people do not perform quite as well on the guidance test as those who completed the tests (they average 16.7 out of 19 on the comprehension test compared with 17.7) but they are situated above those oriented towards the ANLCI module (who average 8.7 out of 19).

A variation was therefore created by allocating them with answers to the IALS tests. Out of the 547 who

NOTES

6. Test interruption therefore results in missing final values. This problem is generally resolved by restricting oneself to the questions answered, taking their difficulty into account. Unfortunately, an unforeseen computer glitch caused the loss of all answers to IALS exercises as soon as the interruption occurred: this affects approximately 8% of the people, for whom only the answers to the guidance test and socio-demographic characteristics remain.

7. The coding of the answers to IALS questions was carried out by three independent teams: a team from INSEE-CREST (F. Bulot, L.-A. Vallet and D. Verger), a team from DARES (P. Zamora) and a team from DEPP (T. Rocher), before the pooling of and discussion on the proposed coding.

8. The file includes 4,011 households. In 951 cases, the survey could not be conducted for "objectively neutral" reasons (vacant house or flat, no person within the scope of the survey, physical unfitness, and long-term absence). Out of the 3,060 remaining households, 974 refused the survey or cannot be contacted (which is often the same thing): the "refusal" rate is therefore 32%. A calibration is used to correct the bias induced by these refusals.

9. The rule was as follows: if the household identification number (random) + 1 can be divided by 3, the person interviewed will take the IALS tests if he or she successfully completes the guidance test (otherwise, he or she takes the ANLCI module).

10. The level of education and qualifications were used, predicting 29% of the variance of the IALS score for the respondents.

took the IALS test, success in each item was modelled (via logistic regressions) according to the comprehension score on the guidance test. This model was then used to allocate answers to the IALS module for those who did not take it, i.e. both for those who dropped out during the test and those who took the ANLCI module. For the latter, this allocation is very fragile and the assumption that they should be directly classified under level 1 will be privileged. It should be pointed out that, for those who did not complete the IALS test, the allocations are determined according to two types of logic: for the questions that the people have effectively answered but for whom these answers have "disappeared" due to a computer problem, the allocation is a mere compensation; for the questions after the interruption, the allocation is a little less justified and another assumption could be selected, such as failure in all these questions if the person surveyed claims the interruption is due to the tests being too difficult.

Prior to assessing individual skills, the items must be verified and adjusted to ensure that the dimensions measured in 1994 and 2002 can be compared. The initial purpose was to try and compare the 2002 item success order with what was observed in France and abroad in 1994. The table above presents all available data (NCES 1998).

If all items are considered, hierarchies do not match very closely: the linear correlation between the series of IVQ success rates (in fact the 547 respondents to the IALS modules) and the series of success rates in the other countries in 1994 is only 0.48; the correlation is 0.35 with that of France. Item m10 in particular poses a problem: its 2000 success rate is 90.8% although the 1994 success rate is 40.0% in France and 53% in the other countries, i.e. far more significant gaps than for the other items[11]. Two other items seem problematic: those of exercise 1. Considerable progress is observed on the other items between the French results in IALS and IVQ, which is not reflected in these particular items[12]. If we exclude these three items from the comparison scope, the coherence is much more apparent: the correlation between the IVQ series and that of foreign success rates is 0.84; correlation with French rates remains unsatisfactory (0.5). Furthermore, the removal of these 3 items does not benefit any population in particular (which could have been the case if only the questions very difficult for one population category but easy for another had been removed: the first category would have had the advantage). Before removing these items, the average success rate in the 13 questions is 70% for the respondents to the IALS module of IVQ and 64% for the countries which participated in IALS in 1994 (except for France). After removal, the success rate in the 10 questions is 69% for the respondents to the IALS module of IVQ and 64% for the countries which participated in IALS in 1994 (except for France). This removal only slightly affects the IVQ sample, as the average success rate drops 1 point, whereas it remains identical for the IALS sample.

Table 2 - Success in IALS-derived items in IVQ and IALS (in %)

	IVQ (1)	IVQ (2)	IALS 94 France	IALS 94 Other countries
m1	56,1	49,6	55	77
m2	48,6	44,3	38	62
m4	74,7	67,6	57	77
m5	59,3	53,6	54	65
m6	82,7	78,5	43	69
m7	69,0	66,1	43	60
m9	68,9	63,3	54	60
m10	90,8	87,0	40	53
m11	86,0	78,6	40	73
m12	63,0	58,8	20	55
m13	42,9	38,1	22	27
m14	74,2	67,7	55	70
m16	80,5	75,1	71	87

Note: 13 items were selected as part of the Prose scale. The second column indicates the success rate for the 547 people who took the IALS items in IVQ. The third column broadens the scope to all 663 people who took the tests, with allocations based on the results in the guidance tests. The fourth column provides the 1994 success rate in France, while the final column indicates the average 1994 success rate in 7 countries/linguistic regions (Germany, English-speaking Canada, French-speaking Canada, USA, Sweden, German-speaking Switzerland, and French-speaking Switzerland).

NOTE

11. There may be two explanations for this difference: on the one hand, confusion in the 1994 correction instructions (or in the French version at least) which may have excluded some of the right answers; on the other hand, this item epitomises the difficulties in switching from written to oral expression. The question is: "Using the information provided in the brochure, formulate in your own way the difference between jury interview and group interview". This item therefore explicitly requires an expression effort, which hasn't got the same degree of difficulty in writing or orally.

12. Once again, detailed examination of the items confirms the doubt. These two items relate to film reviews and the same trend is observed as in 1994: the answers given are affected by the knowledge of those surveyed. The first item requires listing comedies and many people in 2000 mention *Monsieur Hire*, because they recognised Michel Blanc, an actor famous in France for his comedy roles. This is not as obvious abroad.

This comparison therefore indicates imperfect coherence between IVQ data and IALS data in the item hierarchy. It seems however that, by excluding the three most problematic items, it can be assumed that the scales are equivalent. Pending a more detailed examination, the ten remaining items were used to establish a score comparable with that of IALS. However, in light of the low number of items, the results should be approached with caution.

In 1994, the people in charge of the IALS survey decided to use a two-parameter IRM model (item response model) for the data. One of the benefits of this type of methodology is that it enables reliable comparisons between surveys using partially different assessment protocols. It was important to obtain results which could be compared with those of the previous US surveys when new tests had been created to take into account the cultural diversity of participating countries.

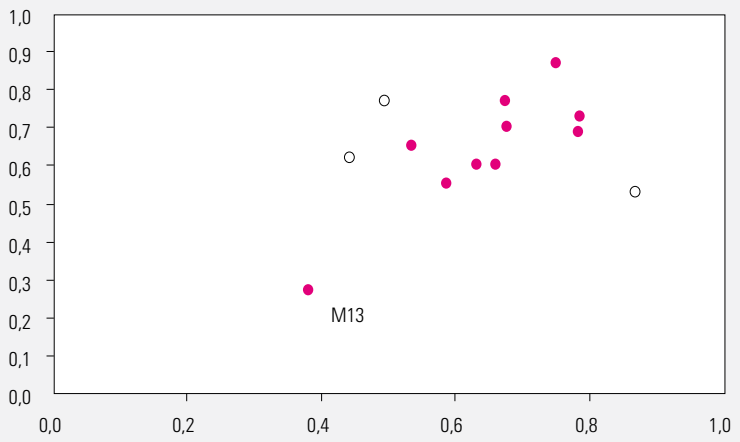
The IRM model summarises a matrix of success indicators, with the items in columns and individuals in lines: the (j, i) box indicates 1 if individual *j* passed item *i;* 0 if he or she failed. The idea is to model the presence of a 1 according to individual parameters (skill) and item parameters (item difficulty, item discrimination, i.e. level of coherence with the dimension measured). Thus, the probability that individual *j* passes item *i* is calculated as follows:

$$\Pr(x_{ij}=1 \mid \theta_j, a_i, b_i) = \frac{1}{1+e^{-D\times a_i(\theta_j - b_i)}},$$

with a_i being the discrimination coefficient of question *i,* D a factor enabling the switch to the normal ogive link function (constant equal to 1,7), θj the skill of the person surveyed and b_i the item difficulty.

All the parameters are usually assessed by searching for the values which best account for the data: the abovementioned function must be high when there are 1s and low when there are 0s. Many techniques can be used for this assessment, such as the likelihood maximisation technique (D'Haultfoeuille *et al.*, 2002). In this case, to ensure that the two surveys can be compared, parameters a_i and b_i for the 10 items selected are set at their 1994 value and only _*j* values are assessed for the individuals of the IVQ sample. The score obtained is therefore on the 1994 IALS scale and enables the comparison between the two surveys.

Graph 1 - Comparison of the success in IALS items between the overall IVQ sample and the other countries which participated in IALS in 1994



Note: for each item of the IALS test, x is the success rate in the IVQ sample and y the success rate of all countries which participated in IALS in 1994 (except France). Thus, success rate in item M13 is 38.1% on the IVQ sample and 27% in 1994. Small circles indicate the items which were removed.

Results

It is therefore possible to obtain the breakdown of the French population by IALS skill level as per the IVQ survey. The results are presented in table 3 according to the assumption made for those who did not respond to the items.

As previously indicated, the most likely assumption consists of allocating answers to those who failed to complete the IALS test (and those whose given answers to the questions were lost) and ranking at level 1 those in difficulty in the guidance module and oriented towards the ANLCI module (consequently, with the first assumption, 55% are already ranked at level 1, most of the others being situated at level 2).

The difference with the IALS results presented in table 1 is striking: even with the strictest assumption it is far from the 41% of level 1. The breakdown is closer to what is observed in the PISA survey but appears more dispersed in IVQ: the proportions at extreme levels are higher.

In addition, one of the key results of the IALS survey, which appears in table 1, is the strong correlation between the person's skill level and age: 59% of people over 45 are ranked at level 1 compared with 27% of those under 26[13]. The linear correlation between age and IALS score is -0.32.

This correlation is not as clear for the IVQ survey. Even though the proportion of people ranked at level 1 is lower for those under 26 than for those over 45 (8.3% compared with 20.3%), the link is not as strong: the correlation between score and age is only -0.24. This correlation is also sensitive to the test used because it is only -0.13 for those who did not take IALS but the original test designed for IVQ. Furthermore, with the two tests, this correlation is no longer significant when the qualification and education level are integrated into the analysis[14]. Conversely, on IALS data, it is not affected by the introduction of these variables even if the multiplying factor associated with age is still divided by three (from -1.42 per additional year to -0.47).

Lessons for future surveys

Skill assessment is difficult, particularly in an international context (Murat & Rocher 2004). The situation is even more complex in the case of adult assessment because the reference framework is far less specific to determine what needs assessing (there are no school programmes) and it is far more difficult to control collection conditions than for pupils in an education institution. This is not about the standard precautions relating to details. The comparison between IALS and PISA and that between IALS and IVQ show how sensitive results are to the method used to obtain them. The comparison between IVQ and IALS is particularly relevant because it relates to the same population. The change in protocol reduces the proportion of people in difficulty in France from 41% to 15%. This difference can be explained by the improved collection conditions and a less demanding and more user-friendly protocol. The IALS survey was probably too long, presented in a fairly off-putting form (a thick exercise booklet instead of successive leaflets for IVQ). IVQ's guidance process seems crucial for maintaining the motivation of those surveyed, by offering them exercises adapted to their level. It is also possible that the nature of the dimension assessed in both surveys is a little different, due to the fact that the answers are collected verbally in IVQ whereas they were in written form in IALS. In these conditions, the IVQ approach seems preferable because the purpose of this type of survey is to measure the comprehension of supports as opposed to expression ability. If the use of a written medium introduces a specific difficulty, the assessment of the comprehension will be affected. Obviously, these factors probably affected the results of the other countries which participated in IALS but it is impossible to evaluate their impact outside of France[15] and determine to what extent the French ranking would have been modified.

These results are particularly important in the perspective of future

Table 3 - Breakdown of the French population into IALS skill levels according to IVQ

	Level 1	Level 2	Level 3	Level 4 or 5
Response allocation for all those who did not take the IALS test	10,0	29,6	44,7	15,6
Allocation for those who failed to complete the IALS test + level 1 for those oriented towards the ANLCI module	15,4	25,6	43,6	15,4

Table 4 - Breakdown of the French population into IALS skill levels in IVQ by age

	Level 1	Level 2	Level 3	Level 4 ou 5
Under 26	8,3	11,5	56,9	23,3
26 to 45	14,2	23,9	45,2	16,7
Over 45	20,3	34,7	35,1	10,0

Note: in this table, the second assumption was selected, as presented in table 3.

NOTES

13. The ironic paradox of the survey should be noted: although the results may indicate a sharp improvement in the population's skill level and indirectly in its education system (if of course the lifecycle effect is unwisely ignored due to the remoteness of the education system), the newspapers mostly used IALS data to denounce the failure of school, which has "become a machine to produce unemployed and illiterate individuals".

14. Therefore the population's average skill level could be entirely explained by the increase in the education level, with each level still associated with the same skill level. This result is reminiscent of what was observed during the 3-day tests (Baudelot and Establet 1988) but should be treated with caution because it does not take into account any potential lifecycle effects and may be sensitive to the tests used. 15. In addition, international comparison problems, in particular due to cultural bias in the tests, are only mentioned briefly via the work of Blum, Gérin-Pace and Vrignaud.

15. In addition, international comparison problems, in particular due to cultural bias in the tests, are only mentioned briefly via the work of Blum, Gérin-Pace and Vrignaud.

surveys. The 2010 IVQ survey will naturally be in line with those of 2002 and 2004. Modifications will probably be made but they will most likely be minor: the difficult comparison between IVQ 2002 and IVQ 2004 demonstrates in its own way how sensitive results are to the protocol selected. The PIAAC survey will be the result of more complex arbitrations between the different participating countries. What type of exercise will be selected? How long will the survey take? What response collection method will be used? Is comparability with IALS a necessity for the countries that participate in this survey and, in this case, should be protocol be improved? New questionnaire or collection method tests, comparing the different choices, will probably be necessary to answer these questions, with a view to implementing a quality survey, meeting the expectations of all its participants. ■

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Evaluating Languages: An account of the EFLUSL Cooperative Evaluation Project

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This paper outlines the background, development and outcomes of the EFLUSL international cooperative project, which set out to develop a set of quality indicators for the evaluation of the teaching and learning of foreign languages at upper secondary level. The project was launched in 2003 by the European Network of Policy Makers for the Evaluation of Educational Systems and was led by a steering group in the Irish Department of Education and Science. Seven countries participated in the project. An evaluation framework was drafted by the steering group, discussed and agreed by the participants and then tested in two phases by inspectors or evaluators in upper secondary schools throughout the participating countries. The main outcome of the project is a set of quality indicators with illustrations of practice. These indicators, with accompanying booklets and a reporting template, are now available for use by national systems, by researchers, and by schools engaged in self-evaluation. The published project report also contains case studies of good practice adopted from school reports written during the testing of the instruments, and an analysis of aspects of practice described in the reports.

The background: current developments in evaluation practice

The European Network of Policy Makers for the Evaluation of Educational Systems decided to initiate a project which would develop a set of quality indicators for the evaluation of the teaching and learning of foreign languages at upper secondary level. This decision was taken against a background of important developments in the area of school evaluation in general and, more specifically, in the area of language education and assessment.

In recent years there has been a definite movement towards greater professionalisation of evaluation practice by many who are involved in the evaluation of schools and teaching, whether members of national inspectorates, academic researchers or other evaluators, such as teacher trainers. This professionalisation has involved a move away from an evaluation practice based largely on subjective, impressionistic judgments towards an approach which is more research-based. It has involved the development and application of robust, transparent criteria for the evaluation of teaching and learning activities and outcomes. In addition to developing criteria, evaluators have begun to place a greater emphasis on gathering reliable evidence as part of the evaluation process. The systematic gathering of objective, dependable, high-quality data as the basis for making evaluative judgments has become a priority for professionals in the area. National inspectorates in a number of countries have developed systems to ensure greater consistency in evaluation practice, to improve the validity of evaluation findings and to ensure greater transparency in the whole evaluation process.

Transparency in the evaluation process has acquired greater importance also in the light of developments in the area of school self-evaluation. The literature on school improvement emphasises the development of definite criteria by which schools can evaluate their own performance and set goals for improvement. National ministries have published guidelines for school self-evaluation which include such criteria. Two well-known examples are Scotland's *How Good Is Our School?* and Ireland's *Looking at Our School*[1]. With the growing realisation

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1. Available, respectively, on the websites www.hmie.gov.uk and www.education.ie.

that school self-evaluation and external evaluation by inspectors or other professionals can complement each other, it is only natural that the criteria being used by external evaluators should be made available to school communities also. Apart altogether from the question of school self-evaluation, school communities have increasingly demanded professional standards and greater transparency from inspectors and other evaluators, and therefore it seems reasonable that their evaluation criteria should be made available to schools. This demand in turn has served as a further impetus for evaluators to develop clear, robust criteria and evaluation procedures which would stand up to scrutiny by those who were the subjects of the evaluation process.

In the area of language education, too, there have been significant developments which have affected assessment and evaluation of learning outcomes. The publication by the Council of Europe in 2001 of the *Common European Framework of Reference for Languages* (CEFR)[2] meant that the landscape would never be the same again for learners and teachers of languages or for those responsible for the evaluation of language teaching and learning. The CEFR, which was the culmination of a process of research and development stretching back over thirty years, has provided a basis for European consensus on standards of quality and transparency in the area of language teaching, learning and assessment. Undoubtedly the most popular and most widely-used feature of the Framework are the self-assessment grids which describe language competences in the five main language skills at six levels from A1 to C2 in simple "can-do" statements. When the European ministers for education decided in Barcelona in 2002 that an indicator of language competence should be developed for use in the Member States, the decision was taken to base the new indicator (the European Indicator of Language Competence, currently being developed) on the CEFR descriptors. The Framework has been widely adopted also by examining authorities and by government ministries and other bodies responsible for developing syllabuses. It is, therefore, a tool which evaluators of the teaching and learning of languages are adopting as part of their professional apparatus. Here, again, we recognise a move away from impressionistic evaluation towards criteria-based evaluation.

The genesis of the EFLUSL project

Against this background, in 2003 the European Network circulated a proposal for an international cooperative project whose main objective would be to develop a common set of quality indicators for the evaluation of the teaching and learning of foreign languages at upper secondary level and invited members to participate. A steering group was set up, comprising members of the Irish Inspectorate and an academic advisor[3]. Ireland's interest in leading the project was partly due to the fact that the Irish Inspectorate had already been active in developing its own evaluation criteria and systems. It had established an internal Evaluation Support and Research Unit (ESRU) in 1998 to underpin its statutory inspection activities[4]. Furthermore, the Irish inspectors of modern foreign languages had been working for some time to develop evaluation criteria specifically for use in the evaluation of language teaching and learning in second-level schools.

In addition to Ireland, five other member countries from the European Network opted to participate in the project: Belgium (Flemish Community), France, Norway, Sweden and Switzerland. Luxembourg joined later, bringing the number of participant countries to seven. The project adopted the somewhat unwieldy title of "Evaluation of Foreign Languages at Upper Secondary Level", with the acronym EFLUSL. The EFLUSL project objectives were:

- to develop, test and refine an evaluation framework for teaching and learning of foreign languages,
- to exchange information on best practice in the area of foreign language teaching and learning,
- to compare elements of quality and practice in different education systems, with particular emphasis on the impact of national and international language initiatives,
- to agree and report on best practice observed when using the evaluation instruments across countries, drafting a number of case studies of best practice for inclusion in the final report,
- to prepare for publication a short

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2. Council of Europe, *Common European Framework of Reference for Languages: Learning, teaching, assessment* (Cambridge: Cambridge University Press, 2001).

3. Dr Seán Devitt, Senior Lecturer in Education at the University of Dublin, Trinity College.

4. ESRU was set up under the leadership of Gearóid Ó Conluain, who is the Irish representative in the European Network..

inter-country report on the outcomes of the project.

A number of key principles were established from the outset. The first of these was a shared understanding among participants that effective evaluation and reporting can enhance the richness of the teaching and learning process. EFLUSL participants were conscious that, although written testing and examinations are used widely at upper secondary level, such written assessment provides limited information on the effectiveness of language teaching and learning. Participants agreed that when evaluators observe and interact with teachers and learners in schools, the result is a much more complete form of evaluation.

Secondly, although the EFLUSL project was primarily concerned with the development of a framework for use in external evaluation, it was recognised that self-review and external evaluation could complement each other in promoting quality assurance in schools. Therefore, the quality indicators which the project would develop for external evaluation could also be used in schools for self-review.

Thirdly, it was agreed that the project would draw on the Common European Framework of Reference for Languages in developing its evaluation instruments. The CEFR provided an essential theoretical backdrop to the work of the project, both in relation to levels of linguistic competence and its use of "can-do" descriptors and illustrations.

Finally, the EFLUSL project would have respect for diversity as a guiding principle: diversity in education systems, in curricula and in methodologies. This respect for diversity was essential, given that schools included in the EFLUSL project would be drawn from the national education systems of the seven participating countries and would include different school types within those systems.

The main phases of the project

At the beginning of the project, each participating country was asked to prepare a country statement according to a template provided, describing the types of upper secondary schooling present in the national system; the place of languages in the education system; the language curricula; the arrangements for school and teacher self-review; and the arrangements for external evaluation of teachers and schools. These country statements were collated and analysed by the Irish steering group and this analysis provided the starting point for the development of the evaluation instruments. The steering group developed a draft framework of quality indicators, a set of accompanying templates to facilitate the gathering of evidence, and a set of guidelines for testing the evaluation instruments. At an initial plenary meeting held in Ireland in May 2004, the results of this preliminary work were presented to the project participants. During the course of the meeting, the drafts were discussed and extensively revised. This meeting resulted in agreement on the form and content of the evaluation instruments, which were to be tested in three schools in each of the seven participating countries during the initial trial phase. The arrangements for testing the evaluation instruments were also discussed and agreed.

The schools selected reflected the different school types: academically oriented, vocationally oriented and comprehensive. The student groups selected for observation were studying the target languages through various types of curricula, were studying the language as a second or third language and they included a range of student ability. It was also stipulated that male and female students should be included. For the purposes of the project, upper secondary was defined to mean students more than sixteen years of age. The number of schools inspected and the number of classroom visits were broadly similar in each of the participating countries. A total of twenty-one schools and forty-four teachers took part in the evaluation during the initial trial phase. Among the forty-four language teachers, there were teachers of English, French, German and Spanish. To ensure the collection of a comprehensive evidence base, a range of evaluation activities was undertaken at a whole-school level, at an individual teacher level and at a classroom level.

Towards the end of the initial trial phase, questionnaires were circulated to participating evaluators to assess the effectiveness of the evaluation instruments. Participants indicated their satisfaction with the quality indicators and suggested certain amendments and additions. Participants also indicated their satisfaction in relation to the evidence gathering schedules, the reporting mechanisms and the evaluation activities themselves. The completed questionnaires were analysed by the steering group, together with the school evaluation reports. The academic advisor also carried out a detailed analysis of the school evaluation reports. The results of these analyses were presented at an interim plenary meeting of the representati-

ves from the participating countries in Luxembourg in June 2005.

During and after the interim plenary meeting, revisions were made to the evaluation instruments in preparation for the main trial phase of the project. The illustrations of practice which accompanied the quality indicators were revised in line with feedback from participants, and enriched with examples taken from the school evaluation reports. A significant addition to the instruments at this stage was the development of a student questionnaire. This was done in response to a concern on the part of participants to include the voice of the learner in the evaluation process and also to broaden and strengthen the evidence base. Other revisions centred around making the evaluation instruments easier to use, by reducing the number of evidence templates to be completed, removing possible overlaps and ensuring clarity and flexibility in use.

The main trial phase of the project took place in the period November 2005 to April 2006. Each participating country carried out an evaluation of the teaching and learning of foreign languages in the upper secondary cycle in three schools, and most countries succeeded in completing evaluations in at least two schools. Six countries, sixteen schools, and thirty-eight teachers of English, French, German, Spanish and Italian took part in this phase of the evaluation.

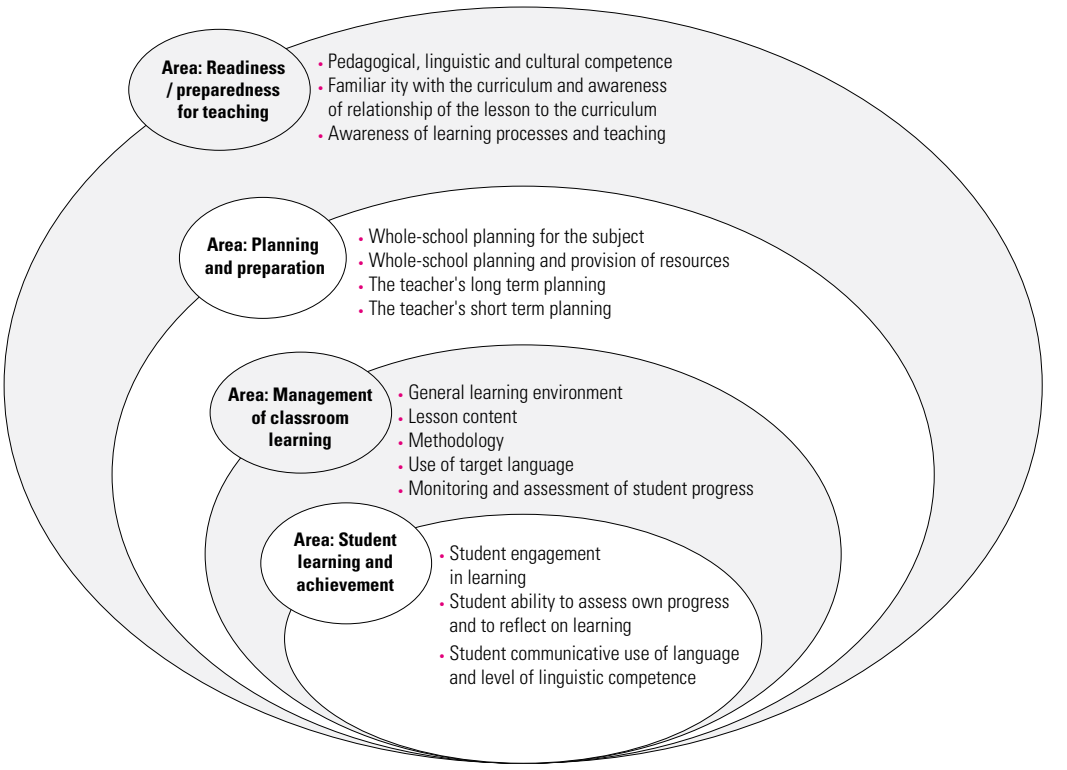
Based on the experiences of the participating evaluators and the analysis of the evaluation reports, the Irish steering group finalised the evaluation instruments, which were then presented as part of the final project report, published by the Department of Education and Science and made available for use throughout the member states of the Network.

The EFLUSL evaluation instruments

The EFLUSL quality indicators are the heart of the project, and are presented in the form of a diagram, consisting of four conjoined ellipses. In all, there are fifteen indicators, grouped into four broad areas: Readiness/preparedness for teaching, planning and preparation, management of classroom learning, and student learning and achievement.

The diagrammatic representation places the student at the centre of the teaching and learning process.

EFLUSL Quality Indicators



It places the other key player in that process—the teacher—in the outermost of the ellipses. The indicators of readiness for teaching are given prominence because the teacher's pedagogical, linguistic and cultural competences are essential ingredients in the teaching process and the language-learning process. Between the learner and the teacher, the diagram represents processes of planning and preparation, and the management of classroom learning.

The teacher and the learner interact in a whole-school context, and the quality of that environment is an important factor in determining learning outcomes. The indicators reflect the importance of whole-school planning and provision, as well as individual teacher planning. The diagram shows that the area which impacts most directly on the learner and his or her acquisition of linguistic, communicative and cultural competence is the management of classroom learning, which in turn is a function of the teacher's professional preparedness and of the planning and preparation processes.

The EFLUSL quality indicators are supplemented by illustrations of practice at two of four possible levels: "optimum practice" (level 4) and "scope for development" (level 2). The other two levels might be termed "competent practice" (level 3) and "requiring urgent attention" (level 1). In the course of the project, the illustrations were expanded and supplemented by examples based on actual practice described in the evaluation reports.

During the evaluations, the evaluators assign ratings at one of the four possible levels to each area within the framework, using the illustrations as benchmarks. These ratings are used to assist evaluators when making judgements about the overall quality of each aspect of the teaching and learning of the target language in the school. The application of the ratings assists in identifying key areas of strength and areas for further development within the school.

In order to gather a reliable evidence base on which to make judgments, the EFLUSL project envisages a variety of evaluation activities during the course of the school visit: a structured interview with the school principal or the head of the language department; a structured interview —part of which is conducted in the target language— with each teacher whose teaching is to be observed; a review of planning documentation; a review of students' written work and of students' assessment records; direct observation of lessons; the administration of a student questionnaire. In order to facilitate the systematic gathering and recording of evidence, the EFLUSL instruments include two record of evidence booklets, a set of guidelines for evaluators, a student questionnaire and a reporting template.

Project outcomes

The main objective of the EFLUSL project was to develop, test and refine an evaluation framework for the teaching and learning of foreign languages. The European Network's identification of the need for a set of agreed standards in foreign language teaching and learning against which schools' performance can be benchmarked was both timely and correct. At the beginning of the project, participant countries were asked to submit as part of their country statement any evaluation criteria which had been developed, or were in the process of being developed. It was surprising that, in the main, countries did not have agreed criteria for their evaluations. This fact, which could have been perceived as a disadvantage, proved to be an advantage. The steering group began with what was almost a blank sheet, and each participating country was able to make its own contribution to the development of the framework.

One of the challenges facing the participants was to devise quality indicators which would be at the same time rigorous and flexible. The seven participating countries and the variety of participating schools within those national systems provided ample scope to test both the validity and the flexibility of the instruments. Feedback from project participants indicated a high level of satisfaction with the effectiveness of the instruments in meeting the needs of evaluators in differing contexts. Thanks to the project, inspectors, evaluators and researchers throughout Europe now have at their disposal a set of quality indicators developed specifically for the evaluation of the teaching and learning of foreign languages.

The EFLUSL project also aimed to identify, describe and compare aspects of good practice in the teaching and learning of foreign languages in different education systems. From the earliest stages of the project, the steering group and all the project participants were faced with the question: What is best practice in language teaching and learning? To agree on quality indicators is already to agree in principle on what constitutes good practice, and the work involved in drafting the

preliminary descriptors of practice at two levels, "optimum" and "scope for development", involved identifying and describing elements of excellent and fair practice commonly encountered in language classrooms. The draft indicators and illustrations presented at the initial plenary meeting were analysed and discussed at length by the participants before agreement was reached on the indicators and illustrations to be used during the first trial phase. The decision to use the CEFR as a constant reference point at this stage certainly assisted the participants in reaching consensus.

When the evaluators throughout the seven countries carried out their in-school evaluations during the first trial phase of the project, they observed teaching and learning through the lenses of the agreed indicators and illustrations of practice. What is interesting in reading their reports is that, notwithstanding the differences in context from one country to another and the diversity of reporting styles, the similarities in practice which emerge are far greater than the differences. The final report of the EFLUSL project includes two chapters which describe and analyse the practice described by evaluators. The first of these chapters consists of three case studies of good practice, which are simply school reports, slightly edited, from three different countries. The second chapter presents a thematic analysis of the range of practice described in the school reports. These two chapters show how the evaluation instruments served to draw out the characteristics of effective and less effective practice throughout the participating countries, and to contribute to a shared understanding of what constitutes good practice in language teaching and learning.

A novel feature of the EFLUSL quality indicators is the inclusion of three specific indicators for the readiness or preparedness for teaching of the individual language teacher. These indicators centre on the teacher's linguistic, cultural and pedagogical competences. Traditionally, evaluators have tended to focus on the teacher's planning and pedagogical input as observed during lessons. But the three EFLUSL indicators in the area of teacher readiness shift the focus to the teacher as a professional who brings certain qualities and competences to the task of language teaching.

The structured interview with the teacher and the observation schedules are intended to assist the evaluator in forming a judgement on the teacher's professional capacity, rather than on how he or she performs in the classroom on a given day. The fact that part of the structured interview is conducted through the target language and asks about the teacher's recent engagement in continuous professional development enables the evaluator to form a judgement on the teacher's linguistic competence and the extent to which the teacher has maintained contact with the culture of the target language. This emphasis fits very well with the idea of the teacher as a reflective practitioner, who has an awareness of what makes a good language teacher, and who continues to develop his or her own professional profile throughout a lifetime in teaching. School management has a role to play in this regard also.

One of the illustrations of optimum practice in the area of whole-school planning states that "planning addresses the continuing professional development needs of teachers". A significant aspect of the EFLUSL project was the level of involvement of school communities, and not just individual teachers, in the evaluation process. A guide for participating schools was prepared, and in some countries briefing sessions were held for school principals and language teachers prior to the evaluation visits. Some countries elicited the view of the school management and of teachers on the evaluation instruments and on the evaluation process itself during and after the evaluation. An important part of the EFLUSL evaluation process in schools was the interview with the principal, which investigated the extent to which there is whole-school planning for language teaching and learning and for the provision of suitable resources. Again, this represents a shift of emphasis from the traditional notion that languages are a matter for the language teachers and that the wider school context is not particularly relevant in the evaluation of language teaching an learning. It recognises that the quality of teaching and learning of languages depends to a significant extent on whole-school factors which are the responsibility of school management.

The EFLUSL indicators affirm the importance of the whole-school dimension and the impact of school leadership on what happens in the language classroom. There is anecdotal evidence that participation in the project contributed to a heightened awareness of what constitutes good practice at a whole-school level regarding provision for languages and whole-school planning. While the main focus of the EFLUSL project was external evaluation, there is no doubt that making the evaluation instruments available to schools

could enhance the capacity of school communities as a whole to engage in self-evaluation and self-review.

Finally, the EFLUSL project has made some contribution to the development of a greater understanding of the importance of learner autonomy. Each of the four areas of the quality indicators makes some reference to learner reflection and the ability of learners to take responsibility for their own language learning. For example, in the area of planning and preparation, one of the illustrations of optimum practice is that the teacher's long-term plan provides for the communication of learning outcomes and modes of assessment to students, and supports the development of student autonomy and responsibility for learning. In reading the evaluation reports, however, there is little evidence of the development of learner autonomy in the schools evaluated, no matter which country. Nevertheless, it is true that language teachers are beginning to become more aware of its importance as the result of research projects in the area and the use of the European Language Portfolio with their classes[5]. Similarly learners, especially through using the Portfolio, will become increasingly more aware of their own learning and begin to take responsibility for it.

The inclusion of a student questionnaire among the EFLUSL evaluation instruments further served to underline the importance of learner autonomy. This questionnaire was an optional element, added after the first trial phase of the project in response to a need expressed by some of the participants to include the voice of the learner. However, the questionnaire was not widely used in the main trial phase, and the reports do not reflect the student point of view to any significant extent. This fact suggests that the concept of learner autonomy is still a new one for most language teachers and learners[6].

■■■

With the publication of the final report of the EFLUSL project[7], the full suite of evaluation instruments has been made available for use by national systems, by individual researchers and evaluators, and by schools engaged in self-evaluation. A CD ROM containing the quality indicators, the record of evidence booklets, the guidelines for evaluators, the student questionnaire and the reporting template in electronic format accompanies the report, and should facilitate the use of the instruments during school evaluations throughout Europe.

In addition to their usefulness to evaluators in the field, it is hoped that the EFLUSL instruments will promote research into the effectiveness of language teaching and learning. For example, the ratings assigned on a scale of one to four in the course of school evaluations could be used to assist national agencies in compiling data on the general areas of strength and areas for further development that are common throughout schools in an education system. In compiling a composite national report on language teaching, it would be possible to state the proportion of schools that show "optimum practice" in the management of classroom learning or to identify the areas that need to be addressed in teacher education and continuous professional development programmes[8].

In presenting the results of the EFLUSL project, the Irish steering group is certainly not claiming to have produced a perfect set of evaluation instruments or to have said the last word on evaluating language learning and teaching at upper secondary level. There is no doubt that, as evaluators make their own of the instruments and as researchers continue their enquiries, the professional dialogue will continue in the same spirit of collaboration which marked every stage of the project. ■

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5. The European Language Portfolio (ELP) is an instrument developed by the Council of Europe and based on the CEFR. It aims to promote plurilingualism and learner autonomy. See www.coe.int/portfolio

6. See Little, Ridley and Ushioda, *Towards greater learner autonomy in the foreign language classroom,* (Dublin, Authentik, 2001) for an account of an Irish research and development project whose purpose was to explore ways of making second-level language learners more autonomous.

7. *Evaluating Languages: Report of the Evaluation of Foreign Languages at Upper Secondary Level (EFLUSL)* Project, (Dublin, Department of Education and Science, 2008).

8. For an example of a national composite report on the teaching and learning of foreign languages, based on an analysis of a number of individual school reports, see: *Inspection of Modern Languages: Observations and Issues,* (Dublin, Department of Education and Science, 2004), available on www.education.ie

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The Importance of Teachers, Their Working Situation and Conditions[1]

In this article is presented a study based on data from the national evaluation of the compulsory school in Sweden (NU 03), conducted by the Swedish National Agency for Education (NAE). The focus of the study is the issue of teacher competence – in a broad sense – and the impact this has on students' learning environment and results. This means that the spotlight is on the performance of teachers in compulsory school, rather than the students and their achievements. The study analyses data from comprehensive questionnaires for teachers, students and head teachers in a huge, nationally representative, sample of Swedish compulsory schools (Year 9), and relates these data to performance tests and grades from the students in the same sample. Thus, a distinguishing feature of the study is that the database has provided a unique opportunity to collate questionnaire data from students, teachers and head teachers, along with data on students' results (tests and marking data), at the individual level. This has not been possible with most other studies in this important area. For this purpose, a range of advanced statistical analyses has been used, including multi-level analysis. These factors ensure that the correlations found can be considered both comparatively reliable and quite unique. Some of the most important findings are these: The issue of whether the teacher has teacher training and education in the subject which she/he is teaching, has a significant impact on students' learning. The higher the teacher grades his/her methodological and didactic competence and the more fun the teacher describes teaching his/her subject – i.e., the higher the teacher´s "professional self-esteem" – also provides significantly better the conditions for students to learn. Furthermore, boys' assessment of who is a good teacher is highly affected by whether the teacher is male or female, while girls' assessment of who is a good teacher is affected by whether the teacher is younger or older. Finally, the opportunities for skills development are perceived by more teachers to have reduced than increased. A third of teachers do not feel they have sufficient competence to be able to identify and support students in need of special support, and to be able to work with students from different social and cultural backgrounds.

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Objectives and background of the study

The origin of this study is the national evaluation of the compulsory school (NU 03) carried out by the National Agency for Education in 2003, which reported and published summaries of its main findings during the period October to December 2004[2]. The relatively unique methodology of the national evaluation is described in the following section of this paper. The collated data from NU 03 included comprehensive questionnaire data from a huge nationally representative sample of participating students, teachers, parents and head teachers in grades 5 and 9. With NU 03 completed, the National Agency for Education stated in a missive to the Ministry of Edu-

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1. This article is a slightly revised and updated version of a paper originally presented at the ECER 2007 Conference of the European Educational Research Association (EERA), 19-22 September 2007, Ghent, Belgium.

2. Skolverket (National Agency for Education; 2004).

cation that "the spread of knowledge within the student group is so great that questions must be asked about the effects of the schools' input". Against this background, a number of in-depth analyses were subsequently performed using the NU 03 data base in order to possibly find explanations for the observed variations in student performance. One of these analyses concerns the the issue of compulsory school teacher competence – in a broad sense – and the impact this has on students' learning environment and results[3]. Thus, the spotlight is on the performance of teachers in compulsory school, rather than the students and their achievements.

The focus of the study has been guided by a deeply felt need on the national (state) level, for more reliable information regarding the situation and importance of teachers. One point of departure was a review of research initiated by the National Agency for Education entitled "The impact of financial resources on educational results", whose main conclusion was that "the expertise of the teacher is the type of resource which has most impact on students' results"[4]. A recent study by the Swedish Agency for Public Management from 2007[5] showed that of all teachers in grades 6-9, only 42 percent had both teacher training aimed at these grades, and education in the subject they were teaching. A further 19 percent had teacher education and subject education, but not aimed at these grades. With this in mind, the study focuses on the importance of teachers for students' learning situation and knowledge development.

However, it would be unproductive to focus on the importance of teachers without at the same time highlighting the conditions teachers have for carrying out their duties. Studies show deficiencies in this respect, in terms of both the basic conditions for the school's activities and the teacher's own conditions. The National Agency for Education, along with the Swedish National Audit Office and the teaching unions in Sweden, has concluded that many teachers do not have the training which the teaching requires. The National Agency for Education's Educational Inspectorate has identified major variations within and between schools in terms of teaching delivery and teachers' assessment of students' knowledge[6]. This picture of the teaching situation is not unique to Sweden. The OECD project "Attracting, developing and retaining effective teachers" highlighted deficiencies common to all the countries which took part in the study, including difficulties attracting people into the profession, teacher competence below required levels and not valuing the teaching profession[7].

In a broader sense the objectve of the study has been to provide knowledge which can be used as a starting point for improvement initiatives at all levels of responsibility, i.e. nationally and at the level of principal organiser, head teacher and teacher.

Methodology

Data

As mentioned above, the study used data from the national evaluation of the Swedish compulsory school (NU 03) carried out by the National Agency for Education in 2003. The collated data included performance tests in most school subjects and comprehensive questionnaire data from participating students, teachers, parents and head teachers. In order to obtain a nationally representative sample, the NU-03 used a "PPS" sample (Probability Proportional to Size), where the primary sample unit was compulsory schools with a Year 9. Then, once the schools had been selected, two to four classes were selected at each school as a systematic sample. These are the students and their teachers which have been included in this study. The study sample comprises a total of 120 schools, 1,688 teachers and 6,788 students. The individual non-response rate for the questionnaires on which this survey is based stands at 14 percent on average for the teacher questionnaires, 14 percent for the student questionnaires and 0 percent for the head teacher questionnaires.

Of the teachers in the survey, 86 percent state that they have completed a teacher training[8]. This proportion is somewhat higher than the national average, which stood at 80 percent at the time of the survey[9]. 60 percent of the teachers in the study are women and the age distribution shows two

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3. For a further presentation, see Skolverket (National Agency for Education; 2006).

4. Gustafsson, J-E. & Myrberg, E. (2002).

5. Statskontoret (Swedish Agency for Public Management; 2007).

6. Skolverket (National Agency for Education; 2005).

7. OECD (2005).

8. In the study, the term "teacher with teacher training" is used for teachers who have a degree in teaching. As such, this term is used instead of "qualified teacher" as the term "qualified" in the Swedish educational terminology is currently not clearly defined.

"bulges" with a considerably larger proportion of teachers around the ages of 30 and 60. The study's picture of an uneven age distribution and a larger proportion of women is in line with the Swedish national statistics.

Student performance was measured by both results on national tests in the three subjects Mathematics, Swedish and English, and specielly designed knowledge tests for use in the national evaluation (NU 03) in these and other subjects. In addition to students' results in the knowledge tests, their final marks have also been used to measure performance. The final mark is based on the teacher's overall assessment of the student's knowledge in relation to the objectives and grading criteria of the syllabus. This means that the analysis is based on both concrete student performance and the teacher's overall assessment of student performance.

Advantages

Using this data base, the methodology of the study can be said to be relatively unique in two respects: the possibility of linking individual data on student and teacher level; and the use of complex statistical analyses including multilevel analysis in order to explore the correlations on this individual level.

Thus, the data base was designed so that connections at the individual level between the four groups of responses and respondents (student performance; student questionnaire data; teacher questionnaire data; and head teacher questionnaire data) are possible. The phrase "teachers' importance" raises the question of whether it is possible to identify any causal correlation based on the existence of a correlation. A causal correlation may mean that the teacher is an explanatory factor for the students' actions or that the students are an explanatory factor for the teacher's actions. It may even be that the teacher is an explanatory factor while also being a dependent object in a reciprocal correlation.

However, the term "correlation" in this study does not necessarily mean that there is a causal correlation. The study is attempting to identify correlations of a general nature and several statistical methods have been used. The main methods used have been factor analysis, regression analysis and multilevel analysis. Factor analysis has been used to generate indices based on several variables. Since the study is attempting to identify correlations of a general nature, a number of variables have been kept constant in the analysis. These were the teacher's gender, whether the teacher has undergone teacher training, the teacher's age and the subject which the teacher teaches. In the analyses which also include students, their gender, whether they have a foreign background and the student's socio-economic background have been kept constant.

A major advantage of this study is that connections can be drawn between teachers and students in the analysis. This has made it possible to use multilevel analysis as well as more traditional statistical methods. Multilevel analysis allows for the study of correlations between different levels, i.e. in this study between head teachers, teachers and students. This has made it possible in the analyses to handle so called cluster effects, and to attempt to avoid what in statistical literature is decribed by the term "ecological fallacy"[10].

Limitation

In the analyses where the teacher's training has been connected to students' attitudes and performance, it has not been possible to carry out individual analyses of each and every one of the teachers' training combinations. It has only been possible to compare teachers who have undergone teacher training and education in the subject taught with the group of other teachers. The category "Other teachers" here means the following combinations: teachers who have teacher training but not education in the subject taught; teachers who do not have teacher training but do have education in the subject taught; and teachers who have neither teacher training or education in the subject taught. Thus, it has not been possible to explore if e.g. teacher training in the relevant school subject is more important than didactical teacher training, or vice versa. This is a major limitation in the study and points to further needs of research of the similar kind. On the other hand, it has been possible to explore the effects of a complete teacher training (both subject-wise and didactical) compared to other combinations of training or non-training.

Another major limitation of the study is that, due to the sampling technique, there were not sufficiently large subject teacher groups to allow in-depth analyses of all the subjects. As a consequence, studies of correla-

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9. The figure was 77 percent in the aforementioned 2007 survey conducted by Statskontoret (Swedish Agency for Public Management).

10. See e.g. Robinson, W.S. (1950).

tions between student performance and teacher characteristics were only possible to carry out for the three "core subjects" Mathematics, Swedish and English. On the other hand, clear and statistically significant correlations could be observerd for all these three subjects individually. There was an intention to use the test results in other subjects, but the underlying data has been judged to be far too inadequate in quantity and strength to ensure reliable analyses in these subjects.

A third important limitation is that the available data only refer to grade 9, i.e. the last year in Swedish compulsory school. Students' performance is affected by a host of factors in the "here and now" and earlier in students´ schooling, and it can be difficult to identify any general influencing factors, including teacher behaviour and competence in this specific grade. When considering the study's findings regarding correlation between teacher-related factors and students' performance, it should be remembered that students' knowledge development has been underway for nine years, and much of their learning also takes place outside school. At the same time, it is reasonable to assume that the last year of the nine years which students have been at school is particularly significant for how students perform in school, both in terms of test results and grades attained. This is based on the supposition that the most recent experiences have a particularly large impact. Additionally, in grade 9 students become strongly focused on knowledge-based performance and on the learning environment which promotes this, since grade 9 is the last year of Swedish compulsory school – which means that students´ marks and test performances are of great importance for their possibilities of entering upper secondary education. And finally, since the correlations which have been obesrved were identifiable and recurred despite a complex context, it may be quite possible that the correlations are actually stronger than is evident in the analyses in this study.

On a more general level, it is also important to bear in mind, when assessing the findings of this study, that this is a quantitative study with the inherent advantages and disadvantages which that entails.

But although these limitations are important, all in all, the study has the advantage of using both a data set and analysis methods that have not been possible to utilize in many other studies within this important area of research. These factors ensure that the correlations found can be considered both comparatively reliable and quite unique.

Some main findings

What constitues a good teatcher?

This study relates teachers' attitudes to their work and their opinion of their own working conditions to students' descriptions of a good teacher, based on the following three questions which through a factor analysis empirically constitute the students´ concept of a good teacher:1). "Is the teacher good at teaching?", 2). "Is the teacher good at explaining things you (as a student) don't understand" and 3) "Does the teacher give fair marks?". In the following, the concept "good teacher" is related to students' responses to these three questions.

An analysis of the factors which characterise a good teacher also involves focusing on the learning environment in which teacher and students come together. In this study, the concept "learning environment" is an "umbrella" term which includes the classroom environment plus attitudes of and relations between teacher and students.

The analyses of the teachers' own responses and students' descriptions of their teachers highlight five factors in teachers which correlate positively with student performance, with students´ description of a good teacher and/or students' learning environment. These correlations are described in more detail below.

The importance of teacher training

The study shows that teachers' training correlates positively with students' perception of a good teacher. The correlation applies to whether the teacher has teacher training and is educated in the subject which he/she teaches. However, this does not apply to all students. The strongest correlation is with high performing students. For low performing students, there is no correlation with the teacher's training.

The combination of the teacher having undergone teacher training and education in the subject taught correlates positively with student performance in the national knowledge tests in both Swedish and English. There is also a positive correlation between the teacher having undergone teacher training and education in the subject taught and the students' final marks in Swedish, while this correlation does not exist in English. In Mathematics, there is not the same clear correlation pattern with the

combination of teacher training and education in the subject taught.

Conclusively, the analysis also shows that the factor of training is not in itself sufficient to reach all students. Furthermore, the impact of formal teacher training is weak in Mathematics. There may be several reasons for this. It may be related to the fact that Mathematics is one of the subjects where students change teacher most often. The subject culture may also go some way to explaining the weaker correlations with the teacher's education. As this and other studies show, the subject of Mathematics differs in many ways from other school subjects. Mathematics is a subject with few whole-class explanations and discussions, with students largely working on their own. Mathematics is also the subject in which students are least motivated. The Swedish Delegation on Mathematics states that teaching is often traditional, strongly tied to teaching material, with little variation in approach. The delegation has concluded that the growing trend for individual calculation in Swedish schools is damaging. In order for students to gain the desire and willingness to learn meaningful Mathematics, the delegation believes that the competence of teachers needs to be better exploited[11].

The importance of the teacher´s desire to teach

The teachers' descriptions of how much they enjoy teaching their subject correlate positively with the description of the learning environment as given by teachers and students. They also correlate with students' descriptions of a good teacher, irrespective of the students' gender, socio-economic background or level of performance. The teacher's statement that she/he enjoys teaching very much also has a positive correlation with students' results in all elements of the test in Swedish and with students' final marks in Swedish. A similar pattern applies for Mathematics, where correlations are evident with both students´ final marks in Mathematics and one of the two knowledge tests in this subject. However, correlations between the teacher´s desire to teach and student performance could not be discerned in English. Instead, in English, the teacher's focus on the syllabus goals correlates with students' test results in every element and with students' final grades.

Thus, it is especially worth noting that in Mathematics, the fact that the teacher very much enjoys teaching seems to have a greater impact than formal teacher training. The absence of a correlation in English with the teacher's perceived enjoyment may be explained by the fact that English is a subject where students are to a large extent motivated by factors outside school. Bearing in mind that many students in the NU 03 study perceive English to be "fun but difficult," the correlation between the teacher's focus on the goals to be achieved and students' results in English may also possibly be explained by the fact that for certain students, setting a clear threshold level is important for motivation and therefore for performance.

The importance of teacher self-confidence

The teacher's own assessment of his/her methodological and didactic competence correlates positively with the teacher's and students' description of the learning environment. They also correlate with students' descriptions of a good teacher, irrespective of the students' gender, socio-economic background or level of performance. However, there are no discernable correlations between teacher self-confidence and student performance in our findings. Since teachers' description of their methodological and didactic competence correlates with students' assessments irrespective of a student's gender, socioeconomic background or performance, this factor – the teacher's own view of her or his competence – has real potential when it comes to initiatives for increased goal attainment for all students. Seen in terms of a student's right to equal opportunities, the findings of the analysis suggest grounds for focusing on those teachers who express doubt about their competence. Particular consideration should be given to the situation that one in ten teachers do not agree very much with that they have sufficient competence in terms of methodology and didactics.

The importance of the teacher´s gender

Boys' assessment of who is a good teacher is affected by whether the teacher is male or female. Boys rate male teachers as better teachers to a greater extent, i.e. feel that the teacher teaches well, is able to explain when they do not understand and gives fair grades. In addition, they state that male teachers have a greater ability to motivate them and arouse interest. What is more, boys

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11. See SOU 2004:97.

state that they listen to male teachers more than they listen to female teachers. Girls express no differences between female and male teachers when assessing whether someone is a good teacher.

The findings shed light on the issue of boys' difficulties in attaining the compulsory school knowledge goals. There is cause to consider the issue of what makes boys listen to and get motivated by male teachers and whether there is something in male teachers' attitudes and behaviour which is more likely to increase boys' interest and motivation. Whatever the reasons, the findings show that boys are less inclined to listen to or be motivated by their female teachers. This situation has consequences for female teachers' conditions for carrying out their duties, and for boys' opportunities for development and learning.

The importance of the teacher´s age

Girls rate younger teachers as better than older teachers, i.e. feel that the teacher teaches well, is able to explain when they do not understand and gives fair marks. For boys, this correlation is considerably weaker. Girls also state that younger teachers act more in line with the intentions of the steering documents. In addition, they state that their younger teachers have a greater ability than their older ones to motivate them and arouse interest. This should be compared with the fact that the older teachers to a greater extent describe their students as motivated in the subject.

Since girls state to a higher degree that they are motivated by younger teachers, the question may be asked as to whether the younger teachers are more able to connect with the girls' lives and values. One finding worth noting is that although the older teachers to a greater extent feel that they have a good classroom environment with motivated students, the findings of the analysis show that there may be a group of less satisfied but silent girls in class. From the perspective of goal attainment, the findings suggest grounds for making older teachers aware of the situation, as well as actively focusing on girls' views on their conditions and needs as the basis for their development and learning.

Some other important issues

There are other important findings in the study which concern the teachers´ working conditions and their prerequisites for doing a good job. These findings concern, among other things, the opportunities for skills development, the relation between head teacher and teachers, and teachers´ mutual collaboration.

The opportunities for skills development are perceived by more teachers to have reduced than increased. A third of teachers do not feel they have sufficient competence to be able to identify and support students in need of special support, and to be able to work with students from different social and cultural backgrounds. It should be noted, however, that this study was conducted before the current Swedish government´s massive commitments to competence development for teachers, the so called "Teacher In-Service Education Initiative" launched in 2007. These national initiatives are aimed at improving the problematic situation concerning teacher competence development, found in this and other Swedish studies.

Over a tenth of the teachers in the study state that they have a problematic relationship with their head teacher. Teachers' perceptions of their head teacher correlate positively with their description of job satisfaction and the support they receive at work. Correspondingly, the head teacher's involvement in teaching has a positive correlation with teachers' perception of their working conditions and development opportunities.

Finally, collaboration in teaching, particularly collaboration between teachers in the same subjects or subject areas, is not developing to the same extent as other aspects of teachers' work.

Conclusions

Methodological conclusions

As far as we have been able to find, there are relatively few studies which are designed to provide good correlational data concerning the impact of teacher training, teacher competence and other teacher characteristics on student performance and student learning conditions. Studies within this field have often used data on aggregated level, e.g. school level or even national (country) level in order to investigate possible correlations between, e.g. the extent to which teachers have adequate teacher training and the extent to which students achieve their performance objectives. Furthermore, these issues are often controversial and ideologically coloured, which makes it difficult to discern any empirical evidence that may actually exist.

Our study has provided some new and fruitful knowledge on the impact of teacher training and other teacher

characteristics. The basis for this has been the possibility to link teacher and student data on the individual level, and also a large enough sample to detect differences between, e.g. different school subjects and students on different performance levels. With this kind of data, the use of modern and advanced statistical methods – especially multilevel analysis – has made it possible to perform the analyses which have been described and which have yielded quite interesting findings. In our opinion, more studies which meet these conditions are necessary in order to bring the research forward within this important field.

Thus, our study shows the importance of and opportunities inherent in ensuring that continued evaluations of school activities are designed so that students' and teachers' responses can be related to each other at the individual level. Only then can teachers' competence, for example, be related to students' attitudes and performances in a clear and useful manner. Furthermore, this study and its limitations show the importance of ensuring that continued analyses of teacher competence and other influential factors in the school situation are set up so that they provide a nationally representative picture of more subjects in compulsory schools.

Policy issues

The study has identified three conditions or factors in teachers which have an impact on students' perception of the quality of the teaching they receive, their learning environment and to some extent also their performance. These factors relate to teacher training, teachers' self-confidence and security in their professional role, and the demographic composition of the teaching staff. All these factors are therefore important to take into consideration with a view to promoting increased goal attainment.

The fact that teacher training together with education in the subject taught is an important but insufficient basis for a good learning environment and good results for students, is knowledge which can be applied to improvement initiatives at all levels of responsibility. This applies to the municipalities' and the head teachers' work to provide teachers with good pedagogical conditions for attaining the goals, while also providing a starting point when recruiting teaching staff.

The syllabus places emphasis on the student's desire to learn. The analyses show that students' desire to learn has a correlation with the "teacher's desire to teach". Teachers' own confidence in their methodological and didactic competence and the fact that they enjoy teaching are factors which, irrespective of the student's gender, socio-economic background and level of performance, correlate positively with the students' assessment of who is a good teacher and what constitutes a good learning environment. The knowledge that "the teacher's desire to teach" is a success factor, has implications for the basic teacher training programme and the ongoing skills development initiatives at national, municipal and school levels. It is also an issue for head teachers to bear in mind when determining the direction of pedagogical support for teachers in the school, and when recruiting teaching staff.

The teachers' age and gender have an impact on girls' and boys' perception of who is a good teacher. These findings have been quite controversial and heavily discussed. One might naturally think that, in a modern and equal society, the teacher's age or gender should not be of any great importance to the students' attitude towards the teacher. At the same time, these correlations may be an expression of social structures, family circumstances, entrenched gender roles or demographic conditions which the school is only able to influence in part or perhaps over the long-term. But nonetheless, it is important to consider the implications for teachers' working conditions and for students' opportunities to learn and develop. This is an important issue to address not least with regard to boys' motivation for school work, and with regard to girls' experiences of stress in schools[12].

There are therefore good reasons to highlight and examine the situation from the perspective of goal attainment, not least when recruiting teaching staff and organising the school's activities. In the long term, it is important – as in most workplaces and most companies – to work towards a more mixed body of teaching staff in terms of age and gender. This would create conditions for teachers and students to take account of differences and conduct a dialogue with students and among the teaching staff on conditions for work, for example from the perspective of age and gender. One element of this involves focusing on achieving a balanced mix of teachers, by encouraging more men and more people of lower middle age to take up the teaching profession. ■

NOTE

12. For further discussion, see Björnsson, M. (2005).

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French Teachers: a particular identity in Europe?

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In France, schools today represent both continuity and change. Independent, free of charge, neutral, secular and compulsory, they embody the ideals of the French Revolution while continuing to promote the values of the Republic, such as discipline and merit.
Schools are also undergoing significant changes. Industrialised countries, bound by market principles, are looking to increase the efficiency of their education systems in order to cope with the expansion in training needs. Substantial reforms of their education systems are underway or getting started, leading to major shifts in the training and working conditions of teaching staff. Judging from international comparisons, the teaching profession is becoming increasingly complex and losing some of its independence in exchange for additional status, performance and qualifications in certain countries.
Affected by these changes and this expanded context, teachers are asking questions, and through international comparisons of salary or working time, these players can be situated in a wider context.

A PROFESSION NOW PREDOMINATED BY WOMEN

At both the pre-primary/primary and secondary levels, the feminisation of teaching really took off after World War II. From 64% in 1955 at the pre-primary/primary level, the proportion of female teachers in France has continued to rise: 74% in 1975, 78% in 1994, 82% and as high as 85% among younger teachers (under age 30) in 2007. The sombre severity of the *hussards de la République*, the name given to French teachers during the Third Republic, has gradually been replaced by the image of a female school teacher. There are many reasons for this according to Antoine Prost[1]: *"Since 1948, pre-primary education has been multiplied by 2.6, vocational training by 5, the second cycle of lycée by 4.8 and universities by 5.7... Schooling has been extended (Berthoin reform of 1959) by two years upstream (between ages 4 and 6) and by three years downstream (three quarters of 16-year-olds attend school versus one quarter a generation ago).* " Prost goes on to note: *"[…] this extension of schooling, spectacular between 1948 and 1976, was made possible by higher living standards which eliminated the need for children to work in the fields, and by the introduction of family benefits on a broad scale in 1932".* The growing role of women in the work force and, in particular, the recruitment of female teachers helped feminise the teaching profession. However, it should be noted that teaching positions are almost exclusively filled by women at the pre-primary level (93%) and, to a lesser degree, at the primary level (78%).

Feminisation therefore depends on the level of education. There are fewer women working at the higher levels in France: they account for 34% of teachers in tertiary education.

At the secondary level, *"the growth in the teaching staff was not as abrupt, because supervisory roles were not reinforced and the new recruits were mainly teachers' aides".*

As a result, feminisation at the secondary level has been less pronounced than at the pre-primary/primary level, going from 49.6% in 1955 to 54% in 1985 and 57% in 2007.

NOTE

1. *Histoire générale de l'enseignement et de l'éducation en France* : Tome IV : " L'École et la Famille dans une société en mutation " (depuis 1930). Cited passages translated from the French for the purposes of this article.

The rate of feminisation also varies according to the category of teaching discipline. In the humanities, there is a growing proportion of women (67.7% in 1984, 72.1% in 2004)[2]: 76% in literature, 81% in modern languages; the only exception is philosophy, mostly taught by men (63%). Scientific disciplines attract men more than women (54% of mathematics teachers and 59% of physics/chemistry teachers are men), but most biology teachers are women.

In technological and vocational subjects, women are in the minority except in management, paramedical and social fields.

Feminisation in secondary education also depends on teacher category: women account for most certified teachers[3] (60%) and slightly less than half of agrégés (49%) and PLP's (48%).

Feminisation is not a French exception

Feminisation in primary education (78% in France) is even higher in Sweden (80%), in Germany and Great Britain (82%), in the Czech Republic (84%), in Hungary (86%) and even in Italy (95%).

Feminisation in lower secondary education (63% in France) is more or less equivalent in Sweden (62%), Spain (60%), and in Great Britain and Germany (59%).

By contrast, it is much higher in Hungary and the Czech Republic (83%), in Italy (74%) and in Finland (71%).

Regarding feminisation in upper secondary schools, few countries have comparable results to those of France (51%), except Hungary (52%), Great Britain (51%) and Sweden (50%).

Certain countries have a higher proportion than France, such as the Czech Republic (55%) and Finland (56%), whereas others have a lower proportion, such as Spain (45%) and Germany (42%).

A high level of educational attainment – and set to get even higher

The level of educational attainment required to become a teacher has been increasing in France for more than 50 years. The same phenomenon is observed in the proportion of people who hold the baccalaureate (secondary school diploma) in a given generation of the French population. At the beginning of the 1950s, around 5% of French people in a given generation held the general baccalaureate; this proportion has since grown steadily to 35% in 2007. The technology baccalaureate was introduced in 1969 (1.7% of baccalaureate holders that year); in 2007, 17.2% of people in the generation considered held this diploma. The vocational baccalaureate was introduced in 1987 (0.1%); in 2007, 12.8% of people in the generation considered held this diploma, bringing the proportion of all baccalaureate holders to 64.3% for 2007. The recruitment of teachers has necessarily followed this rising trend in educational attainment levels. Until the end of the Fourth Republic (1958), primary school teachers were recruited at the end of the last year of lower secondary school *(classe de troisième)*. In 1959, at the beginning of the Fifth Republic, they were recruited at the baccalaureate level. Starting in 1991, with the creation of the *Instituts universitaires de formation des maîtres* (IUFM's)[4] they were recruited at the licence level (i.e. after three years of tertiary education). Currently, more than one third of pre-primary/primary teachers hold a *licence*, 12% hold a *maîtrise* (diploma testifying to four years of tertiary education) – this proportion is 25% among teachers under age 25 – and 4% hold a diploma testifying to at least five years of tertiary education (DEA[5], DESS, doctoral degree or similar); the proportion is 8% for mid-career teachers.

At the secondary level, there was less recruitment of teachers in the early 1950s, as explained by Prost: *"[…] growth in the teaching staff was not as abrupt and structu-*

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2. Jean-Richard Cytermann and Alain Lopes, " Une forte féminisation des métiers de l'Éducation nationale ", Revue AFAE, January 2006.

3. Certified teachers have passed the national competitive exam leading to the CAPES (*certificat d'aptitude au professorat de l'enseignement du second degré*, ISCED 5) which qualifies them to teach at the secondary level. The CAPES is open to holders of a qualification testifying to at least three years of tertiary education. Certified teachers work in either lower secondary schools *(collèges)* or upper secondary schools *(lycées)*.

Agrégés are teachers who have passed the competitive exam leading to the *agrégation* (open to holders of a qualification testifying to at least four years of post-secondary education). Most holders of this certificate teach in upper secondary schools and prepare students for the baccalaureate.

PLP's *(professeurs de lycée professionnel)* are teachers in vocational secondary schools who have passed the competitive exam leading to the CAPLP *(certificat d'aptitude au professorat de lycée professionnel)* and who prepare students for vocational diplomas.

4. IUFM *(institut universitaires de formation des maîtres)*: tertiary education institution which trains teachers for the primary and secondary levels.

ral reforms led to a redistribution of the personnel. Thus, in the years following the war, while primary school teachers had full reign over the cours complémentaires[6]*, the* collèges *and* lycées *were the exclusive domain of agrégés and certified teachers*[7]*. The* certificat d'aptitude pédagogique à l'enseignement secondaire (CAPES) *created in 1950 was characterised by programmes closer to those taught in the classrooms and by the year of instructional training in one of the* centres pédagogiques régionaux (CPR)" – these centres were replaced in 1991 by the IUFM's, and an additional year of preparation became necessary to take the agrégation, which now requires a *maîtrise*, or 4 years of tertiary education. For many years already, certified teachers and agrégés have completed diplomas beyond those required to take the competitive recruitment exams.

Specifically, while a quarter of secondary school teachers hold a *licence*, nearly four out of ten hold a *maîtrise* (and the number of young teachers is even higher: half of those under 32). Two out of ten hold a diploma testifying to at least five years of tertiary education (DEA, DESS, doctoral degree, etc.).

In most European countries, professional training begins at the start of tertiary studies for teachers, which include general training as well. This is known as the simultaneous model. Otherwise, professional training starts during a second phase and may or may not run parallel to certain general courses (consecutive model), as in France, Italy and Spain. In Ireland, Portugal and the United Kingdom[8] the two models coexist.

The training programme lasts 4 to 4.5 years in many countries, such as Germany, the Netherlands, etc. In France, training is based on the consecutive model and lasts 5 to 5.5 years, similar in duration to a Master's degree.

More than eight secondary school teachers out of ten in France obtained their diploma in the subject area they currently teach; this does not apply to pre-primary/primary teachers, half of whom studied humanities (literature, social sciences, languages).

One quarter of the others come from short training programmes (STAPS, STS, IUT); one fifth come from scientific programmes and the rest (one out of ten) come from law/economics programmes.

Looking at the population of students enrolled in the second cycle of university in France, we see that literature and social science studies are over-represented among teachers, the sciences are under-represented, and law and economics are very under-represented.

Good students as children

The theory that teachers were good students as children turns out to be true and not only in France; six pre-primary/primary teachers out of ten and two thirds of secondary school teachers in France never repeated a year. However, whether teachers repeated parts of their schooling also depends on specific policies at different times and is therefore only a guideline.

Analysing the school trajectories of teachers within the French Community of Belgium, Christian Maroy[9] highlights the fact that most secondary school teachers were "on time" or ahead as students and enjoyed school.

When asked to describe their school performance, two secondary school teachers out of ten in France report having been very good students. This proportion is almost one half in the subject area they currently teach, and fully one half report having been good students in this subject.

One pre-primary/primary teacher out of seven in France reports having been a very good student and more than one in two report having been a good student.

Attaining the French baccalaureate with honours can also provide insight into school performance: 4% of secondary school teachers report obtaining high honours, whereas the proportion

NOTES

5. DEA *(diplôme d'études approfondies)*: diploma testifying to five years of tertiary education, requires a year of research on a specific subject, ISCED 6.

DESS *(diplôme d'études supérieures spécialisées)*: diploma testifying to five years of tertiary education, includes a compulsory in-company placement, ISCED 5.

6. *Cours complémentaires* became *collèges d'enseignement général* as a result of the Fouchet reform of 1963, and these in turn became *collèges d'enseignement secondaire* (lower secondary schools) – see article by J.C. Emin and P. Esquieu, *"Un siècle d'éducation"*.

7. Antoine Prost, *Histoire de l'enseignement et de l'éducation depuis 1930* – Chapter 4: " Les surprises de la démocratisation ". Cited passages translated from the French for the purposes of this article (*collège* = lower secondary school; *lycée* = upper secondary school).

8. *Initial training and transition to working life. Key topics in education in Europe,* Volume 3, Eurydice 2002.

9. *L'enseignement secondaire et ses enseignants,* edited by Christian Maroy, Pédagogie en développement, De Boeck, 2002. Cited passages translated from the French for the purposes of this article.

of high honours awarded in 1967 was 0.5%; 15% report obtaining honours, which is three times higher than for 1967 baccalaureate graduates.

An upward trend in social origin

For pre-primary/primary teachers, this proportion is 10%.

A number of sociologists have examined the social origin of teachers, for example Ida Berger or Alain Léger[10], the latter writing of a gradual *"embourgeoisement"* of teachers.

Although the proportions of socio-professional categories vary slightly from one survey to another, all surveys conclude that embourgeoisement is indeed occurring in the profession.

This is also revealed by the various surveys of the DEPP (Evaluation, Prospective and Performance Directorate, French Ministry of National Education) which have focused on the social origin of teachers[11].

In 2005, French pre-primary/primary teachers were from families in which:

- All the fathers worked: they were mainly middle or senior managers (35%), manual workers (22%) or were self-employed, e.g. farmer, craftsman (18%). In 10% of cases, the father was a teacher;
- Two thirds of the mothers worked, mainly as clerical workers (24%), teachers (12%) or middle managers (9%).

In France, teachers represent around 4% of the total work force. This confirms the over-representation of teachers whose parents were also teachers. The image of the *"normalien with peasant or labourer parents, who gained access to an honourable and esteemed profession through the École Normale without added costs, since the school provided for students' material needs"* grows more distant with each passing decade.

For young pre-primary/primary teachers (under 32), the higher proportion of fathers in senior management and mothers in teaching is even more pronounced.

Younger teachers are clearly observed to follow in their parents' footsteps: twice as many teachers under 32 (14%) as teachers over 49 (7%) have a parent who teaches.

French secondary school teachers today come from families in which:

- All the fathers worked, primarily as employees, almost equally divided between the private and public sectors (41% and 37% respectively), mainly in middle or senior management (43%) or teaching positions (10%);
- Two thirds of the mothers worked, primarily as employees (51%), with nearly as many in the private as the public sector (24% and 27% respectively), mainly as clerical workers (30%), teachers (18%) or middle managers (16%).

But the social origin of secondary school teachers varies according to their category: while one secondary teacher out of six has at least one parent who taught, thereby confirming the over-representation of teacher parents, this is not the case for teachers at vocational secondary schools (PLP's). Only 5% of their fathers were teachers, whereas this figure is three times as high for certified teachers or *agrégés*. In addition, there are fewer senior managers among the fathers of PLP's (14%) than among the fathers of *agrégés* (29%) or certified teachers (23%). The less "privileged" social origin of PLP's is accompanied by a greater proportion of fathers who were manual workers (one out of two) than for *agrégés* (one out of seven) or certified teachers (one out of five), as well as a greater percentage of clerical workers (17%) versus 10% for certified teachers and 6% for *agrégés*.

In similar fashion to the fathers of PLP's, their mothers are more often manual workers (43%) than the mothers of *agrégés* (7%) and less often teachers (10% versus 26%). In contrast, there are three times as many craftspersons, retailers and business owners among the mothers of PLP's (23%) than among the mothers of *agrégés* (7%).

This *"embourgeoisement"* has a definite impact on how teachers perceive their professional situation compared to that of their parents.

Thus, 30% of pre-primary/primary teachers whose parents were in more intellectually demanding professions and in senior management think their social standing is worse than that of their parents; with regard to working conditions, this figure is 23%.

Thirty-four per cent of teachers' children think their social situation is worse than that of their parents (only 24% think it better); 44% think their working conditions are worse.

A proportionally greater number of pre-primary/primary teachers reported their situation to be better if their parents were or are farmers, clerical workers or manual workers.

NOTES

10. *Enseignants du secondaire*, Alain Léger, PUF.

11. Since 1991, DEPP has conducted various surveys of teachers (sample or panel) at both the pre-primary/primary and secondary levels. Many of the figures presented here are from the 2005 survey.

At the secondary level, 80% of teachers have the impression that their social standing equals or exceeds that of their parents at the same age; this proportion is 73% with regard to working conditions. There are a few variations according to teacher category: only two PLP's out of ten think their social standing is worse. Respondents whose parents were in the most low-skill occupations have the impression, more so than the others, that their social standing has improved; this is true for 93% of those whose mother was a farmer and 87% of those whose father was a farmer, as well as for 89% of those whose mother or father was a manual worker, for 82% of those whose father was a clerical worker and 70% of those whose mother was a clerical worker, and also for 62% of those whose mother or father was in a middle-ranking profession (between workers and managers, including teachers, nurses, etc.).

Inversely, only three teachers out of ten whose parents were senior managers or teachers share this impression, whereas three out of ten feel their social standing is worse than that of their parents.

The comparative perception of working conditions is very close to that for social standing, except among teachers' children; almost half think their working conditions are worse than those of their parents. This opinion is shared by one out of four teachers working in a *ZEP (zone d'éducation prioritaire*, a disadvantaged area targeted for special help in education).

In a survey conducted in the subsidised independent schools of the French Community of Belgium, Christian Maroy highlights sociological constants in the teachers, *who "are mainly recruited in the middle-class strata, although they also come from both extremes of the social hierarchy, from the upper classes for women as well as the working classes for men"*.

An early career choice influenced by educational experience

The time at which French teachers report having chosen their profession varies according to the level of education.

Among pre-primary/primary teachers, their profession takes root at an earlier age; almost three out of ten report having already decided in primary school to become a teacher, or at least before starting their tertiary education for six in ten of them.

For secondary school teachers, the choice is made later (only one out of five decides prior to their tertiary studies). The interest in a specific subject which will later become their teaching discipline develops during their schooling.

For roughly two thirds of teachers, their choice of profession is influenced by their educational experience. For half of secondary school teachers, the charismatic image of a teacher led them to choose their career. Is this a matter of identifying with a teacher, or of discovering a love for a particular subject?

Fewer pre-primary/primary teachers (four out of ten) report having been influenced by the memory of a teacher.

The motivating factors which lead teachers to choose their profession are quite similar across the different education levels: for around 55% of pre-primary/primary and secondary school teachers, first and foremost is the desire to teach, especially the subject area to which they dedicated their tertiary studies. Given that imparting knowledge involves an audience, *"contact with young people"* is the second motivating factor for every one of two secondary school teachers. By a narrow margin, *"working with young children"* is the top motivating factor for pre-primary/primary teachers.

"The joy of sharing knowledge" is what best defines the interaction with students (for nearly one out of two teachers), especially after a few years on the job.

In all surveys conducted over the past 15 years, the motivating factors that lead teachers to choose their profession have a remarkably stable hierarchy, which nonetheless varies with age: *"attachment to* [their] *subject area"* drops slightly after 20 to 25 years of experience (around age 50) to the benefit of the *"interaction with students"*. As many as seven out of ten secondary school teachers with more than 35 years' experience highlight *"contact with the students"*. It is conceivable that a career choice initiated by *"a love for the subject area"* is rebuilt after-the-fact, whereby *"contact with the students"* becomes both the explanation for the career choice and the primary source of enjoyment in teaching young people.

At the other end of the spectrum, young secondary school teachers with less than five years' experience primarily show a strong *"attachment to* [their] *subject area"* (seven out of ten), which supersedes "contact with the students" (five out of ten), but the "fringe benefits" of their profession are also important to them, such as *"work-life balance"* (one out of three) and *"independence"* in their work.

For English teachers "working with children, the fulfilment of teaching, creativity and stimulation" are among the motivating factors which influence their choice of profession[12].

"Contact with children", a lifeline for pre-primary/primary teachers

In response to media scrutiny that at times distorts the difficult populations and contexts in schools, pre-primary/primary teachers in France affirm with conviction (seven out of ten) that *"contact with children"* is the primary source of satisfaction in their jobs. This is true regardless of a teacher's experience and training, while it does vary slightly with the type of school: the trend is slightly stronger in pre-primary schools than in primary schools and more pronounced in women than in men, who find *"sharing knowledge"* more *"fulfilling"*.

For secondary school teachers in France, *"contact with the students"* is also becoming the primary source of satisfaction (six out of ten). When asked what the interaction with students involved, one in two teachers assimilated it with the *"joy of sharing knowledge"*, one in four with *"constantly challenging* [themselves]*"* and one in five with the *"spontaneity of interacting with young people"*.

For one out of two teachers, the third source of satisfaction is *"independence in* [their] *work"*, defined far more often as freedom in teaching decisions (eight out of ten) than as the "absence of a strong hierarchy" or as "working alone".

As a secondary advantage, French teachers also cite the *"fringe benefits"* of their profession, such as *"work-life balance"* (three out of ten), "working in education" and "interaction with co-workers".

While teaching experience does not directly explain the differences in satisfaction, it does influence the perceived difficulty of the profession; the longer teachers have been teaching, the higher the proportion who feel teaching is becoming more difficult.

Thus, among French teachers with less than five years' experience, in either pre-primary/primary or secondary education, one out of five finds their job increasingly difficult, whereas the proportion is two out of three among teachers with at least 20 years' experience and eight out of ten among teachers at the very end of their careers.

"Student behaviour" makes day-to-day work difficult

The broad satisfaction that French teachers reportedly feel in doing their jobs should not overshadow certain difficulties which, in their view, complicate their working conditions.

Once again the hierarchy has varied little since 2002[13]. First and foremost is *"student behaviour"*, which affects eight secondary school teachers and six pre-primary/primary teachers in ten (selected out of three choices). This term includes both the unruly behaviour of students as well as their lack of motivation, which make it harder to manage the classroom.

The oldest teachers and PLP's are particularly affected.

Pre-primary/primary teachers identify as their prime difficulty *"the complexity of the responsibilities"* placed on them. This may be linked to a sense of helplessness in response to the shifting definition of their role (programme overhauls, new directives, etc.), as well as pressure from schools and parents to achieve results, a consequence of rankings in international assessments.

"Making sure all students advance" is the second difficulty experienced by two thirds of secondary school teachers, a difficulty they closely link to what they consider excessive class sizes.

In a 2005 survey on the difficulties teachers face in their profession, which involved different response modes, fewer pre-primary/primary teachers than secondary school teachers (44% versus 56%) identified with the widespread impression that "adapting to the level of [their] students is difficult". The pre-primary/primary teachers most at ease in adapting to the level of their students have less than five or more than 20 years of experience. The years reported to be the most difficult in primary school are the first, second and fifth years, respectively CP, CE1 and CM2. During the first two years, children are introduced to reading, writing and arithmetic; during the fifth and final year of primary school (CM2), they master essential skills and appropriate the working methods needed for *classe de sixième*, the first year of secondary school.

Three main reasons are given for these difficulties: *"disparity in*

NOTE

12. Eurydice report, Volume 3, 2004. Cited passages translated from the French for the purposes of this article.

13. Two surveys of 1000 secondary school teachers were conducted in 2001 and 2002. They were representative in terms of teacher category, age and subject area.

students' learning outcomes" (two in three teachers), *"students' socio-cultural backgrounds"* (one in two) and *"lack of student participation"* (one in three).

This hierarchy varies according to the year teachers instruct: in pre-primary school, teachers blame the *"disparity in socio-cultural backgrounds"*, while in CM2, they more often blame the *"lack of participation by students and their poor mastery of basic knowledge"*.

At the secondary level, more than half the teachers have trouble adapting to the level of their students, especially PLP's, teachers who work in ZEP's, female teachers and young teachers with less than ten years of experience. The corollary difficulties are *"arousing students' interest in the subject area"* especially in mathematics and physics/chemistry, and *"getting them to participate"*, more of a challenge for the oldest teachers.

Three reasons are given for these adaptive difficulties: *"insufficient mastery of basic knowledge"*, which implicitly lays blame on primary schools; *"disparity in learning outcomes"*, especially among teachers of French; and *"lack of student participation"*, which teachers at the end of their careers tend to blame.

Working time: the challenges of comparing across countries

The data collected by OECD relate to statutory working and teaching times of teachers at different levels of education. At the primary level, teachers in OECD countries teach an average of 812 hours of lessons per year in public educational institutions. French pre-primary/primary teachers teach 910 hours, which places them at the top of the range along with Ireland (915 hours), the Netherlands (930 hours), New Zealand (985) and the United States (1080 hours).

In lower secondary education (*collège* in France), working time in France (634 hours) is lower than the average working time for OECD countries (717 hours). France is positioned close to Denmark (648 hours) and Finland (589 hours). Germany (758 hours) and the United States (1080 hours) are above the average.

In general upper secondary education (*lycée* in France), teachers in OECD countries teach an average of 667 hours. With 616 hours, France is slightly below the average. The range is broad, extending from 364 hours for Denmark to 1080 hours for the United States.

The variation observed raises questions about comparing and defining teachers' working time, e.g. what exactly is covered by this term in each country:

- Regulations concerning teachers' working time vary. "In most countries, teachers are formally required to work a specific number of hours; in others, teaching time is only specified as the number of lessons per week"[14].
- "Contact time is a substantial component, but preparation for classes and the necessary follow-up (including correcting students' work) also need to be included in comparisons of teaching loads."
- "Other relevant elements (such as the number of subjects taught, the number of students taught, and the number of years a teacher teaches the same students) should also be taken into account."

The comparisons are distorted by the fact that in some countries, activities other than teaching are not included in working time; this is the case in Finland, Italy, New Zealand and the French Community of Belgium, where schools determine the time spent on activities other than teaching. However, the time spent preparing lessons and correcting tests and assignments is not regulated and the government sets the minimum and maximum number of lessons (50 minutes) that teachers must teach.

DEPP has conducted several surveys, of new teachers (1993-1995) and of more experienced teachers (2002), with regard to the time they report spending on lesson preparation and on correcting and evaluating the work of their students.

New teachers reported spending 11h40 on average per week preparing lessons during their first year of teaching, with technological subjects and humanities taking up the most time (14h30 and 13h04 respectively). The total weekly average for all new teachers was 38h42 during their first year, with humanities teachers spending up to 41h43 and technology teachers up to 41h37.

In 2002, DEPP added to the working time survey by including the hours spent meeting with parents, doing other tasks and gathering material for lessons, as well as the number of leave days per year spent gathering material or preparing lessons. For teachers of all subject areas and all ages combined, the reported working time is 39h47 and the reported number of leave days spent working

NOTE

14. *Education at a Glance 2008*, OECD.

Definitions and methodology

"Data on statutory teachers' salaries and bonuses are derived from the 2007 OECD-INES Survey on Teachers and the Curriculum. Data refer to the school year 2005/06, and are reported in accordance with formal policies for public institutions"[15]

Teaching time

Teaching time is defined as the number of hours per year that a full-time teacher teaches a group or class of students as set by policy. It is normally calculated as the number of teaching days per year multiplied by the number of hours a teacher teaches per day (excluding periods of time formally allowed for breaks between lessons or groups of lessons). Some countries, however, provide estimates of teaching time based on survey data.

At the primary level, short breaks between lessons are included if the classroom teacher is responsible for the class during these breaks.

Working time

Working time refers to the normal working hours of a full-time teacher. According to a country's formal policy, working time can refer to:

- the time directly associated with teaching (and other curricular activities for students, such as assignments and tests, but excluding annual examinations);
- the time directly associated with teaching and hours devoted to other activities related to teaching, such as lesson preparation, counselling students, correcting assignments and tests, professional development, meetings with parents, staff meetings, and general school tasks.

Working time does not include paid overtime.

Working time in school

Working time in school refers to the time teachers are required to spend at work, including teaching and non-teaching time.

15. *Education at a Glance 2008*, OECD.

Table 1 - Distribution of weekly working hours by subject area (reported in 2002)

	Subject areas				Others: physical and health ed., art, music, etc.	Total
Average hours	**Humanities**	**Sciences**	**Technology**	**Modern languages**		
Number of teachers	161	152	123	101	64	601
%	28,8	25,3	20,5	16,8	10,6	100,0
Hours						
Paid hours	18h52	19h01	19h56	18h47	20h59	19h20
of which annual overtime	1h05	1h01	1h27	1h04	0h54	1h07
of which effective overtime	0h19	0h23	0h22	0h16	0h11	0h19
Teaching hours	18h20	18h30	19h31	18h19	19h46	18h46
Reduction in teaching hours	0h31	0h31	0h25	0h28	1h12	0h34
Hours outside of teaching	24h04	19h14	19h59	20h50	14h31	20h27
Hours spent preparing lessons	8h59	6h56	7h59	7h35	5h33	7h40
Hours spent correcting work	7h56	6h42	4h52	6h15	2h45	6h10
Hours spent counselling students	1h01	0h46	1h27	0h57	0h43	1h00
Hours spent with parents	1h06	1h07	0h32	1h09	0h54	0h59
Hours spent on other tasks	1h11	1h01	1h15	1h11	1h16	1h10
Hours spent gathering lesson material	2h29	1h43	2h08	2h44	1h55	2h12
Hours spent working with other teachers	1h21	0h59	1h46	1h01	1h26	1h17
Of which hours worked at home	17h10	13h28	11h08	13h38	7h58	13h25
Total hours worked	**42h55**	**38h15**	**39h37**	**35h37**	**35h30**	**39h47**
Leave days worked	24,4	17,0	19,3	19,7	12,0	19,4

is 19.4. Once again, humanities teachers reported spending more time: 42h55 per week and 24.4 leave days worked *(Table 1)*.

The international comparisons of teacher salaries that will be reported here concern OECD countries rather than EU countries, since the reference period used by the Eurydice Network is the 2002 calendar year.

Teaching salaries vary according to country

The indicator "How much are teachers paid?" compares the starting, mid-career and maximum statutory salaries of primary and secondary teachers who possess the minimum qualifications required to teach in public primary and secondary institutions. The additional payments and incentive schemes used to reward teachers are taken into account.

The combined analysis of teachers' salaries and their working and teaching time provide a better understanding of their working conditions.

OECD has observed an increase in teacher salaries in real terms in nearly all countries between 1996 and 2006.

"On average in OECD countries, upper secondary teachers' salaries per teaching hour exceed those of primary teachers by 44%; the difference is 5% or less in New Zealand, Scotland and the partner country Chile and is equal to or greater than 75% in Denmark and the Netherlands."

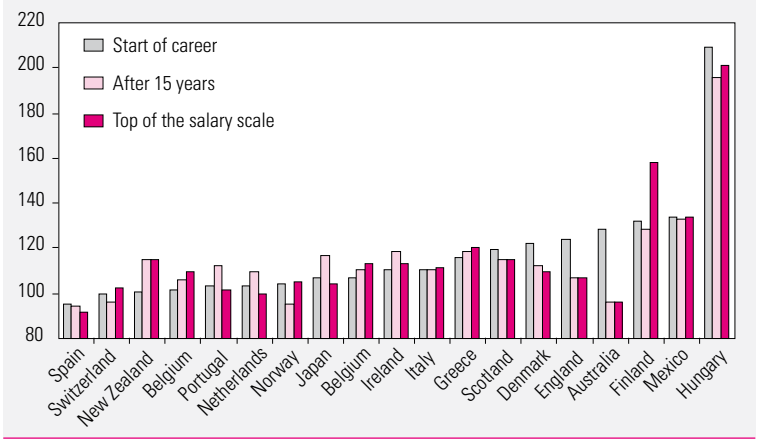
"Salaries at the top of the scale are on average around 70% higher than starting salaries for both primary and secondary education, although this differential largely varies among countries in line with the number of years it takes to progress through the scale." For example, in South Korea it takes 37 years to reach the top of the scale, where salaries are triple the amount of starting salaries; in Portugal, it only takes teachers 26 years to triple their salary. However, not all teachers reach the top of the salary scale.

In primary education, the annual statutory starting salary of teachers in OECD countries is 27,828 in USD converted using PPPs[16] *(graph 1)*. France is positioned at 23,317 in equivalent USD, close to Italy (24,211) but far behind England (29,460) and Germany (40,277). There are limits to these comparisons in that taxation as well as social benefits vary enormously from one OECD country to the next. This can be seen in the different financial incentives (e.g. bonuses based on region) and family allowances, and in other benefits such as reduced rates on cultural goods and services. After 15 years of experience, the annual statutory salary is 37,832 equivalent USD on average in OECD countries and 31,366 in France. The maximum statutory salary of a French primary school teacher is 46,280 equivalent USD (OECD average: 46,290), the ratio between salary after 15 years of experience and GDP per capita being 1.01. As noted by OECD, *"Comparative data on salaries for comparable professions would provide a better benchmark, but* […] *such data are not yet available"*.

In lower secondary education, the average starting salary in OECD countries is slightly higher than in primary education: 30,047. France is positioned below this average (25,798 equivalent USD). After 15 years of experience, the average OECD salary increases to 40,682 equivalent USD and the salary in France to 33,846. At the end of their careers, French teachers are closer to the OECD average (48,882 versus 49,778), with a ratio to GDP of 1.09. This falls short of Korea's ratio (2.28) but exceeds Sweden's ratio (0.91).

In upper secondary education, the ratio to GDP improves, both the OECD

Graph 1 - Salary changes for primary school teachers according to experience, between 1996 and 2006



NOTE

16. Purchasing power parities (PPPs) are currency exchange rates which equalise the purchasing power of different currencies, thereby eliminating the differences in price level among countries. PPPs can be used to convert expenditure on GDP into a common currency and apply the same set of international prices.

average ratio (1.34) and France's ratio (1.10). Starting at 26,045 equivalent USD, French teachers earn 34,095 after 15 years of experience and 49,155 at the end of their careers *(Graph 2)*.

With regard to France, the comparison does not take into account the measures to make teaching jobs more attractive and improve teachers' purchasing power: revaluation of effective overtime (hours in addition to annual overtime, for after-school tutoring, sessions during holidays, etc.), increased ratios of *hors-classe* (merit-based, senior-level) promotions, and a starting bonus for new recruits.

The global policy will improve not only purchasing power, but also working conditions and career opportunities for French teachers, who feel they are somewhat "disliked".

Feeling "disliked", a source of distress among teachers

Although French teachers express overall satisfaction with their professional experience, nine out of ten recognise the existence of an inner *"malaise"*, or distress. By the end of the 19th century, the Ribot report (1899) was already looking for the causes of the *"malaise"* in secondary education. Currently, six out of ten teachers report feeling this distress themselves. The situation varies according to the type of school: teachers in vocational schools, ZEP's and lower secondary schools are more affected than teachers in *lycées* (general upper secondary schools). The distress has many causes: feeling that *"the real-life difficulties of the job are not taken into consideration"* (seven out of ten) as well as the sense that teachers are *"seen by society in a more negative light"* (six secondary school teachers and five pre-primary/primary teachers out of ten).

Teachers also evoke a growing disconnect between the ideal of sharing knowledge and the realities of the classroom, as well as their *"powerlessness to realise the ideal of helping all students succeed"* (one out of two).

This feeling of powerlessness tends to affect young teachers and those in lower secondary schools and ZEP's (one out of two) more than PLP's (four out of ten) who have already faced the challenges of orienting students with academic problems. *"There is a large gap between teachers' perception of how they are viewed and the way other citizens report viewing them. In fact, teachers are often viewed more positively than they think"*[17]. The Eurydice report on the teaching profession notes that this feeling is shared by Dutch, Austrian, Italian and Finnish teachers.

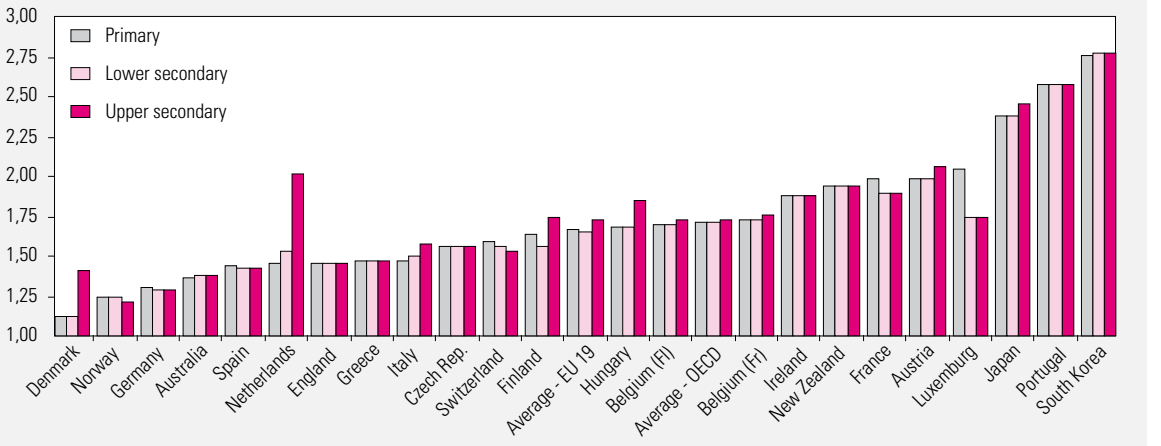
French teachers suggest several ways of easing this distress:
- *"more support from parents"*, especially for young teachers in lower secondary schools and ZEP's;
- *"training courses geared towards everyday teaching practices"*, an expectation of new recruits in particular;
- *"more teamwork"* with co-workers who teach the same subject;

finally, more support from school directors and inspectors, continuing education courses, improved teaching practices, and more teamwork with co-workers who teach other subjects.

Most teachers want to keep teaching

Two thirds of pre-primary/primary and secondary school teachers in France want to keep teaching. Among those considering a change of careers,

Graph 2 - Ratio between maximum and starting salaries



half of the secondary school teachers indicate that *"student behaviour"* would be the primary reason.

For pre-primary/primary teachers, the cause is more often a sense that the profession has lost its standing. One third would like to have partial mobility enabling them to work in secondary or tertiary education. One of every four Danish teachers reports having applied to other jobs. Three of every ten Swedish teachers say they want to change careers. One third of English teachers say they intend to leave the profession in the next five years.

In addition to the desire to leave teaching, whether teachers would *"recommend the profession"* to their children is also indicative of their professional experience. One in two teachers would indeed recommend teaching to their children.

They include the passionate, unwavering supporters who would definitely recommend the profession and have always felt that way (four out of ten).

Their reasons are numerous: a fascinating job, rewarding contact with the students, freedom, independence in their work, the sense of utility that comes from sharing knowledge or a love of their subject area, and work-life balance.

The job is gratifying; as one pre-primary/primary teacher put it: *"Seeing the radiant face of a child learning to read his or her first word is the best reward"*.

A minority of teachers would recommend their profession but have not always felt that way (7%). They include teachers who chose their creer by default or who have at times felt discouraged but now see their experience in a positive light, or those who feel better in their job now than they did when they started. *"I used to only see the job's problems and all its demands. Now, the joy of teaching is getting stronger and stronger and I really have a sense of being useful"*. The notion of balance is what changes, according to one pre-primary/primary teacher.

Finally, there are the disillusioned: those who would have recommended the profession in the past but no longer feel the same way (four secondary school teachers and three pre-primary/primary teachers out of ten).

The reasons cited are as follows: deteriorating working conditions, the profession's loss of standing, lack of consideration by parents and students, students' lack of motivation, disparity in students' levels, violence, unwieldy programmes, and excessive class sizes. *"Working conditions are getting too hard. The classes are too big. The dissimilarity among students and their lack of motivation is discouraging"*, noted one PLP.

French teachers have a common mission, are recruited at the same level (three years after the baccalaureate) and now receive their training in the same place, at the *Instituts universitaires de formation des maîtres*. They form a group with specific social characteristics, but one which is far from homogeneous.

Beyond the specific statutory requirements leading to non-negligible differences in job duties, teachers' working conditions are more varied than they seem, to such an extent that diversity within the profession can be said to exist in France and in developed countries.

Whether French teachers work in primary, lower secondary or upper secondary schools, in urban or rural areas, in ZEP's, whether they teach one or several subjects, have large or small classes, whether they were very good students or good students, and their socio-economic category growing up – all these variables play a role in how teachers view the day-to-day aspects of their job.

Can we still speak of a single profession? The European context cannot be forgotten, nor the fact that teachers' core mission is to educate not only citizens, but citizens of the world. ■

The Size of Learning Structures in French secondary Schools at the Start of the 2007 School Year

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The average number of pupils per teacher (twelve) and the number of pupils per division (twenty-four) are not the best indicators for estimating pupils' reception conditions and teachers' working conditions in state secondary schools. Indeed, a third of lessons are in groups and not in divisions, with significant disparities depending on the type of training (19% in *collèges* (lower secondary school) and 49% in upper secondary general or technological programs). Thus, to better understand actual supervisory conditions, the E/S indicator can be calculated corresponding to the number of pupils under a teacher's responsibility for one hour. This comes to 21 for training overall, to 16 for vocational training, 23 for lower and upper secondary general and technological training and to 28 for *classes préparatoires aux grandes écoles* (CPGE, prep courses for French engineering and business schools). Moreover, the E/C indicator, corresponding to class size as seen by the pupil, can be calculated to assess the size of classes from the pupil's point of view. This equals 24 for all public secondary schools, but varies according to type of training or subject. Finally, there are significant disparities in the average size of structures depending on the teacher's post discipline. This is why this indicator is completed by the number of pupils seen by a teacher on average in one week.
From an international standpoint, supervisory rates and class sizes are key indicators for assessing the quality of the education system. They are major points in education policy and key subjects of debate in many OECD countries. International comparisons (Education at a Glance 2008: OECD Indicators) can be used to appraise the values of these indicators in the different OECD countries. However, different methodologies are used and it is not possible to have the same level of detail as for France.

In international comparisons, supervision in secondary schools is calculated according to the student-teacher ratio. This ratio stood at 11.8 in France in 2006 as against over 15 in Germany and the United States (the OECD average is 13.2), but stood at less than 10 in Greece, Luxembourg, Norway, Portugal and Spain. It was 12 at the start of the 2007 school year in France.

However, this indicator offers only an elementary insight into pupil reception conditions.

Several indicators can be calculated to show the size of learning structures in secondary schools.

The E/D indicator of the pupil-division ratio gives the average size of a division. The value of this indicator was 23.8 at the start of the 2007 school year (table 1). But the size of divisions does not reflect the actual conditions in which lesson programs are organised. Indeed, pupils are not always in a complete division situation and more often in small groups. This is generally the case for subjects for which lesson time is statutorily split and where lessons are organised into practical work, tutorials, workshop groups and modules, but also for options or modern or ancient languages. Some of these lesson programs may also concern pupils from several divisions.

A THIRD OF TEACHING HOURS ARE PERFORMED IN GROUPS

The percentage of teaching hours in groups for all types of training stands at 33.4%. This can sometimes vary by 100% or more (from 18.6% in lower secondary training, up to 47.1% for vocational training and 49.0% in upper secondary general and technological programs).

But a better indicator of the resources allocated to teaching is the percentage of hours in the learning structures – divisions or groups – with 10 pupils or less. Overall, this stands at 8.5%, but can go up to 19.0% in vocational programs and 30.5% in *sections d'enseignement général et professionnel adapté* (SEGPA, special facility for lower secondary pupils with serious and long-term learning

Table 1 - Size of structures by type of training

Metropolitan France + Overseas Departments - State

Training level	Year 2007-2008						Reminder 2006-2007	
	Number of pupils per division (E/D)	Average size of structures (E/S)	Number of pupils in class (E/C)	% of hours in the structures <= 10 pupils	% of hours in the structures > 35 pupils	% of hours in groups	Average size of structures (E/S)	% of hours in the structures <= 10 pupils
Lower secondary school	23,9	22,8	24,1	3,2	0,4	18,6	22,9	3,1
SEGPA	13,3	12,6	13,9	30,5	0,1	25,7	12,5	32,0
Upper secondary, vocational	19,4	16,0	18,9	19,0	0,2	47,1	16,1	18,6
Upper secondary, general and technological	28,3	22,7	26,3	6,4	1,7	49,0	23,0	6,2
CPGE	35,6	27,8	34,2	8,8	33,1	46,4	27,2	8,4
STS	22,4	18,1	21,5	14,1	1,4	45,0	18,1	14,2
Total	**23,8**	**21,0**	**23,8**	**8,5**	**1,1**	**33,4**	**21,1**	**8,4**

Sources : Relay and SCOLARITÉ databases - MEN-MESR-DEPP.

Table 2 - Size of structures by training level

Metropolitan France + Overseas Departments - State

Training level	Year 2007-2008						Reminder 2006-2007
	Number of pupils per division (E/D)	Average size of structures (E/S)	Number of pupils in class (E/C)	% of hours in the structures <= 10 pupils	% of hours in the structures > 35 pupils	% of hours in groups	Average size of structures (E/S)
6e (first year, lower secondary)	23,9	22,9	24,2	2,7	0,4	15,5	22,9
5e (second year, lower secondary)	24,4	23,5	24,6	1,8	0,5	16,4	23,4
4e (third year, lower secondary)	24,4	23,1	24,2	2,6	0,4	20,7	23,1
3e (fourth year, lower secondary)	24,0	22,4	23,8	3,4	0,3	22,1	22,5
Other lower secondary (3e d'insertion, classes relais) *	12,6	12,6	15,2	43,5	0,2	8,8	12,9
SEGPA	13,3	12,6	13,9	30,5	0,1	25,7	12,5
CAP (ISCED 3)	14,2	12,8	15,2	34,3	0,2	40,0	12,8
Mention complémentaire (vocational diploma)	11,3	11,4	12,8	41,0	0,1	7,4	11,1
BEP (ISCED 3)	22,2	17,0	19,9	14,3	0,2	53,2	17,2
Bac professionnel (ISCED 3)	18,0	16,0	18,7	18,7	0,2	40,3	16,1
2nde (first year, upper secondary), general and technological	31,1	24,4	27,8	4,3	2,0	50,9	24,9
1re (second year, upper secondary), general and technological	27,1	22,1	25,6	7,4	1,8	46,8	22,3
Terminale (final year, upper secondary), general and techno;	27,0	21,6	25,2	8,2	1,4	49,2	21,8
CPGE	35,6	27,8	34,2	8,8	33,1	46,4	27,2
STS	22,4	18,1	21,5	14,1	1,4	45,0	18,1

Sources: Relay and SCOLARITÉ databases - MEN-MESR-DEPP.

*3e d'insertion: for 15-year-olds more suited to a vocational program. Classes relais: temporary structure for drop-out pupils to help them reintegrate mainstream education.

Table 3 - Percentage breakdown of teaching hours according to the size of structures and training type (in %)

Year 2007-2008 - Metropolitan France + Overseas Departments - State

Type of training	Size of structures								Total
	<= 5	6 à 10	11 à 15	16 à 20	21 à 25	26 à 30	31 à 35	> 35	
Lower secondary	0,5	2,7	6,3	14,7	45,7	29,3	0,4	0,4	100,0
SEGPA	3,2	27,4	42,5	25,9	0,5	0,2	0,2	0,1	100,0
Upper secondary, vocational	2,1	17,1	41,7	13,4	15,8	7,7	2,1	0,2	100,0
Upper secondary, general and technological	1,1	5,4	18,4	21,3	14,1	14,1	23,8	1,7	100,0
CPGE	2,4	6,5	11,5	14,3	14,9	8,4	8,8	33,3	100,0
STS	1,2	13	32,9	19,5	14,6	10,2	7,3	1,4	100,0
Total	**1,1**	**7,4**	**18,5**	**16,8**	**28,7**	**19,3**	**7,1**	**1,1**	**100,0**

Source: Relay Databases - MEN-MESR-DEPP.

difficulties). Otherwise, the share of teaching hours performed in structures with over 35 pupils stands at 33.1% for *classes préparatoires aux grandes écoles* (CPGE), 1.7% for upper secondary general or technological programs, 1.4% in *sections de technicien* supérieur (STS, advanced technician vocational courses), and virtually zero in other types of training *(table 1)*.

These disparities can of course be noted when the training levels are broken down *(table 2)*.

Nearly a fifth of teaching hours are performed in structures with 11 to 15 pupils

Irrespective of the type of training, 28.7% of teaching hours are performed in learning structures with 21 to 25 pupils, 19.3% with 26 to 30 pupils, 18.5% with 11 to 15 pupils and 16.8% with 16 to 20 pupils. However, this percentage breakdown is significantly different depending on the type of training. Thus, for vocational upper secondary training (in a *lycée professionnel*), 41.7% of hours are in structures with 11 to 15 pupils; in *collèges* (lower secondary school), 45.7% are in the 21-25-pupil learning structure bracket and 29.3% in the 26-30 bracket. In terms of upper secondary general and technological programs in *lycées* (upper secondary schools), the breakdown is much more uniform with a maximum of hours in the 31 to 35 pupil bracket (23.8%). Finally, for CPGE programs, a third of hours are in structures of over 35 pupils *(table 3)*.

A Teacher in contact with 21 pupils on average

The average number of pupils under a teacher's responsibility for one hour on average, or the average number of pupils per structure (E/S), is calculated by considering the number of hours followed by a group of pupils - group or division - for each lesson program with a teacher. Irrespective of the training, this stands at 21. This indicator has not changed for five years. Its values significantly vary depending on training type: 12.6 in SEGPA, 16 in lycée professionnel, 18.1 in STS, 22.7 in lycée, 22.8 in collège and 27.8 in CPGE *(table 1)*.

While the average numbers of pupils by division in general and technological *lycées* and in *collèges* are very different (28.3 and 23.9 respectively), the average numbers of pupils per structure are on a similar level. Thus, in spite of significantly different average division sizes, *lycée* and *collège* teachers have, overall, an equivalent number of pupils in their classes. However, note that the average number of pupils per structure varies according to the training level. Indeed, the average size of *collège* structures varies from 22.4 in *troisième* (fourth year of collège) to 23.5 in *cinquième* (second year in *collège*). The average size in *lycées*, which is 22.7 on average, varies from 21.6 in general and technological terminale (last year of *lycée*) to 24.4 in general and technological *seconde* (first year of *lycée*) *(table 2)*.

The mean number of pupils per structure in Metropolitan France and in the overseas departments masks significant disparities between academic councils *(académies)*. Indeed, the number of pupils per structure is much higher in Nice, Versailles or Paris with an E/S of over 22, than in Corsica, Lille or Amiens where it is under 20. The average number of pupils per structure in collèges in the *Académie de Versailles* (Versailles Academic Council), for example, stands at 23.9, i.e. 1.1 pupils over the national average. On the other hand, it is 21.7 in the *Académie de Lille*, i.e. 1.1 pupils under the national average.

Class size also varies from the pupil's point of view

The reception conditions are not always the same for pupils in state secondary schools. The E/C indicator is used to measure class size from the pupil's point of view. This indicator corresponds to the average number of pupils in the class or the average size of the class (*cf.* "Mathematical Formula" box). The average number of pupils in the class is generally 23.8, but the values of this indicator are very different depending on the type of training: 13.9 in SEGPA, 18.9 in *lycée professionnel*, 21.5 in STS, 24.1 in *collège*, 26.3 in *lycée*, and 34.2 in CPGE *(table 1)*. There are also major disparities depending on the subject taught. Maths and French for example have an average of 25 pupils per class. The average size of physical education and sports classes is 26.2, while it is 20.5 for technology classes. There are also major differences in modern languages for pupils. For example, Spanish classes have an average of 24.4 pupils, while German classes have an average of 21.3 pupils. It can also be noted that 22.6% of German

Table 4 - Size of structures per subject taught

Metropolitan France + Overseas Departments - State

Subject	Year 2007-2008					Reminder 2006-2007
	Average size of structures (E/S)	Number of pupils in class (E/C)	% of hours in the structures <= 10 pupils	% of hours in the structures > 35 pupils	% of hours in groups	Average size of structures (E/S)
Mathematics	22,7	24,9	5,4	1,5	16,3	22,7
French	23,1	25,0	4,6	0,8	9,9	23,2
English	21,6	23,8	5,3	0,9	39,4	21,8
Physical education and sport	24,1	26,2	2,5	1,4	11,2	24,1
History and geography	24,4	25,8	2,0	1,1	6,0	24,6
Physics-Chemistry	21,4	24,1	5,5	2,1	41,9	21,7
Technology	18,0	20,5	14,3	0,3	44,7	17,8
Life and earth sciences	21,5	23,3	2,7	0,7	40,7	21,8
Spanish	22,1	24,4	5,0	1,3	56,9	22,4
German	17,2	21,3	22,6	1,4	85,6	17,0
Visual arts	22,9	24,1	3,2	0,2	8,6	23,1
Biotechnology, healthcare	14,7	17,4	23,3	0,2	51,3	14,8
Music	23,2	24,4	3,2	0,3	5,4	23,2
Miscellaneous	16,7	21,6	22,5	2,1	48,9	17,0
Applied arts	15,2	18,1	24,2	0,3	46,2	15,1
French - history - geography	17,9	20,4	11,9	0,2	31,6	18,2
Economics and management	19,5	22,5	7,3	0,9	48,7	19,7
Vocational pluri-disciplinary project	14,0	16,8	27,5	0,2	65,6	14,3
Economics	21,7	24,5	5,8	1,5	23,4	22,0
Mechanical engineering, industrial automation	13,1	15,2	31,9	0,1	67,1	13,4
Civic education	20,3	22,7	5,2	0,5	40,1	20,6
Economic and social sciences	25,1	27,7	3,2	3,0	40,3	25,5
Latin	19,6	25,2	15,5	4,1	86,0	19,4
Philosophy	25,0	27,4	2,1	2,9	19,0	25,2
Mechanical engineering in construction	14,9	17,4	22,1	0,1	59,4	15,2
Hotel-tourism industry	15,0	18,0	22,8	0,5	58,1	15,1
Biotechnology, biological engineering-biochemistry	18,9	22,4	8,5	1,5	60,4	19,7
Electro-technical electrical engineering	14,0	16,0	19,9	0,0	69,8	14,2
Accounting, finance	18,6	21,3	7,4	0,4	44,8	19,3
Professional practices	14,7	17,4	26,0	0,3	50,3	14,5
Italian	18,7	22,7	16,6	1,3	81,8	19,0
Electronic electrical engineering	13,6	15,5	24,5	0,1	74,2	13,8
Communication	18,5	21,6	9,8	0,6	48,8	18,5
Itinéraire de découverte initiative	22,0	28,6	8,1	3,6	55,9	22,3
Civil engineering	13,8	16,2	26,9	0,1	59,9	13,8
Engineering science	16,9	19,9	11,0	1,7	83,8	17,3
Miscellaneous vocational arts	15,2	19,1	23,3	0,6	65,9	15,1
Individual work guidance	20,8	25,3	14,2	1,8	30,5	21,1
Office technology and secretarial studies	17,7	20,0	8,3	0,2	53,8	17,9
Business management	19,9	23,0	9,5	1,2	31,8	20,2
Mechanical engineering, maintenance	12,9	15,3	42,9	0,0	63,0	12,7
Electrical engineering, IT	14,5	17,5	21,7	1,4	73,2	14,4
Individual tutorials	23,1	28,1	8,6	6,7	60,6	23,7
Management IT	18,2	21,3	9,8	0,9	66,2	18,4
General science	20,1	23,9	8,9	5,3	49,6	20,2
Industrial engineering, textiles and leather	12,6	14,6	31,6	0,0	58,5	12,8
Vocational training	10,9	13,7	61,0	0,0	67,1	10,5
Industrial engineering, wood	13,9	16,1	26,7	0,0	51,9	13,7
Paramedical and medical studies	20,3	23,6	7,3	1,6	49,3	19,7
Law and legislation	23,8	27,1	3,6	5,3	13,7	24,1

Table 4 – (*suite*)

Subject	Year 2007-2008					Reminder 2006-2007
	Average size of structures (E/S)	Number of pupils in class (E/C)	% of hours in the structures <= 10 pupils	% of hours in the structures > 35 pupils	% of hours in groups	Average size of structures (E/S)
Physical measurements and IT	18,2	20,6	5,0	0,8	87,4	18,8
Graphics industry	13,3	15,8	35,5	0,2	62,9	12,8
Heat engineering	14,4	16,5	17,9	0,0	55,8	14,6
Technical language	18,1	21,8	6,5	1,0	90,5	17,7
Industrial engineering, metallic structures	11,5	13,4	46,8	0,1	57,1	11,0
Ancient Greek	15,2	22,6	38,5	2,9	90,0	15,6
Driving, navigation	11,7	16,8	45,8	0,4	72,9	11,5
Industrial engineering, glass and ceramics	12,2	15,0	38,6	0,0	67,5	12,1
Religious education	14,5	19,8	42,1	1,3	75,6	14,3
General language and literature	18,1	22,4	22,8	1,6	42,4	18,9
Portuguese	16,1	22,8	34,0	2,0	71,9	16,7
Russian	14,1	20,5	43,3	1,8	90,2	14,0
Industrial engineering, composite plastics	12,9	15,3	35,6	0,0	59,5	11,6
Personal care	17,4	23,8	4,9	6,4	73,0	17,9
Chinese	19,9	24,1	17,0	1,7	81,4	20,0
Arabic	14,3	20,0	43,2	1,6	88,6	14,3
Occitan	17,0	25,8	32,6	2,6	74,6	16,9
Corsican	19,4	22,6	14,5	0,5	48,7	20,4
Other modern or regional languages	21,2	31,4	17,7	6,3	58,6	21,7
Provençal	17,2	19,9	11,1	0,2	53,3	18,7
Chemical engineering	15,8	19,1	26,8	0,4	55,5	15,6
Breton	13,8	24,3	51,1	3,7	81,2	12,5
Dutch	16,6	20,3	22,0	1,0	71,9	17,1
Basque	16,5	20,2	27,4	1,0	90,4	14,6
Japanese	19,3	24,5	17,5	1,7	93,1	21,4
Catalan	17,3	20,9	24,8	0,4	67,3	18,5
Hebrew	17,5	25,7	45,1	12,7	76,6	14,5

Source: Relay databases - MEN-MESR-DEPP.
There are over 1200 subjects, which is why some have been grouped, particularly those from the vocational field.
The subjects are classified according to their total number of teaching hours.

hours are taught to learning structures (a group in most cases) of 10 pupils or less, while only 5% of Spanish hours are taught to 10 pupils or less *(table 4)*. Note that the number of pupils taking Spanish is more than twice that of those taking German (1.66 million as against 0.66 million).

Major disparities in the size of the structure according to the teacher's post discipline...

There is a major disparity in structure size in post disciplines with the highest number of teaching hours. Some of these differences can be explained by the application of variable splitting thresholds according to discipline, type of training or *académies* (particularly in vocational training).

Some teachers teach their hours to all the pupils from the same division. For example, only 10% of teaching hours carried out by a history-geography or language-literature teacher are in a group. On the other hand, physics or earth or life sciences teachers often have their structures split (over 40% of these teachers' teaching hours are in groups).

Modern languages teachers, sometimes teaching pupils from different divisions, mainly teach to groups (57% for Spanish teachers, 85% for German teachers, 82% for Italian teachers). But these hours are not necessarily taught to few pupils (only 5% of the Spanish hours taught are to structures of 10 pupils and less).

For the most frequent post disciplines, the average size of the structures sometimes exceeds 24 (maths, language and literature, physical education and sport, history-geography), and for others, mainly the vocational and technological disciplines, it is less than 14 *(table 5)*.

Table 5 - Size of structures by post discipline and the total number of pupils seen by a teacher per week
Start of 2007 school year - Metropolitan France + Overseas Departments - State

	Average size of the structures (E/S)	% of hours in the structures <= 10 pupils	% of hours in the structures > 35 pupils	% of hours in groups	Average number of pupils per week
L1300 - mathematics	24,2	2,9	2,0	15,1	105
L0202 - language and literature	24,0	2,8	0,9	10,8	97
L0422 - English	22,2	4,3	1,1	40,6	135
L1900 - physical education and sport	24,2	2,3	1,4	11,7	154
L1000 - history-geography	24,8	1,2	1,2	9,8	135
L1500 - physical science	22,3	3,1	2,6	43,0	142
L1600 - life and earth sciences	21,7	2,4	1,0	42,5	194
L0426 - Spanish	22,2	4,7	1,3	57,1	151
L1400 - technology	20,6	3,7	0,4	40,9	214
L0201 - classics	22,8	8,2	3,0	39,6	112
P0210 - language & literature - history - geography	17,7	11,6	0,2	33,9	80
C0072 - special needs teacher	13,1	23,1	0,1		49
P1315 - mathematics - physical science	16,3	16,3	0,1	42,2	88
L0421 - German	17,3	22,2	1,4	85,4	112
L1800 - visual arts	23,5	2,3	0,3	8,9	368
L1700 - music	23,7	2,1	0,3	5,6	375
P7200 - biotechnology - health, environment	14,0	28,2	0,1	49,4	114
P0222 - language & literature - English	17,2	12,8	0,3	43,3	128
L8012 - economics and accounting management	21,2	5,0	1,6	39,9	75
P8013 - sales	17,7	9,6	0,2	49,5	58
P8012 - accounting and office technology	17,5	10,9	0,1	44,0	68
L1100 - economic and social sciences	24,8	3,3	2,8	42,4	124
P8011 - communication and office technology	17,2	10,5	0,1	49,9	60
L0100 - philosophy	25,0	2,3	3,9	20,2	111
P5200 - electrical engineering, electro-technical option	14,1	17,2	0,1	68,4	43
L4100 - mechanical engineering, construction	16,3	17,7	2,3	65,0	59
L8011 - economics and administrative management	21,3	3,9	1,4	41,4	75
L8013 - economics and commercial management	21,7	3,5	1,6	41,8	69
P6500 - art and applied arts	18,3	11,9	0,2	22,1	217
C1400 - technology: mechanical construction	20,6	3,2	0,3		214
L4200 - mechanical engineering, industrial automation	14,0	25,8	0,8	74,2	53
L5200 - electro-technical studies	14,4	22,3	0,4	75,6	50
L1510 - physics and applied electricity	16,1	18,1	0,3	51,7	52
P4100 - mechanical engineering, construction	13,5	29,3	0,1	57,3	81
P4500 - mechanical engineering - vehicle maintenance	12,4	62,6	0,0	68,3	41
L0429 - Italian	18,7	16,6	1,3	82,1	127
C1315 - mathematics - physical sciences	23,6	1,6	0,3		131
P2100 - industrial engineering, wood	12,5	35,9	0,1	58,2	32
P4550 - mechanical engineering, maintenance of automated mechanical systems	13,0	27,1	0,0	60,9	45
P2200 - industrial engineering, textiles and leather	12,5	34,1	0,1	58,9	33
P2400 - industrial engineering, metallic structures	11,3	45,6	0,0	51,1	31
P7300 - medico-social science and techniques	19,1	3,9	0,1	55,4	57
L7100 - biochemistry - biological engineering	19,4	3,8	0,6	59,9	72
C0222 - English language and literature	22,5	3,3	0,3		123
L5100 - electrical and electronic engineering and automatic syst.	14,1	24,3	0,2	77,4	46
P4200 - mechanical engineering, industrial automation	12,0	39,4	0,1	62,1	35
P3100 - heat engineering	13,5	23,6	0,0	59,8	40
L7300 - medico-social science and techniques	20,7	2,4	2,2	64,7	84
C0210 - language & literature - history - geography	23,7	1,5	0,3		122

Source: Relay databases - MEN-MESR-DEPP.
The discipline names are preceded by their code. The codes starting with a C are *collège* type disciplines, those starting with an *lycée* type disciplines, and those starting with a P are *lycée professionnel* type disciplines. A teacher can however teach in a *collège, lycée* or *lycée professionnel*, irrespective of his/her type of post discipline. The post disciplines shown in this table are those for which the number of teaching hours are the highest..

... BUT THIS SHOULD BE QUALIFIED BY THE TOTAL NUMBER OF PUPILS SEEN BY A TEACHER A WEEK

Depending on the teacher's post discipline, the average size of structures can be the same, but the number of structures in which the teacher teaches is not necessarily the same; this results in a very different total number of pupils seen in a week. Thus, given the level of training, *lycée* or *collège*, in which the teacher works and the programs associated to a number of teaching hours a week, the average size of structures and the number of pupils seen by a teacher a week are not the same for all secondary school teachers.

Music and visual arts teachers mainly teaching in *collèges* for one hour a week to each structure have a similar number of pupils per class (over 23) and see the same number of pupils a week (over 350). Maths teachers have on average the same number of pupils (23) but only see 104 pupils a week, but much more often over the week. Language and literature teachers also see the same number of pupils a week as their maths colleagues (104), but have one pupil less on average (22) *(graph)*.

THERE IS A BIAS BETWEEN THE ABOVE RESULTS AND THOSE FROM INTERNATIONAL COMPARISONS

The 2008 edition of *Education at a Glance* allows OECD countries to assess the results from their education systems based on various indicators. The supervisory rate, i.e. the student-to-teacher ratio, and the size of classes, i.e. the number of pupils per class, are key indicators in showing the quality of the education system.

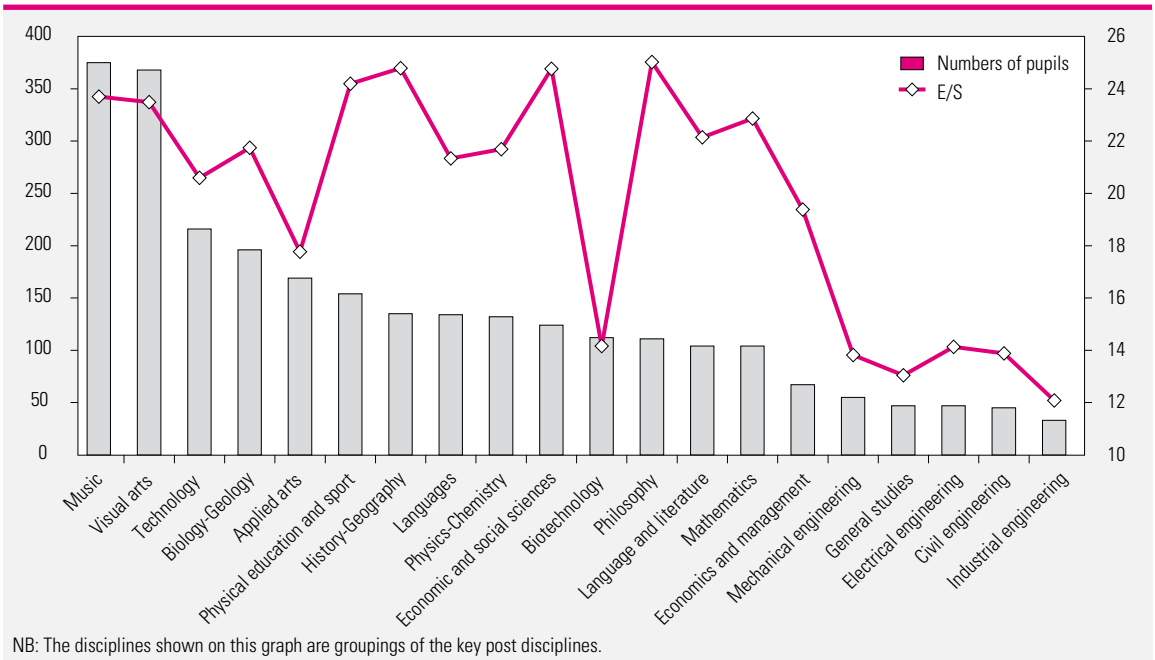
However, there are biases because different methodologies are used in calculating the above results and the indicators in the international comparisons.

Two types of indicators are calculated in *Education at a Glance 2008*: the supervisory rate and class size.

The supervisory rate corresponds to pupil numbers for a given education level (lower or upper secondary school), expressed as full-time equivalents, divided by the number of teachers at the same level and in the same type of teaching establishment, also as full-time equivalents. This indicator offers only an elementary approach to pupil reception conditions and it is therefore preferable to reason in terms of class size.

For the OECD, class size is calculated from the number of pupils in the same lesson (generally mandatory subjects), but disregards lessons in sub-groups. This indicator is calculated for lower secondary education only, due to classes in sub-groups not

Graph 1 - Average size of structures (E/S) and total number of pupils seen by a teacher a week
Metropolitan France + Overseas Departments - Start of 2007 school year



NB: The disciplines shown on this graph are groupings of the key post disciplines.
Source : Relay databases - MEN-MESR-DEPP.

being taken into account in the calculation. Special education programs are not included to ensure international comparability of data.

The OECD results for lower secondary school education show that the mean size of classes in France is 24.1, very near to the OECD country average (23.8). The size of classes in South Korea, Japan and Mexico is over 30, while it is 20 in Denmark, Ireland, Iceland, Luxembourg and Switzerland.

We cannot compare the previously-calculated data with international data. Firstly, the OECD results on class size only concern the lower secondary school, although this could be broken down into more detail for all training levels to the subject or the teacher's post discipline. Secondly, the OECD indicator calculation method is quite basic as it does not take all structure types into account, even though it is important take teaching in groups into consideration. Finally, the other indicators calculated previously, like the E/C indicator or the percentage of hours taught in groups or in small or large structures, are very important in showing the reception conditions for pupils and the quality of the education system. ■

Source

The data presented come from relay databases which compare data on pupils and teachers in state secondary establishments. The indicators calculated provide actual and not theoretical data.

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Learning Structures

A learning «structure» (division or group) comprises pupils following a lesson program together.

A «lesson program» is defined by a subject taught (French, Maths) combined with a lesson procedure (lecture, practical work, tutorial, module).

A «division», often called «year» in everyday usage, is the learning structure in which all secondary school pupils are enrolled. Whatever the school year (*sixième* [1st year], *cinquième* [2nd year]), a pupil is enrolled in one division only by the school director. A division groups pupils according to the largest number of classes taken together, generally the mandatory general subjects (common core).

As a rule, a «group» refers to a sub-group of pupils from a division in a class which is statutorily split (organised into practical work, tutorials, modules). It is possible for a group to comprise pupils from several divisions for the teaching of options or ancient or modern languages.

Mathematical Formula

E/D: average number of pupils per division.

E/S: Average number of pupils per structure (group or division).

This indicator is used to estimate the number of pupils under a teacher's responsibility for one hour on average.

$$E/S = \frac{\sum h_i x_i}{\sum h_i}$$

E/C: average size of the class.

This indicator is used to show, from the pupil's point of view, the number of pupils in the class in which the pupil has a one-hour lesson.

$$E/C = \frac{\sum (h_i x_i) x_i}{\sum h_i x_i}$$

where h_i is the number of teaching hours with structure

and x_i is the number of pupils in structure .

Recruitment discipline, post discipline and subject

A teacher is recruited according to a recruitment discipline (e.g. *Lettres Modernes* [French language and literature]), appointed to a school according to a post discipline, which is sometimes different (e.g. *Lettres Classiques* [Classics]), and teaches one or more subjects (e.g. French, Latin, Greek).

Measuring and comparing Equity in Education systems in Europe

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Using data from international surveys, quantitative indicators have been developed to describe how education systems treat the young generations under their responsibility and how they perfom their task (Baye, Demeuse, Monseur & Goffin, 2006; European Group for Research on Equity in Education systems, 2005; OCDE, 2005). While initial research in this area concentrated mainly on the efficiency of education systems, an interest in equity gradually developed, based at first on existing documents such as the OECD's *Education at a Glance*, and then followed by specific documents (Baye, 2005; Gibson & Meuret, 1995; Hutmacher, Cochrane & Bottani, 2001). Starting with the concept of equal access, such as the right for everyone to attend school regardless of origin, and moving on to equal treatment consisting in an identical service being offered to all, modern society is increasingly demanding with respect to school in terms of equality of performance and achievements. Thus, in most European countries, schools are expected to produce students with equal performance levels at the end of a given stage of education, at least in terms of basic skill acquisition, and a minimum level in the skills considered essential for life. This should obviously not prevent an increasing number of them from extending their time at school to a greater or lesser degree beyond compulsory education. In the following text, we only deal with the education received by all during the period of compulsory education, which should be of equal benefit to everyone in terms of life skills (OECD, 1999, 2003), even if some of the data used to analyse performance at this level are derived from higher education data.

Inequalities and iniquity

The wide range of individual scores obtained in standard tests such as those developed by the *International Association for the Evaluation of Educational Achievement* (IEA) of the OECD through its *Programme for International Student Assessment* (PISA), gives an idea of the disparities between students in the participating countries. While student performance in all countries is heterogeneous, the discrepancies are more or less marked. Thus, if we take the difference between the best and the weakest students in mathematics or reading, disparity in performance seems to be the most marked in Belgium (Baye, Demeuse, Monseur & Goffin, 2006, pg. 12). It is largely due to this fact that the authors and their Belgian colleagues are interested not only in the issue of average performance but also in the disparities between students.

The Belgian situation is an interesting one for several reasons and notably because since 1989, education is the sole responsibility of its three communities – French, Flemish and German-speaking – while its organisational structures, completely identical to begin with, are gradually diverging. While there are quite substantial disparities between students whether we consider Belgium as a whole or each of its Communities individually, the average level of students is different in the French and Flemish Communities. Thus, while we can say that neither of these education systems is really capable of reducing disparities in performance, it is clear that on average, the situation is more advantageous for young Dutch-speaking students than for their fellow citizens in the south of the country. This is borne out by the fact that young Flemish students obtain 553 in mathematical literacy, 530 in reading literacy and 529 in scientific literacy respectively whereas their French-speaking contemporaries only obtain 498, 477 and 483 points respectively in each of these three subject areas (Baye et al, 2004, pg. 49).

As observed by Hanushek and Woessmann (2005), it is extremely difficult to respond to a usual requirement of users and politicians, namely, to assess the impact of specific mechanisms, such as streaming organised early on in the curriculum, or repeating a year, on an education

system's efficiency and equity. Referring to international comparisons is therefore very useful both in estimating how widespread a phenomenon actually is and the organisational methods which appear to be linked to it. While there are inequalities in all the education systems studied, there are nevertheless substantial disparities between countries/regions and *"not all education systems are equal in their capacity to treat students in an equitable manner"* (Vandenberghe, 2003). Using a global index, Dupriez and Vandenberghe (2004) thus show that the in Belgium's French community, inequality is more pronounced, in that students' scores in mathematics, reading and science are conditioned more here than elsewhere by the social and cultural characteristics of their families. At the other end of the scale, results are far better in Finland, i.e.there is more homogeneity among students, as is average performance.

It now remains to define what constitute acceptable disparities in results and what we could consider as unfair, i.e. to differentiate between the concepts of inequality and iniquity (Demeuse & Baye, 2005). To this end, the *European Group for Research on Equity in Education systems* (2005), coordinated by the authors following research already done by the Ad Hoc Group on Equity Issues of the *OCED Internal Education Indicators Project* (INES) (Hutmacher, Cochrane & Bottani, 2001), proposed a reference framework for organising the data according to a consistent system of indicators (Demeuse, 2004; Nicaise, Straeten, Baye & Demeuse, 2005). For in order to define the complexity of education systems with respect to this specific quality known as equity, we need a set of indicators rather than a single index. An education system may well show minor disparities in test results when taking into consideration the global school population, but may accumulate disparities observed between specific groups, whether one of them is a minority group or not. From this point of view, comparing the results of girls and boys is a good example of a situation where neither of the groups under consideration is a minority.

For the reasons mentioned above, the framework of equity indicators is based on two aspects. The first concerns individuals where unfair disparities may be shown:

• globally, with no way of linking these disparities to specific characteristics of the individuals but merely because the differences between the weakest and the strongest are deemed unacceptable,

• with respect to identifiable groups of individuals (e.g. girls or boys, foreigners or nationals, youngsters whose parents hold less high-status or lesser-paid jobs, are less qualified... and the other, more privileged students),

• with respect to individuals, belonging to identifiable categories or not, at a particularly unacceptable level (beneath a certain threshold comparable to the poverty line in economics).

In the reference framework, we can consider the situation of individuals below a threshold considered unacceptable, with identifiable features, as the most iniquitous.

The second aspect considers different areas where disparities may be apparent:

• the context (other than school) in terms of
  - individual consequences of education, such as disparities in income or social advantages,
  - economic and social inequalities, such as poverty and insecurity,
  - cultural resources such as the level of education and access to cultural heritage,
  - ambitions and feelings such as professional ambitions or the feeling of being treated fairly,
• the educational process in terms of
  - quantitative differences in the education received (inequality in terms of duration or expenditure),
  - differences in the quality of the education received (support from teachers, school segregation)
• results due to factors within the education system in terms of
  - skills,
  - personal development,
  - school career.
• results due to external factors in terms of
  - social mobility,
  - individual benefits for the most disadvantaged who benefit, for example, from the help of those with the most schooling,
  - collective benefits, in particular as a result of contacts with institutions and others (e.g. increased tolerance).

In the following pages, it is impossible to present all the indicators developed, and so the authors have concentrated on one particular aspect: school segregation. This choice will facilitate linking the results observed in terms of segregation with the organisational structures of different education systems.

However, in order to discuss segregation appropriately, the disparities observed need to be linked to factors such as attending different schools and classes or being assigned to different streams and, even more challenging, partially or totally to particular charac-

teristics of the individuals concerned (gender, nationality, language, socio-economic status...). We will now look at this more closely.

Segregation at school

Table 1 from the European report written by Baye and her colleagues (2006, pg. 42), shows the different segregation mechanisms at work in the various education systems studied. The effects of school segregation were assessed on the basis of data from the PISA 2003 survey.

In addition to its precision and accuracy, the value of an indicator lies in its ability to advance understanding and facilitate analysis (Demeuse, 2006) and so the authors have opted for a calculation method which conveys an intuitive understanding of the different values: it is based on the proportion of pupils in the target group which should change schools to achieve a homogeneous distribution of the group among all schools (Gorard & Taylor, 2002).

Table 1, column 3, shows us that 59.2% of the Belgian pupils belonging to the group comprising the weakest 10% in mathematics would need to be redistributed among the different schools for there to be an identical proportion of weak pupils i.e. 10%, in each school. In Finland, this redistribution of weak mathematics pupils would only amount to 27.7% and in Iceland, 26.1%. Column 4 shows the same type of information but this time, the target group is no longer the 10% lowest scorers in the mathematics test, where the average score varies according to the performance level of the country in question, but the group of pupils failing to achieve level 2 (out of a total of 5) in the maths test. In this case, we are looking at 50.4% of weak pupils in mathematics, beneath PISA level 2, who would need to be redistributed to balance out their distribution among Belgian schools whereas 33.7% of Finnish pupils and only 21.5% of Icelanders would experience the same fate.

Choosing an indicator is therefore not without significance as we can see from the two examples above (R2 between the two methods =0.6674 for the 25 countries with data). To interpret these figures correctly, the proportion of pupils under level 2, i.e. who are in a very preoccupying situation, in the different education systems must obviously be taken into account. This is only 6.8% in Finland against 15.0% in Iceland and 16.5% in Belgium (column 11). This distribution can be further refined per Community in the case of Belgium: 12% in the Flemish Community, 17% in the German-speaking Community and 23% in the French Community (Baye *et al.*, 2004, pg. 60). Column 13 gives the average obtained by the weakest decile, i.e. 409.7 points for the 10 % lowest scorers in Finland against 364.2 points in Iceland and 332.3 points in Belgium. The ranking of the three countries therefore remains the same, whether we consider the proportion of weak pupils (under level 2 on the overall scale) or the average of the 10% lowest scorers in each country, but the values of these indicators are different and lead to drawing more or less significant parallels between education systems.

The same interpretation can be made based on the PISA scale. Columns 1 and 2 concern the effects of segregation based this time on the reading test. The results are very similar to those we have just described related to mathematics and highlight the constancy of academic segregation mechanisms, irrespective of the disciplines under consideration. The two methods corroborate each other with respect to reading (R2 between the 2 methods = 0.7531 for the same 25 countries). The results converge more when the same method is used with the same target group (either the 10% weakest pupils or the group of pupils below level 2), applied to the results obtained in the two disciplines, mathematics and reading (R2 = 0.9779 when taking into account the 10% weakest pupils irrespective of the discipline, and R2 = 0.8946 when taking into consideration pupils under level 2, irrespective of the discipline) than when two different methods are used for the same dsicpline.

Another traditional method leads to the same observation, based on variance in performance due to attending one school rather than another. The results obtained through this method are shown in column 9 for mathematics[1]. For the 23 countries where data are available, correlation between the performance of the 10% weakest pupils (column 3) and variance due to attending a given school is good (R2 = 0.8554), which is not the case if we compare the performance of pupils below level 2 and variance linked to attending a school (R2 = 0.4948).

The following columns in *table 1*, still based on data collected during the PISA 2003 survey, no longer

NOTE

1. The value of this index, supplied by the OECD (2004, p. 383), is available for neither the United Kingdom due to the fact that it did not apply the sampling conditions, nor France (Monseur & Demeuse, 2004, pp. 49-52).

Table 1 - School segregations

(as in Baye, Demeuse, Monseur & Goffin, 2006, pg. 42)

	Based on reading skills (10 % weakest) (2003)	Based on reading skills (below level 2) (2003)	Based on mathematics skills (10 % weakest) (2003)	Based on mathematics skills (below level 2) (2003	Based on parents' profession (2003)	Based on gender (2003)	Based on linguistic origin (2003)	Based on parental birthplace (2003)	Variance in schools expressed as a percen-tage of total variance in the country (Rho) Maths 2003 (pg. 383)	% pupils with weak reading skills (2003)	% pupils with weak mathematics skills (2003)	Average of weakest decile in reading (2003)	Average of weakest decile in maths (2003)
	1	2	3	4	5	6	7	8	9	10	11	12	13
Cyprus	-	-	-	-	-	-	-	-	-	-	-	-	-
Lithuania	-	-	-	-	-	-	-	-	-	-	-	-	-
Malta	-	-	-	-	-	-	-	-	-	-	-	-	-
Slovenia	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	-	-	-	-	-	-	-	-	-	-	-	-	-
Bulgaria	-	-	-	-	-	-	-	-	-	-	-	-	-
Romania	-	-	-	-	-	-	-	-	-	-	-	-	-
Switzerland	44,9	37,9	46,1	40,8	32,4	12,0	44,1	20,7	34,2	16,7	14,5	337,9	361,1
Finland	25	32,9	27,7	33,7	30,8	7,5	65,4	45,3	4,8	5,7	6,8	407,3	409,7
Iceland	26,2	19,3	26,1	21,5	35,4	8,4	63,5	30,7	3,8	18,5	15,0	326,9	364,2
Sweden	31,4	26,8	32,3	24,5	29,3	8,5	57,9	31,6	10,5	13,3	17,3	353,8	353,3
Norway	31,8	24,1	29,9	21,1	26,6	8,4	51,0	35,7	6,6	18,1	20,8	329,2	348,1
Poland	34,5	27,7	31,8	23,3	42,5	7,8	95,5	93,9	12,6	16,8	22,0	338,9	349,3
Denmark	38,3	30,5	36,5	29,7	29,2	9,4	60,9	34,1	13,4	16,5	15,4	341,2	364,4
United Kingdom	38,4	33,7	40,7	32,8	33,9	14,9	64,5	32,4	-	14,9	17,8	349,2	360,4
Latvia	39	30,2	40,9	28,5	28,8	9,1	86,7	37	22,5	18,0	23,7	350,2	342,3
Luxemburg	39,6	32,7	39,3	32,9	21,2	13	26,2	14,2	31,6	22,7	21,7	306,6	343,6
Ireland	40,8	39,8	37,4	30,5	30,9	28,3	83,1	21,6	15,9	11,0	16,8	364,6	363,4
Spain	42,6	30,5	43,7	30,3	30,9	11,4	74,7	38,6	19,7	21,1	23,0	321,4	338,9
Greece	50,3	36,2	51	28,2	31,1	10,5	70,2	37,7	36,3	25,3	38,9	302,7	299,7
Turkey	50,8	30,6	49,5	22,9	24,9	13,0	85,0	67,5	54,9	36,8	52,2	307,5	280,8
Slovak Rep.	52	37	52,4	40,8	35,9	17,4	81,3	32,4	41,7	24,9	19,9	319,8	344,8
Portugal	54,3	41,5	52,5	34	29,4	9,2	71,5	35	33,6	21,9	30,1	323,0	326,4
Czech Rep.	55,3	42,6	55	46,1	40	18,8	83,7	36,8	47,8	19,3	16,6	329,1	364,3
Netherlands	56,2	54,2	56,6	55,9	33,9	10,8	55,8	33,9	58,8	11,5	10,9	375,1	384,3
France	56,3	48,3	57,5	50,4	30,8	15	57	31	-	17,5	16,6	331,2	358,7
Italy	56,5	43,6	57,6	38,1	33,6	23,5	72,2	38	52,2	23,9	31,9	301,7	310,8
Austria	59,9	50,4	55,9	47,7	31,5	28,3	47	34,6	52,9	20,7	18,8	314,1	358,0
Hungary	60,2	47	60,6	44,9	36	18,5	84,2	39,3	58,3	20,5	23,0	333,7	341,3
Belgium	61,1	49,9	59,2	50,4	38,4	17,9	55,8	34,7	46,0	17,9	16,5	306,7	332,3
Liechtenstein	63,0	62,9	63,6	61,8	32,8	5,9	17,6	16,2	42,2	10,4	12,3	378,6	360,4
Germany	64,7	48,7	62,9	49,8	36,8	12,4	52,3	37,9	51,7	22,3	21,6	301,3	326,8

Table 2 - Correlations between the different segregation indices
(columns 1 to 9 in table 1).

	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9
Column 1	1.0								
Column 2	0.86779	1.0							
Column 3	0.98890	0.87107	1.0						
Column 4	0.79512	0.94581	0.81692	1.0					
Column 5	0.27357 p<0.1858	0.27370 p<0.1855	0.26648 p<0.1979	0.34667 p<0.896	1.0				
Column 6	0.41353 p<0.0399	0.34714 p<0.0891	0.36538 p<0.0725	0.25916 p<0.2109	0.14883 p<0.4777	1.0			
Column 7	-0.14831 p<0.4792	-0.36202 p<0.0754	-0.15657 p<0.4548	-0.43098 P<0.0315	0.33981 p<0.0965	0.18550 p<0.3447	1.0		
Column 8	-0.14487 p<0.4896	-0.30157 p<0.1429	-0.18035 p<0.3883	-0.36924 p<0.0693	0.34221 p<0.0940	-0.16948 p<0.4180	0.63143 p<0.0007	1.0	
Column 9	0.91824	0.75281	0.92488	0.70340 P<0.0002	0.20347 p<0.3518	0.44670 p<0.0326	0.44670 p<0.0326	-0.05580 p<0.8003	1.0

All correlations at p<0.0001 are significant unless otherwise specified.

concern academic segregation, i.e. the more or less overt existence of schools where pupils are organised into groups based on whether their school results demonstrate high or low academic performance, but rather, segregation on the basis of pupils' personal characteristics: their parents' professional status (column 5), the pupil's gender (column 6), the language spoken at home – the target group consisting of students stating that they do not speak the language of education in their home (column 7) and the pupils' and parents' place of birth (column 8).

On the whole and contrary to the different academic segregation indices, correlations in *table 2* indicate a weak link (tendency) between academic segregation indices and segregation indices linked to profession or gender. This link is even negative with respect to linguistic segregation (language spoken at home) or the parental birthplace.

In general, ranking based on this method highlights a set of countries where the effects of segregation appear insignificant: Sweden, Denmark, Finland. At the other end of the scale, we find Italy, Austria, Hungary, the Czech Republic, Germany and Belgium. It would seem that where systems apply little segregation at school level, social differences are negligible and performance is more or less the same among the different institutions. On the other hand, the more strongly segregating systems tend to accentuate differences in performance between the social groups. From this point of view and without sacrificing efficiency on the altar of equity, much to the contrary, it seems that Finland, where average performance is high and shows little dispersion, can be compared to Germany, where average performance is relatively low and dispersion is far more marked, as indicated by the authors of the European report (Baye *et al.*, 2006) There are however special circumstances. Thus, if we consider the language spoken in the home, Finland (index of linguistic segregation = 65.1) ranks lower than Belgium (55.8) for instance. This sort of performance in Finland certainly shows the impact of concentrating certain groups with low representation in the country (e.g. national minorities or foreigners in Helsinki) in certain schools whereas such groups can be more "diluted" when their percentage on the territory is both greater and more homogeneous, as is the case in Belgium. And so if indicators are to be used for steering purposes, it is important to take into consideration a very wide range of information and interpret figures beyond the "horse race" aspect, to use an Anglo-Saxon idiom, which hits the media headlines.

Organisational structure of education systems and segregation

Several indicators were assembled to correlate data linked to segregation with the way education systems are organised. Some data come from PISA and others from the Eurydice publication *Key data on education*.

As for segregation indicators, it was necessary to make choices. The selection of data given in *Table 3* is the result of a first assessment made by one of the authors (Monseur & Demeuse, 2001, Demeuse, Crahay & Monseur, 2001, 2005) on the one hand, and on the other, a new analysis of available data taking into consideration two aspects which are *a priori* likely to result in segregation: the im-

plementation of organisational structures allowing pupils to be distributed according to academic or other criteria (method of organising pre-primary education, age when the first subject specialisation/selection process is carried out, schooling of special needs pupils in separate educational institutions...) and the implementation of mechanisms to ensure a certain equality in treatment throughout the education system (e.g. the same certification process throughout the system at the end of lower-stage secondary education) or, on the contrary, making the most of specific mechanisms (amount of private funding, right of parents to choose schools in the public education system...).

The first column shows the principal methods of grouping children in pre-primary education (Eurydice, 2005, indicator E10, p. 277, 2002-2003 academic year). The letter "S" indicates that the pupils are grouped according to age, while "F" indicates a vertical grouping process known as the "family" arrangement with children of different ages belonging to the same group. The letter "M" indicates a mixed method. Most countries adopt grouping by age except the Nordic countries (Denmark, Finland, Sweden) and Germany where the family arrangement is prevalent, and 11 other countries where a mixed method has been adopted. The mixed method is the most difficult to describe especially since it can cover very different situations in different organisational structures, including the simultaneous existence of the other two methods. With the notable exception of Italy, Austria and Cyprus, countries where the mixed method is in force are located either in northern Europe (Norway and the Baltic countries) or belong to the group of newcomers who have joined the European Union since 2004.

On the same basis as what we have just observed regarding pre-primary education, columns 10 and 11 show how classes of the 15-year old age group are made up, at least for maths lessons. Here, we are dealing on the one hand with the proportion of pupils in schools where heads have indicated that subject matter covered in maths classes is the same for all but is taught at different levels (in streams) (column 10) and on the other, with the proportion of pupils in schools where heads have specified that maths classes are organised so as to study different subject matter or sets of subject matter at various levels of difficulty (adapting objectives) (column 11) (OECD, PISA 2003 database). While figures for all the participating countries are not complete and while they are largely dependent on the heads' understanding of these two concepts (structuring in streams and modifying the curriculum), the very low values for Finland, Spain, Portugal and Poland concerning curriculum adaptation and aims regarding the pupils are worthy of note, although this does not necessarily mean that little use is made of streaming according to abilities, a practice which is not common in Finland and is far more so in Poland and Portugal.

The second column indicates the age when the first subject specialisation/pupil selection process occurs (Eurydice, 2005, B1, pgs. 56-63 and OECD, publication pending, for Belgium, Switzerland and Turkey, 2002-2003 academic year). This indicator groups together countries with a very early specialisation/selection process (between 10 and 12-yrs) and those which wait until at least the age of 14. In the first group, we find Austria, Belgium, the Czech Republic, Germany, Hungary, Latvia, Liechtenstein, Luxemburg, the Netherlands and the Slovak Republic in addition to Turkey. At the other end of the scale (selection/subject specialisation process at the age of 16 of more), we find Denmark, Estonia, Finland, Norway, Malta, Poland, Spain, Sweden and the United Kingdom.

Another way of organising learning groups consists in repeating years. This is when the weakest pupils who do not achieve the required level at the end of a year or a stage remain in the same class for another school year. This practice is identified in column 3 as a percentage. This percentage represents the proportion of 15-year old pupils who declared in the PISA 2003 survey that they had already repeated at least one year (OECD, publication pending, PISA 2003 database). This information shows the countries where repeating a year is a particularly common occurrence like Belgium (29.5%), France (38.3%), Germany (20.3%), Luxemburg (37.9%), the Netherlands (28.4%), Portugal (29.5%), Spain (28.6%) and Switzerland (21.6%). On the other hand, very low rates of repetition are to be observed in the Czech Republic (2.6%), Denmark (3.4%), Finland (2.8%), Iceland (0%), Norway (0%), Poland (3.6%), the Slovak Republic (2.5%) and Sweden (3.4%).

The information in columns 2 and 3 is related: a high repeat rate is definitely linked to an early selection process, except in the cases of the Czech and Slovak Republics which have an early selection/subject specialisation process but a very low repeat rate. Rather than choosing between these two mechanisms for organising streams according to the pupils' skills,

it would appear that the systems apply either both or neither of them.

In column 4, we find information which partially confirms that of the previous column. It concerns standard progression practice at the end of primary education (ISCED 1) (Eurydice, 2005, E23, pg. 296, 2002-2003 academic year). Letter "A" indicates automatic progression, while "R" means that each year can be repeated and "C", that repeating a year is only possible at the end of a stage. We find the Nordic countries, Cyprus, Greece, Liechtenstein and the United Kingdom in the first configuration, which naturally confirms the rates to be found in column 3.

Column 5 shows the percentage of special needs pupils who do not attend the same schools as other pupils (Eurydice, 2005, C3, pg. 130; Baye, Demeuse, Monseur, & Goffin, 2006, pg. 42, for Belgium, reference period: from 2002 to 2004). We see here that while 0.5% of special needs pupils attend special schools in Italy, they are more than nine times that number (4.6%) in Belgium, just behind Germany (4.8%) and the Czech Republic (5%). Of course, we could consider that this is not the same sort of segregation as academic segregation or segregation on the basis of socio-economic characteristics. Nevertheless, even if relatively low, the percentages observed vary considerably from one country to another and unfortunately, appear to be linked to other indicators in a certain number of countries, which include Belgium, Hungary, Germany or the Czech Republic, whereas the lowest values are to be found in countries which are less segregating in the light of other indicators, with the notable exception of Finland.

In the same way (column 8), arrangements for integrating immigrant children of foreign mother tongue in schools (pre-primary and full-time compulsory education) (Eurydice, 2005, E19, pg. 289, 2002-2003 academic year) could also be considered a good indicator of segregation mechanisms. Some countries integrate these pupils directly into mainstream classes (O) while others assign them to separate classes (S). In some systems, the two methods coexist (M) and a few countries such as Bulgaria, Hungary and Malta indicate no specific measures (NO). Few countries other than Germany, Romania and Latvia declare assigning these pupils to separate classes. It is not an easy task to confront the information collected up to this point concerning the countries which maintain that they assign foreign pupils to mainstream classes or practice a mixed method with the figures in column 8. As in every case where a mixed method is mentioned, it is unfortunately difficult to interpret what lies behind it. This indicator therefore warrants further investigation.

At the end of compulsory education, or after it in countries where compulsory school attendance is shorter, there are conditions for admission to public and subsidised private higher education branches (Eurydice, 2005, B14, pg. 86, academic year 2002-2003). The column summarises the different methods of selection for most branches. The letter "F" means open access to most branches, "S", selection by the institution (in accordance with their capacity or national criteria) and "N", limitation at the national level with direct control of the selection process. On the basis of the distinction between the two types of selection, we can identify only one country which really centralises and monitors access to higher education: Greece. Generally speaking, access appears to be particularly open in Austria, Belgium, France Germany, Iceland, Italy, Liechtenstein, Luxemburg and the Netherlands, in most branches at least, whereas access is more limited in other cases. In comparison with other practices already identified (repeat years and early selection/subject specialisation), two groups of countries appear to emerge here, one where there are numerous filters during the compulsory education period and very few at entry to higher education and the other where the education system seems to be very tolerant during the compulsory education period but more selective at the end of it.

Another way of assessing whether the compulsory education period allows most individuals to achieve a basic education enabling them to pursue the highest possible level of lifelong education is to look at the proportion of the 20 to 24 age-group whose highest qualification level is ISCED 0 to 2 or 3C, i.e. who do not have the required qualifications for accessing higher education (Eurydice 2005, F5, pg. 313). These rates vary widely, with values ranging from 57.6% in Luxemburg, 57% in Iceland, 61% in Malta and 56.3% in Portugal down to 5.1% in Norway, 13.3% in Sweden and 13.8% in Finland. It seems that there is at least some link between countries with a tolerant approach during the compulsory education period and a high proportion of youngsters potentially going on to higher education on the one hand, and regulated access to this higher education after and outside the compulsory school period on the other. This tends to confirm the idea that organising access to higher edu-

Table 3 - Description of school organisational structures

	Grouping methods (pre-primary)	Age of first subject speciali-sation/ selection	Rate of repeat years at 15 (PISA)	Class progression standards (primary)	% special needs pupils in specialised schools	Regulated access to higher education	Certification at end of lower secondary education	Procedures for inte-gration of immigrant children of foreign mother tongue	% private sources in education expenditure	Distri-bution of 15-yr old pupils in mathematics (a)	Distribution of 15-yr old pupils in mathematics (b)	Freedom of choice in public sector education	% pupils at school in public sector (lower stage secondary education)	% 20-24 age group whose qualification level does not give access to higher education
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Austria	M	10	9,6	R	1,6	F	I	O	5,6	16,5	-	AC	92,3	15
Belgium	S	12	29,5	R	4,6	F	M	M	7	4,39	16,48	F	43,2	28,3
Bulgaria	S	14	-	R	2,2	S	I	NO	20,7	-	-	FP	-	22,5
Cyprus	M	15	-	A	0,5	S	M	O	18,8	-	-	A	-	14,7
Czech Rep.	S	11	2,6	R	5	S	NO	O	8,4	7,59	8,66	AC	98,2	41,5
Denmark	F	16	3,4	A	2,3	S	I	O	3,9	21,61	13,78	AC	76,9	45,5
Estonia	M	16	-	R	4	S	M	M	-	-	-	AC	-	19,6
Finland	F	16	2,8	R	3,6	S	I	M	2,2	10,89	1,35	AC	95,8	13,8
France	S	14	38,3	C	2,2	F	M	M	8	-	-	A	78,8	40,4
Germany	F	10	20,3	R	4,8	F	I	S	18,6	23,75	11,91	AC	92,9	26,7
Greece	S	15	7,0	A	0,6	N	M	M	5,8	6,07	-	A	94,5	22,2
Hungary	S	10	9,5	R	3,9	S	I	NO	11	18,76	5,56	AC	93,7	41,3
Iceland	S	16	0,0	A	0,7	F	M	M	8,3	50,42	21,49	AC	99,1	57
Ireland	S	15	13,8	A	1,8	S	E	O	7,8	59,13	24,57	F	100	23,5
Italy	M	14	15,0	R	0,5	F	M	O	9,3	21	9,57	FP	96,6	37,1
Latvia	M	7	-	R	3,4	S	M	S	18,1	32,47	11,47	FP	-	37,3
Liechtenstein	S	11	17,3	A	1,7	F	M	M	-	21,6	11,24	A	-	m
Lithuania	M	14	-	R	1,2	S	I	M	-	-	-	AC	-	29
Luxemburg	S	12	37,9	R	1,5	F	I	M	0	4,27	18,63	A	79,3	57,6
Malta	S	16	-	R	1,3	S	M	NO	10,6	-	-	A	-	61
Netherlands	S	12	28,4	R	1,9	F	M	O	9,1	33,43	38,25	F	23,8	39,9
Norway	M	16	0,0	A	0,4	S	M	O	3,9	77,75	7,8	M (A & AC)	97,8	5,1
Poland	M	16	3,6	R	1,8	S	M	O	-	41,59	0,95	AC	98,1	39
Portugal	S	15	29,5	C	0,5	S	M	O	1,5	32,3	0,71	A	88,7	56,3
Romania	S	15	-	R	1,2	S	E	S	6,5	-	-	FP	-	44,3
Slovak Rep.	M	10	2,5	R	3,6	S	NO	M	2,9	42,96	11,37	FP	94,9	33
Slovenia	M	15	-	R	1,6	S	M	M	-	-	-	AC	-	35,6
Spain	S	16	28,6	C	0,4	S	I	M	12,2	32,43	6,66	FP	67,2	35,7
Sweden	F	16	3,4	A	1,5	S	I	M	3,2	50,22	12,1	M (A & FP)	94,6	13,3
Switzerland	-	15	21,6	-	-	-	-	-	-	19,6	20,32	-	93	-
Turkey	-	11	17,3	-	-	-	-	-	-	33,22	23,46	-	a	-
United Kingdom	S	16	-	A	1,1	S	M	O	15,3	78,09	23,37	M (A & FP)	93,2	41,4
Mean			**13,4**		**2,0**				**8,7**	**30,8**	**13,6**		**86,0**	**33,7**

cation is not the main preoccupation of a tolerant system since this may lead to eliminating a significant part of the school population in the process, through selection, but that such a system regulates access to higher education when the time comes to enter it.

Concerning assessment during the compulsory curriculum, there are different certification methods involved (column 7) at the end of general lower-stage secondary education or compulsory full-time education (Eurydice, 2005, E27, pg. 302, 2002-2003 academic year): a certificate awarded on the basis of a final external exam (E), a certificate awarded on the basis of marks and work throughout the year (I), a certificate awarded on the basis of a final exam and work throughout the year (M) or no certificate (NO). The latter case only involves the Czech and Slovak Republics and the method based on an external exam (E) exists only in Ireland and Romania. All other systems are divided between the mixed method (the year's work and an internal exam) and the year's work alone with no final exam. In most cases, it would probably be necessary to acquire a better understanding of the context in these countries to use this indicator appropriately.

Concerning the "equality of treatment" aspect, one way of assessing the possible differences between schools is to take into consideration the amount of private resources (school fees and any other payment to educational institutions) in education expenditure (ISCED 0 to 6) (Eurydice, 2005, D7, pg. 176, year 2001). These figures are given here for information (column 9) but unfortunately, cannot be easily interpreted and cover potentially very different situations; they are therefore given here to indicate a possibility rather than to provide reliable data on which to build a model for interpretation.

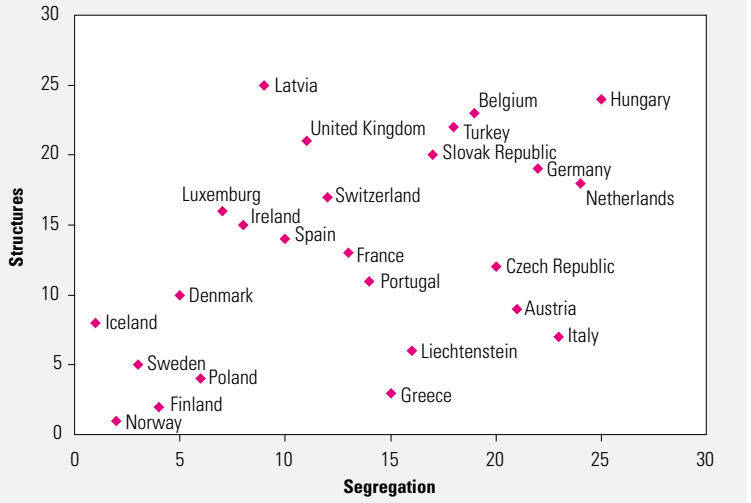
Table 4 - Average rank for each country with respect to the "segregation" and "school organisational structures" aspects

	Segregation	School organisational structures
Germany	22	19
Austria	21	9
Belgium	19	23
Denmark	5	10
Spain	10	14
Finland	4	2
France	13	13
Greece	15	3
Hungary	25	24
Irland	8	15
Iceland	1	8
Italy	23	7
Latvia	9	25
Liechtenstein	16	6
Luxemburg	7	16
Norway	2	1
Netherlands	24	18
Poland	6	4
Portugal	14	11
Slovak Republic	17	20
Czech Republic	20	12
United Kingdom*	11	21
Sweden	3	5
Switzerland	12	17
Turkey	18	22

Column 12 provides information which is probably easier to interpret. It indicates the amount of parental freedom in choosing schools in the public education sector (Eurydice 2005 B5, pg. 70, 2002-2003 academic year): "F" indicates "parental freedom in choosing a school with no action on the part of public authorities to regulate the number of pupils", "AC" that "pupils are allocated a school but parents may request an alternative one", "A" that "pupils are allocated a school", "FP" that "parents choose a school but public authorities may intervene if its enrolment capacity is overstretched" and "M", that the system combines any two of the previous methods. There are few countries practising an entirely free method (Belgium, Ireland and the Netherlands) even if we include those where parents have freedom of choice except when enrolment capacities are overstretched (Bulgaria, Italy, Latvia, Romania, Slovak Republic and Spain). At the other end of the scale, Cyprus, France, Greece, Liechtenstein, Luxemburg, Malta and Portugal allocate pupils to schools in the public sector with the possibility (column 13) of choosing a private institution to avoid this if there is one.

A complementary approach to mechanisms which could potentially

Figure 1 – Projection of the average ranking with respect to the two "segregation" and "organisational structures" aspects given in table 4



privilege segregation would be to take into account the proportion of children schooled in public sector insitutions for lower secondary education (OECD 2005, D.5.1., pg. 418, 2003). On this basis (column 13), systems allowing the most "shopping around" could be identified. It should however be observed that other than the Netherlands and Belgium with only 28.8% and 43.2% of their pupils in the public sector and who are renowned for their high level of academic segregation, most countries indicate a percentage above 90% in the public sector, except for Denmark (76.9%), France (78.8%), Luxemburg (79.3%), Portugal (88.7%) and Spain (67.2%).

This first exploratory analysis based on an essentially univaried approach may be completed with an attempt at summarising these elements including the two sets of variables taken into consideration up to this point. *Table 4* shows this attempt and the rank of each country with respect to the "segregation" *(table 1)* and "school organisational structures" *(table 3)* aspects. This summarising table is based on the calculation of each country's average rank for the set of indicators related to each of the two aspects, the weight of each indicator being considered equal.

In spite of the rather rough method proposed, calculation of the rank correlation coefficient (Spearman's rho) leads to the identification of a correlation that is significant ($p < 0.022$), but moderate (0.455) between the two dimensions. This confirms that higher values tend to be observed for segregation indicators where school organisational structures are themselves more segregating, as shown in *figure 1*. Thus, as demonstrated by previous assessments, the Nordic countries show low values for segregation indices and there is very little segregation in their school organisational structures while at the other end of the scale, Belgium, Hungary, Germany, the Netherlands, Turkey and the Slovak Republic show high values for all the indicators related to both aspects. In some countries like Latvia (with a high level of segregating factors in their organisational structures, but more average segregataion indices) or Greece (low level of segregation in their school organisational structures but average segregation indices), profiles differ more widely and at the present time, it is difficult to understand the link between the two aspects.

■■■

Measuring and comparing equity in education systems in Europe can be achieved through a set of indicators, even if a model for creating this set of indicators should be determined beforehand as we have seen here. It is a question of making choices and explaining them before implementing them on the basis of data. Analysis of national and international publications, such as those of the OECD (Baye, 2005), shows that this type of approach comes together gradually, after a phase where reason is dominated by the available data.

The idea that a single variable would enable the description and the classification of education systems focusing on their greater or lesser degree of equity must, without question, be discarded. Several aspects are at play and it appears difficult to reduce them to a single one. From a practical point of view, this is rather good news: different countries cannot be classified unequivocally, with the exception of the few which seem to perform more or less successfully whatever the aspects taken into consideration, as demonstrated in the report by the European Group for Research on Equity in Education systems (2005) and its continuation at the level of the 25 European Union member states (Baye *et al*, 2006).

A more difficult task than that of setting up an intelligible model of indicators would be to try to explain the results obtained by taking into account the complex structure of the

various education systems. In the above text, we have attempted this approach related to a specific aspect of equity, namely, segregation, by describing the organisation of education systems on the basis of 14 indicators. These organisational indicators were selected in the same way as the equity indicators i.e. on the basis of a model which takes into account two aspects: the greater or lesser degree to which school children are separated into homogeneous groups and the implementation of mechanisms aiming to secure a treatment of school children which is as homogeneous as possible, irrespective of the school attended. As in the case of equity indicators, we had to adapt to the available data and observed that certain information was either lacking or not conducive to reliable exploitation, in particular due to "catchall" categories.

A significant part of future work will be dedicated to improving this information and to a better quantitative and qualitative description of the different education systems so as to compare efficiency and equity on the one hand and education policy and organisation on the other. The systematic research done by Eurydice is very encouraging from this point of view. It should certainly be continued through specific studies linking the description of educational structures to their performance, in particular based on segregation indices such as those presented in this document. ■

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International rankings of higher education institutions

The 2003 publication of the ARWU (Academic Ranking of World Universities) was the first in a series of international rankings of higher education institutions, which attests to the emergence of genuine international competition in this domain. The approaches used for these rankings vary significantly in terms of selection procedures of the institutions to be assessed as well as measurement criteria and methods or result presentation. This diversity is fully reflected in the seven international rankings which are detailed and analysed in this article.

In the *ARWU* and the *THE (Times Higher Education),* both aiming for worldwide coverage, some French universities appear in the top 100. However, they never rank amongst the very best, as these are most often located in the USA and the UK. In the European ranking of the CHE (Centre for Higher Education), the number of French institutions ranked in the *"excellence group"* is lower than that of the UK, Germany, the Netherlands and Italy. It is identical to that of Sweden. French *Grandes écoles*, when they make it into the selection of the institutions to be ranked (the Leiden ranking only takes universities into account) appear in an average position, except in the ranking of the *École de Mines*. However, the *Financial Times* ranking dedicated to European management masters programmes places French business schools in an excellent position. The CSIS ranking (Spanish council for scientific research) is the only one that highlights French research organisations as such.

Very diverse entities with varied missions are defined by the expression "higher education institution". Any attempt to classify this heterogeneous group is arbitrary by nature: it depends on the aspects taken into consideration to characterise the institutions (teaching, training, innovation, development, social responsibility etc.), on the indicators used to position the institutions in relation to these aspects and finally on the methods used to assess the importance of each of these aspects. Rankings are therefore the result of multiple choices, justified vis-à-vis pre-established quality representations and implicit or explicit objectives. In light of the many applications which can result from the rankings, and therefore the multiple possible objectives, no single generic ranking, regardless of its quality and relevance, will ever be able to respond to all the requirements and questions.

These classifications constitute however a good method to tackle such complex systems and raise basic questions on the possible improvement in public policies and institutional strategies. Nevertheless, they do not correspond with a genuine evaluation approach. The classification principle on a single scale makes it possible to compare very different entities. A comparative evaluation between higher education institutions can only be made based on a typology-oriented approach in order to identify, amongst the institutions or even within these institutions or inter-institutional organizations, the elements whose proximity makes the comparison pertinent. Furthermore, typology makes it possible to understand the importance of the necessary diversity of the system in relation to all the requirements of society, unlike the hierarchical classification, which favours a uniform model. Finally, it provides the possibility of reorganising the criteria according to targeted objectives, therefore meeting a broader spectrum of requirements.

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The publication of an international ranking by Shanghai's Jiao Tong University in 2003 is a major step in the restructuring of the international higher education landscape. In France, in particular, this has reinforced the awareness of the ongoing globalisation process and its corollary, the emergence of genuine competition between countries and institutions.

Up until the late 20th century, higher education systems have mostly developed on a national basis, as local legislation did not encourage mobility. In addition, information was not as easily accessible as it is today. Consequently, the "brain drain", although clearly identified, only really affected developing countries, who were unable to train and retain their own elite.

Thus, the comparisons, when they existed, were made between institutions of the same country, in line with the first ranking published in a US journal in 1983.

The remarkable success of the ARWU (Academic Ranking of World Universities) is due to the historical conjunction of several factors. Firstly, its publication was concomitant with the developed countries' realisation of the strategic interest in investing in higher education and research. In Europe, this political desire was epitomised by the Lisbon process, aimed at promoting innovation and considered a driving force in worldwide economic competitiveness. Secondly, there was the opening of borders to flows of people and the formidable leap in international transport. Thirdly was the new context of generalised access to information via the Internet. The idea of an actual higher education "market" took shape on a global scale.

For countries to remain one of the leading players on this "market" involves a triple challenge. On the one hand, the idea is to boost innovation via research, as the economy needs innovation to develop, while also guaranteeing training courses to create the best possible sources of talent and, finally, making the territory more attractive.

The perception of higher education as a "market" alters the perspectives, by emphasising the notions of profitability and performance. The primary mission of knowledge diffusion is overtaken by personal development and the response to the training needs of the economy. The notion of individual investment takes on its full significance.

Nevertheless, this higher education "market" must also adhere to basic social policies such as equal opportunities and the broadest possible access to education. This is why it is subject to public policies, which are one of the most sizeable sources of funding. However, these funds are, by definition, attached to a defined population and territory. Therefore the investment is geographically targeted but uses, along with innovation and training, highly mobile and volatile economic relays. The challenge for public policies and their instruments is, on the one hand, to create the proper conditions for the development and funding of higher education and research and, on the other, to ensure that the effects generated actually benefit the community that made the effort in the first place.

The success of the ARWU is part of this context and goes beyond the expectations of its creators, despite its imperfections. Since then, numerous initiatives have been launched for a better understanding of the methods, constraints, lessons and limitations of the ranking of higher education institutions.

The objective of this article is to present an assessment of this topic of the ranking of higher education institutions by examining the meth-

Table:1 Some examples of Report Cards in 2002

Producer	Name of Report Card	Country/Region	Stated Purpose
Asiaweek	Asia's Best Universities	Asia	Honouring excellence
The Center	The Top American Research Universities	United States	Identify top research universities
CHE/Stern	CHE and Stern University Rankings	Germany	Help school leavers decide where to study
Good Guides	The Good Universities Guide	Australia	Undergraduate choice
The Guardian	University Guide	UK	Undergraduate choice
Maclean's	University Rankings	Canada	Undergraduate choice
Melbourne Institute	Melbourne Institute Index of the International Standing of Australian Universities	Australia	International standing of Australian universities
Perspektyw	Table of Universities	Poland	Undergraduate choice
The Times	Good University Guide	UK	Undergraduate choice – focus on teaching rather than research
U.S. News	America's Best Colleges	United States	Undergraduate choice

Source : Higher Education in Europe Vol. 30(2) June, 2005: Nina Van Dyke, "Twenty Years of University Report Cards"

odology of the main systems, their strengths and weaknesses, the results they attain, in particular with regard to French institutions, and finally to establish perspectives.

Main international rankings and methods used

An initial international meeting organised on ranking systems for higher education institutions took place in Warsaw in 2002. Over 20 "registers" of ranking results (national, trans-national or international rankings) were listed throughout the world. In her article, Nina Van Dyke[1] analysed ten of these registers *(table 1)*. The examples mentioned relate to the USA, Germany, Australia, the UK, Canada and Poland. According to this analysis, while the declared objective is sometimes to honour excellence, most of the time it is to help secondary school pupils choose their higher education career.

The approaches adopted vary dramatically, both in terms of the selection procedure for the institutions to be subsequently assessed and the measurement methods and presentation format.

Selection of institutions to be assessed

The first stage in all ranking systems is to draw up the list of higher education institutions that will be submitted to ranking criteria.

ARWU–FIELD (Shanghai) selects all institutions with Nobel Prize laureates, Fields medals and frequently cited researchers. The larger universities cumulating a large amount of articles indexed by the Science Citation Index Expanded (SCIE) and the Social Science Citation Index (SSCI) are also included. In total, over one thousand institutions were listed in each major field for the 2008 ranking. These major fields, introduced since the 2007 ranking, are natural sciences and mathematics (SCI), engineering, technology and computer sciences (ENG), life and agriculture sciences (LIFE), clinical medicine and pharmacy (MED) and social sciences (SOC). The fields of arts and humanities, psychology and psychiatry are not taken into account.

The ***Times Higher Education Supplement*** determined the list for the 2007 ranking by asking 5,101 experts, whose e-mail addresses are listed in the QS database (Quacquarelli Symonds[2]), to name 30 institutions each (excluding their own) that they consider excellent in their field. The geographical breakdown of these experts is as follows: 41% in Europe, the Middle East and Africa, 30% in North and South America and 29% in the Asia Pacific region. The major fields selected are: arts and humanities, life sciences and biomedicine, natural sciences, social sciences and technology.

The CHE excellence ranking applies to higher education institutions throughout Europe, with a pre-selection principle. Pre-selection is carried out by means of four indicators measuring "research achievements", only in the field of natural sciences and mathematics: *Importance*, i.e. the number of publications in international journals, from 1997 to 2004, *Perception*, i.e. citations (in relation to the international standard), *Influence*, the university's number of most cited authors and Nobel Prizes, and *EU Projects*, the number of projects awarded as part of the European Union's Marie Curie research promotion programme[3]. The institutions selected are those with excellent achievements in at least one of the four indicators. This pre-selection method makes it possible to draw up a list of 250 universities (divided into 500 "faculties" or departments) located in 20 European countries.

The third edition of the *Financial Times* ranking (2007) of the top 40 European masters in management programmes applies to the institutions which responded to the questionnaires sent to all schools and all 2004 graduates in the programmes concerned. It should be pointed out that this ranking will extend to extra-European institutions in 2008.

Leiden University's centre for science and technology studies (CWTS) has developed a ranking

NOTES

1. Nina Van Dyke, Volume XXX Issue no. 2 July 2005 "Twenty years of academic result registers". In this article, the author presents a history of ranking systems and uses the term "register" to define the different ranking systems.

2. Quacquarelli Symonds (QS) is a company specialising in information on higher education and the possibilities of studying abroad. It has offices in London, Paris, Beijing, Singapore, Sydney, Tokyo and Washington DC. It has put together a database listing teacher-researchers working in higher education and research institutions throughout the world.

3. The Marie Curie programme allocates twelve types of funding to encourage the training and recruitment of researchers and promote excellence in European research.
Detailed information on the 6th and 7th PCRDT can be found at the following addresses:http://europa.eu/scadplus/leg/fr/lvb/i23012.htm
http://cordis.europa.eu/fetch?CALLER=FR_FP7_NEWS

system exclusively based on bibliometric indicators. It applies to the European universities detected by these indicators.

The Webometrics Ranking of World Universities is a classification of research units produced by the Cybermetrics Lab, a department of the CSIS (Spanish council for scientific research), based on web exposure.

Paris'*École des Mines* provides an international ranking of higher education institutions which relates to educational performance, based on the future career of alumni. This ranking, clearly created in response to the Shanghai ranking, selects the institutions whose former students

Table 2: ARWU – FIELD indicators and significance

Code	Weight	SCI	ENG	LIFE	MED	SOC
Alumni	10%	Alumni of an institution winning Fields Medals in mathematics and Nobel Prizes in Chemistry and Physics since 1951	Not Applicable	Alumni of an institution winning Nobel Prizes in Physiology or Medicine since 1951	Alumni of an institution winning Nobel Prizes in Physiology or Medicine since 1951	Alumni of an institution winning Nobel Prizes in Economics since 1951
Award	15%	Staff of an institution winning Fields Medals and Nobel Prizes in Chemistry and Physics since 1961	Not Applicable	Staff of an institution winning Nobel Prizes in Physiology or Medicine since 1961	Staff of an institution winning Nobel Prizes in Physiology or Medicine since 1961	Staff of an institution winning Nobel Prizes in Economics since 1961
HiCi	25%	Highly cited researchers in 5 categories:	Highly cited researchers in 3 categories:	Highly cited researchers in 8 categories:	Highly cited researchers in 2 categories:	Highly cited researchers in 2 Categories:
		- Mathematics	- Engineering	- Biology & Biochemistry	- Clinical Medicine	- Social Sciences, General (Partly)
		- Physics	- Computer Science	- Molecular Biology & Genetics	- Pharmacology	- Economics/ Business
		- Chemistry	- Materials Science	- Microbiology	- Social Sciences, General (Partly)	
		- Geosciences		- Immunology		
		- Space Sciences		- Neuroscience		
				- Agricultural Sciences		
				- Plant & Animal Science		
				- Ecology/ Environment		
PUB	25%	Articles Indexed in Science Citation Index-Expanded in SCI fields	Articles Indexed in Science Citation Index- Expanded in ENG fields	Articles Indexed in Science Citation Index- Expanded in LIFE fields	Articles Indexed in Science Citation Index- Expanded in MED fields	Articles Indexed in Social Science Citation Index in SOC fields
TOP	25%	Percentage of articles published in top 20% journals of SCI fields to that in all SCI journals	Percentage of articles published in top 20% journals of ENG fields to that in all ENG journals	Percentage of articles published in top 20% journals of LIFE fields to that in all LIFE journals	Percentage of articles published in top 20% journals of MED fields to that in all MED journals	Percentage of articles published in top 20% journals of SOC fields to that in all SOC journals
Fund	25%	Not Applicable	Total engineering-related research expenditures	Not Applicable	Not Applicable	Not Applicable

Source : http://ed.sjtu.edu.cn/ARWU-FIELD2008/FIELD-Methodology2008.htm

have become top executives in the top 500 worldwide companies ("Fortune Global 500" selection created and published by the *Fortune* magazine).

Ranking criteria, indicators selected, data collection

The second stage of the ranking process is to select the criteria. This is directly linked to the desired objectives.

The **Shanghai ranking** mostly focuses on research-related criteria *(table 2)*. Two new indicators were introduced in 2007: the percentage of articles published in the best journals (20% for each field) and the budget allocated to research.

The ***Times Higher Education Supplement*** **(THES)** ranking mostly relies on the judgment of experts to draw up the list of institutions, but also to assess their quality *(table 3)*. International openness is taken into account, with the introduction of indicators based on the number of foreign students or staff.

The methodology of the **CHE ranking** (CHE Excellence Ranking) is more complex and processes a greater amount of data. The detail of the indicators is presented in *annex 1*. Only biology, mathematics, chemistry and physics are covered by this list.

Data (except for group 5) is collected from each "faculty" or department, i.e. 80 "criteria" divided into 6 groups:

- Group 1: Data relating to the doctoral programmes of the faculties and departments, for example the expected duration of the programme or the nature of the doctoral thesis demanded.
- Group 2: Data relating to the master's programmes of the faculties and departments, for example the names of the different programmes and their structure or the languages in which they are taught.
- Group 3: Data relating to the faculty or department, i.e. the profile of the staff and students or the research.
- Group 4: Data relating to the university as a whole, i.e. the number of students or the student accommodation possibilities.
- Group 5: Pre-selection data, which are the criteria used to select universities. They make it possible to identify the Top Group and the Excellence Group. These are notably publication citations, Marie Curie projects and often-cited authors.
- Group 6: Judgement of doctoral and master's students on the studying conditions, for example study organisation or the quality of the laboratories. Students are surveyed with regard to: guidance possibilities, information on careers, participation in conferences, contact with other students, examination conditions, ICT infrastructures, laboratories, libraries, general studying conditions, publication possibilities, the research community, research internships, premises, social relations, study organisation, team work, the time dedicated to the doctoral

Table 3: *Times Higher Education* Supplement indicators and weighting

Criterion	Indicator	Weight 2005 – 2007
International reputation of university	1. Peer Review: 5101 leading scholars evaluate universities in specific research areas.	40%
International reputation among recruiters	2. Worldwide interviews with 1471 recruiters at international corporations regarding the 20 universities with the most qualified graduates.	10%
International research impact	3. Number of citations in Thomson Scientific Database (2004-2006) or Scopus (2007) per faculty member.	20%
Teaching quality	4. Student/faculty ratio	20%
International outlook	5. Number of international students	5%
International outlook	6. Number of international faculty members	5%

(1) The 5 101 experts are divided geographically as follows: 41% for Europe, the Middle East and Africa, 30% for the Americas and 29% for the Asia Pacific region
(2) The 1471 employers are divided geographically as follows: 43% for the Americas, 32% for Europe and 25% for the Asia Pacific region.
Source : http://www.universityrankings.ch/fr/methodology/times_higher_education, Site du Secrétariat d'État à l'éducation et à la recherche (SER) et la Conférence des recteurs des universités suisses (CRUS)

project, teaching, websites, working rooms etc.

The CHE excellence ranking does not allocate positions as with other rankings but forms groups which are positioned at the front, in the middle or at the back of the race. The pre-selected "faculties" or departments are given bronze, silver or gold medals in order to constitute "groups". The "faculties" which obtain a silver or gold medal are part of the "top group". A minimum of three silver medals is required to join the "excellence group". In each subject, approximately 120 "faculties" or departments have obtained at least one medal and therefore belong to the "top group", while only 25 of them are part of the "excellence group".

The ***Financial Times* ranking** uses a number of indicators based on the future career of graduates, parity, the quality of the teaching staff and international openness *(table 4)*.

Other data, which is not used in the ranking calculation, is collected for the information of the users of the ranking, such as the amount of schooling fees required to follow the master's programme, the duration of the master's programme, the number of students enrolled, the qualifications necessary to be admitted into the master's programme and the percentage of work placement time.

Leiden University's centre for science and technology studies (CWTS) developed a ranking system in 2007 exclusively based on bibliometric indicators. The CWTS presents the results for the 100 European universities with the largest amount of scientific publications. This classification proposes four different indicators, each providing a different classification according to:
- the largest amount of publications,
- the number of citations per publication,
- the total number of publications multiplied by the relative

Table 4: *Financial Times* indicators and weighting

Poids	Indicateur	Définition
20	Weighted salary €	The 'salary today' figure adjusted for salary variations between industry sectors.
5	Value for money rank	The rank is calculated using alumni salaries three years after graduation and course costs. The length of the course is also taken into consideration.
10	Careers rank	The career status of alumni three years after graduation. Progression is measured according to level of seniority and the size of company in which they are employed.
5	Aims achieved %	The extent to which alumni fulfilled their goals or reasons for doing a masters in management. This is measured as a percentage of total returns for a school.
5	Placement success rank	Alumni who used the careers service at their business school were asked to rank its effectiveness in their job search.
5	Employed at three months %	The percentage of the most recent graduating class that were in employment three months after graduation.
3	Women faculty %	Percentage of female faculty.
3	Women students %	Percentage of female students.
1	% Women board	Percentage of female members of the advisory board.
5	International faculty %	Percentage of faculty whose citizenship differs from their country of employment.
5	International students %	Percentage of students whose citizenship differs from the country in which they are studying.
2	International board %	Percentage of the board whose citizenship differs from the country in which the business school is based.
6	Faculty with doctorates %	Percentage of faculty with a doctoral degree.
10	International mobility rank	A measure based on changes in the country of employment of alumni between graduation and today.
10	International experience rank	Weighted average of four criteria that measure international exposure during the masters programme.
5	Languages	Number of additional languages required on graduation from the masters programme.

Source : http://www.ft.com/cms/s/2/706738ba-620e-11dc-bdf6-0000779fd2ac,dwp_uuid=7a661b76-564a-11dc-ab9c-0000779fd2ac.html

impact depending on the field, - the number of citations per publication divided by the average impact depending on the field. This last indicator is used to present the results. It doesn't penalise non-generalist universities such as polytechnic schools or technical universities.

The **"Webometrics Ranking of World Universities"** system analyses approximately 15,000 institutions and classifies over 5,000. It uses four major indicators *(table 5)*.

The main criterion of the **ranking system of Paris' *École des Mines*** is the number of alumni occupying the top executive position (the equivalent of the Chief Executive Officer) in one of the top 500 international companies at the time of the 2006 Shanghai ranking. This criterion is meant to be the equivalent, at corporate level, of the criterion based on the number of alumni having obtained the Nobel Prize or Fields medal, as their number is similar.

When a top executive has attended several higher education institutions, the points obtained are divided between the different institutions. The performance of the best institution is set at 100, that of the others being defined as a percentage of this best performance, as in the Shanghai ranking system.

Creation of an international rankings expert group [4]

The multiple methodological problems posed by the ranking systems led the *UNESCO European Centre for higher education* (CEPES) and the Washington *Institute for Higher Education Policy* (IHEP) to create the International Rankings Expert Group in 2004, which defined a number of quality and best practice principles: the Berlin Principles on the Ranking of Higher Education Institutions.

The Berlin principles, formalised in May 2006 by the international rankings expert group (IREG), formulate 16 recommendations divided into three categories *(table 6)* which can be summed up in four major recommendations:

- take into account the diversity of the institutions, their missions and specific objectives,
- adopt a clear and transparent methodology,
- preferably use result and performance indicators as well as reliable and comparable statistical data,
- inform users of the entire methodology implemented and provide a choice on the way the rankings are displayed.

Results of the different rankings and the position of French institutions

Shanghai ranking

The position of French institutions in the 2008 and 2007 rankings are presented in *table 8*. The corresponding scores are also indicated for each of these two years. Generally, these positions are improving, with surprising variations such as the Bordeaux 1 university, which switches from the 305-402 group to the 51-75 group in the field of computer and engineering sciences. It is difficult to distinguish between the actual improvement in the quality of the institutions and the improvement in the quality of the data collected or of the methodology implemented.

NOTE

4. http://www.che.de/downloads/Berlin_Principles_IREG_534.pdf)

Table 5: The indicators of the "Webometrics Ranking of World Universities" and weighting

Weight	Indicators	Definition
20	Web Size	Number of pages recovered from four engines: Google, Yahoo, Live Search and Exalead.
15	Rich Files	After evaluation of their relevance to academic and publication activities and considering the volume of the different file formats, the following were selected: Adobe Acrobat (.pdf), Adobe PostScript (.ps), Microsoft Word (.doc) and Microsoft Powerpoint (.ppt). These data were extracted using Google, Yahoo Search, Live Search and Exalead.
15	(Google) Scholar	Google Scholar provides the number of papers and citations for each academic domain. These results from the Scholar database represent papers, reports and other academic items.
50	(Link) Visibility	The total number of unique external links received (inlinks) by a site can be only confidently obtained from Yahoo Search, Live Search and Exalead.

Source : http://www.webometrics.info/about_rank.html

Table 6: Recommendations of the international rankings expert group (Berlin, 2006)

A) Purposes and Goals of Rankings

1. Be one of a number of diverse approaches to the assessment of higher education inputs, processes, and outputs.
2. Be clear about their purpose and their target groups.
3. Recognize the diversity of institutions and take the different missions and goals of institutions into account.
4. Provide clarity about the range of information sources for rankings and the messages each source generates.
5. Specify the linguistic, cultural, economic, and historical contexts of the educational systems being ranked.

B) Design and Weighting of Indicators

6. Be transparent regarding the methodology used for creating the rankings.
7. Choose indicators according to their relevance and validity.
8. Measure outcomes in preference to inputs whenever possible.
9. Make the weights assigned to different indicators (if used) prominent and limit changes to them.

C) Collection and Processing of Data

10. Pay due attention to ethical standards and the good practice recommendations articulated in these Principles.
11. Use audited and verifiable data whenever possible.
12. Include data that are collected with proper procedures for scientific data collection.
13. Apply measures of quality assurance to ranking processes themselves.
14. Apply organizational measures that enhance the credibility of rankings.

D) Presentation of Ranking Results

15. Provide consumers with a clear understanding of all of the factors used to develop a ranking, and offer them a choice in how rankings are displayed. This way, the users of rankings
16. Be compiled in a way that eliminates or reduces errors in original data, and be organized and published in a way that errors and faults can be corrected.

Table 7: Top 100 of the 2007 Shanghai ranking by country and field

	Top 100					
Country	SCI	ENG	LIFE	MED	SOC	Sub-Total
United States	59	49	62	61	77	308
United Kingdom	9	7	11	12	11	50
Japan	7	7	3	2		19
Switzerland	3	2	4	2		11
Sweden	2	3	2	2		9
Canada	2	6	5	6	7	26
Germany	7	1	6	6		20
Netherlands	1	3	2	5	4	15
Australia	1	3	4	3	1	12
Israel	4	2	2		2	10
China		9			1	10
France	5	2	1	1		9
Belgium		2	3	2	1	8
Italy	2	3		1		6
Denmark	2	1	1	1	1	6
South Korea	1	3				4
Singapore	1	2			1	4
India		2				2
Finland			1	1		2
Russia	1					1
Brazil				1		1
Spain				1		1
Norway					1	1

SCI : Natural Sciences and Mathematics
ENG : Engineering / Technology and Computer Sciences
LIFE : Life and Agriculture Sciences
MED : Clinical Medicine and Pharmacy
SOC : Social Sciences
Source : http://ed.sjtu.edu.cn/ARWU-FIELD2008.htm

Times Higher Education ranking

The Times Higher Education publishes a TOP 10 for each of the indicators used in the overall ranking *(table 9)*. The two reputation indicators based on the opinion of researchers *(indicators 1)* and employers *(indicators 2)* mostly highlight US or UK universities. In relation to the other indicators, top-ranked institutions are more geographically diversified. Five French higher education institutions, i.e. five schools or groups of higher education schools, are distinguished.

In terms of overall ranking, US and UK universities are predominant amongst the top 50 places of the 200 *(table 10)*.

Four French institutions appear in the TOP 200, including one university *(table 11)*. The ***École Polytechnique*** moved up 9 places between 2006 and 2007, while ENS Paris drops 8 places, the P. et M. Curie University 39 and ENS Lyon 85. This considerable difference from one year to the next is hard

to explain by the dynamics specific to each institution and tends to demonstrate the instability of the indicators which should be examined.

CHE ranking

The CHE ranking classifies European institutions by distinguishing two groups, the "excellence group" and the "top group". Five French universities are listed in the "excellence group" *(table 12)*, two in chemistry and 4 in mathematics *(table 13)*. Forty six institutions appear in the "top group" *(table 15)*.

Financial Times Business schools ranking

The 2006 Financial Times ranking lists 11 French business schools within the top 30 *(table 16)*. The UK has 8 institutions in the top 30 while Belgium, Germany, the Netherlands, Norway and Spain have 2 each. In this ranking system, the education units taken into account are education units leading to a "masters in management", i.e. comparable units: either business schools like in France or specific units within universities like in the UK and other countries.

French institutions in the LEIDEN ranking

The Leiden ranking, exclusively based on bibliometric analyses, lists 7 French universities in its top 100 *(table 17)*. The methodology of this ranking excludes the units that are not identified as part of a university. This principle is strongly unfavourable to France, which has a large number of training and research units outside university.

CSIS ranking [5]

The Spanish council for scientific research (CSIS) is the only ranking system taking into account research institutions in the same capacity as higher education institutions *(table 18)*. This significantly affects the results as the top 4 French entities are research organisations (CNRS, INRIA, INRA and CEA).

The ranking of Paris' *École des Mines*

The ranking of Paris' *École des Mines* gives a much more prominent place to French *grandes écoles*

NOTE

5. http://www.webometrics.info/top1000_r&d.asp

Table 8: French institutions in the Top 100 of the 2007 and 2008 Shanghai ranking by field

2008 Rank	2007 Rank	Institution	Score on Alumni		Score on Award		Score on HiCi		Score on PUB		Score on TOP	
			2008	2007	2008	2007	2008	2007	2008	2007	2008	2007
Natural Sciences and Mathematics												
25	24	Univ. Paris 11	48	40	60	65	24	24	65	63	80	79
31	31	Univ. Paris 06	51	51	0	0	34	34	73	71	80	78
39	51-75*	ENS Paris	74	70	44	28	14	14	39	39	83	80
52-76*	51-75*	Univ. Strasbourg 1	31	31	15	15	28	28	46	45	80	78
77-107*	76-110*	Univ. Paris 07	0	0	0	0	24	24	48	41	85	93
Life and Agriculture Sciences												
76-107*	39	Univ Paris 06	0	0	0	0	20	21	48	46	84	83
Clinical Medicine and Pharmacy												
76-107*	Not classified	Univ Paris 05	0	NC	0	NC	21	NC	35	NC	87	NC
Social Sciences												
No french institution classified												
Engineering/Technology and Computer Sciences												
2008 Rank	**2007 Rank**	**Institution**	**Score on Alumni, award**		**Score on HiCi**		**Score on PUB**		**Score on TOP**		**Score on Fund**	
			2008	2007	2008	2007	2008	2007	2008	2007	2008	2007
51-75*	305-402*	Univ. Bordeaux 1	Not relevant		35	36	34	34	87	87	-	-
51-75*	39*	Univ. Paris 06	Not relevant		20	21	47	45	84	80	-	-

*The table of ARWU - FIELD Ranking gives rank ranges beyond the 50th and lists the institutions that are ranked in alphabetical order. See the Internet address of where the list of names of these institutions is given.

Source : http://ed.sjtu.edu.cn/ARWU-FIELD2008/SCI2008.htm

Table 9: TOP 10 of the *Times Higher Education* ranking

2007 Rank	2006 Rank	Name	Country	Score
For peer reviews				
1	4	University of California, Berkeley	US	100
2	3	Harvard University	US	100
3	1	University of Cambridge	UK	100
4	5	Stanford University	US	100
5	2	University of Oxford	UK	100
6	6	Massachusetts Institute of Technology	US	100
7	13	Princeton University	US	100
8	10	Yale University	US	100
9	16	University of Toronto	Canada	100
10	19	University of California, Los Angeles	US	99.9
For employer reviews				
1	6	University of Cambridge	UK	100
2	8	University of Oxford	UK	99.9
3	4	London School of Economics	UK	99.8
4	1	Harvard University	US	99.5
5	31	University of Manchester	UK	99.0
6	2	Massachusetts Institute of Technology	US	98.9
7	3	Stanford University	US	98.9
8	38	Imperial College London	UK	98.9
9	17	Università Commerciale Luigi Bocconi	Italy	98.6
10	42	University of Melbourne	Australia	98.5
Citations per staff member				
1	1	California Institute of Technology	US	100
2	3	Stanford University	US	99.9
3	4	Massachusetts Institute of Technology	US	98.4
4	9	École Normale Supérieure, Paris	France	98.3
5	12	University of Alabama	US	98.2
6	10	Princeton University	US	96.5
7	2	Harvard University	US	95.9
8	13	Johns Hopkins University	US	95.8
9	112	University of Zurich	Switzerland	95.4
10	6	University of California, San Diego	US	95.3
Staff-to-student ratio				
1	26	California Institute of Technology	US	100
2	61	École Normale Supérieure de Lyon	France	100
3	2	Yale University	US	100
4	7	Tsinghua University	China	100
5	30	École Polytechnique	France	100
6	55	Cranfield University	UK	100
7	21	Universität Ulm	Germany	100
8	4	University of Rochester	US	99.9
9	5	Imperial College London	UK	99.9
10	124	University of Colorado	US	99.9
For international students				
1	1	London School of Economics	UK	100
2	8	Cranfield University	UK	100
3	2	School of Oriental And African Studies	UK	100
4	13	Sciences Po Paris	France	100
5	4	ESCP-EAP Paris	France	100
6	3	Curtin University of Technology	Australia	100
7	6	RMIT University	Australia	99.9
8	5	École Polytechnique Fédérale de Lausanne	Switzerland	99.9
9	10	Imperial College London	UK	99.7
10	9	University of Geneva	Switzerland	99.5
For international staff				
1	11	Hong Kong University of Science And Technology	Hong Kong	100
2	13	Curtin University of Technology	Australia	100
3	2	University of Otago	N.Zealand	100
4	14	École Polytechnique Fédérale de Lausanne	Switzerland	100
5	48	University of Auckland	N.Zealand	100
6	5	University of Hong Kong	Hong Kong	99.9
7	3	London School of Economics	UK	99.9
8	4	ETH Zurich	Switzerland	99.9
9	-	Hong Kong Polytechnic University	Hong Kong	99.9
10	6	National University of Singapore	Singapore	99.8

Source : http://www.timeshighereducation.co.uk/hybrid.asp?typeCode=155

Table 10: The top 50 universities of the *Times Higher Education's* TOP 200

2007 Rank	2006 Rank	Name	Country	2007 Rank	2006 Rank	Name	Country
1	1	Harvard	US	26	18	École Normale Supérieure, Paris	France
2=	2	Univ. of Cambridge	UK	27	22	Univ. of Melbourne	Australia
2=	3	Univ. of Oxford	UK	28	37	École Polytechnique	France
2=	4=	Yale Univ.	US	29	42	Northwestern Univ.	US
5	9	Imperial College London	UK	30	40	Univ. of Manchester	UK
6	10	Princeton Univ.	US	31	35=	Univ. of Sydney	Australia
7=	7	California Institute of Technology	US	32	54=	Brown Univ.	US
7=	11	Univ. of Chicago	US	33=	50=	Univ. of British Columbia	Canada
9	25	Univ. College London	UK	33=	45	Univ. of Queensland	Australia
10	4=	Massachusetts Institute of Tech.	US	33=	19=	National Univ. of Singapore	Singapore
11	12	Columbia Univ.	US	36	14	Peking Univ.	China
12	21	McGill Univ.	Canada	37	64=	Univ. of Bristol	UK
13	13	Duke Univ.	US	38=	50=	Chinese Univ. of Hong Kong	Hong Kong
14	26	Univ. of Pennsylvania	US	38=	29=	Univ. of Michigan	US
15	23	Johns Hopkins Univ.	US	40	28	Tsinghua Univ.	China
16	16	Australian National Univ.	Australia	41	31	Univ. of California, Los Angeles	US
17	19=	Univ. of Tokyo	Japan	42	24	ETH Zurich	Switzerland
18	33=	Univ. of Hong Kong	Hong Kong	43	38	Monash Univ.	Australia
19	6	Stanford Univ.	US	44	41	Univ. of New South Wales	Australia
20=	35=	Carnegie Mellon Univ.	US	45	27	Univ. of Toronto	Canada
20=	15	Cornell Univ.	US	46	70	Osaka Univ.	Japan
22	8	Univ. of California, Berkeley	US	47	66	Boston Univ.	US
23	33=	Univ. of Edinburgh	UK	48	69	Univ. of Amsterdam	Netherlands
24	46=	King's College London	UK	49	43	New York Univ.	US
25	29=	Kyoto Univ.	Japan	50	46=	Univ. of Auckland	N.Zealand

Source : http://www.timeshighereducation.co.uk/hybrid.asp?typeCode=144

Table 11: French institutions in the THE's TOP 200 WORLD UNIVERSITIES

2007 Rank	2006 Rank	Name	Peer review score	Employer review score	Staff/Student score	Citations/Staff score	Interna-tional Staff score	Interna-tional Students score	Overall score
26	18	ENS Paris	91	60	83	98	61	81	87.1
28	37	École Polytechnique	76	94	100	78	70	94	85.1
132=	93=	Univ. P. et M. Curie	60	5	90	73	20	92	63.7
157	72	ENS Lyon	42	45	100	67	41	58	60.8

Source : http://www.timeshighereducation.co.uk/hybrid.asp?typeCode=144

Table 12: Number of universities in the excellence group

Country	Number of universities	Country	Number of universities
United Kingdom	16	Belgium	3
Germany	14	Spain	2
The Netherlands	7	Austria	1
Italy	6	Denmark	1
France	5	Finland	1
Sweden	5	Norway	1
Switzerland	4		

Source : Working paper No. 99 February 2008 : "Identifying the Best:The CHE Ranking of Excellent European Graduate Programmes in the Natural Sciences and Mathematics

Table 13: Breakdown of the excellence group by university

University	Number of subjects in the excellence group	Subjects in the excellence group			
		Biology	Chemistry	Mathematics	Physics
Université Paris-Sud 11	2		X	X	
Université de Rennes 1	1		X		
Université Louis Pasteur Strasbourg	1			X	
Université Paris 7 - Denis Diderot	1			X	
Université Pierre et Marie Curie	1			X	

Source : Working paper No. 99 Février 2008 : "Identifying the Best : The CHE Ranking of Excellent European Graduate Programmes in the Natural Sciences and Mathematics", p.39

Table 14: The French Institutions in the "Excellence Group" CHE Ranking

Excellence Group Biology
0 French Institution/23 European Institutions

Excellence Group Chemistry
2 French Institutions/25 European Institutions
- Université Paris-Sud 11, Université Rennes 1

Excellence Group Mathematics
4 French Institutions/19 European Institutions
- Université Paris-Sud 11, Université Paris 7 Denis Diderot, Université Pierre et Marie Curie, Université Paris-Sud 11

Excellence Group Physics
0 French Institution/24 European Institutions

Source : Working paper No. 99 February 2008 : "Identifying the Best:The CHE Ranking of Excellent European Graduate Programmes in the Natural Sciences and Mathematics

Table 15: French institutions in the CHE's "Top group"

Top Group Biology
10 French Institutions/122 European Institutions
- Université de Méditerranée,
- Université Paris Descartes,
- Université de Nice Sophia Antipolis,
- Université Joseph Fourier Grenoble,
- Université Louis Pasteur Strasbourg,
- Université Paul Sabatier Toulouse,
- Université Pierre et Marie Curie,
- Université Robert Schuman,
- Université Victor Segalen Bordeaux 2,
- Université Paris 11.

Top Group Chemistry
11 French Institutions/130 European Institutions
- Université Bordeaux I,
- Université Claude Bernard Lyon 1,
- Université de Rennes,
- Université Joseph Fourier Grenoble,
- Université Louis Pasteur Strasbourg,
- Université Montpellier 2,
- Université Paris 7 Denis Diderot,
- Université Paris-Sud 11,
- Université Paul Sabatier,
- Université Pierre et Marie Curie,
- Université Robert Schuman

Top Group Mathematics
17 French Institutions/125 European Institutions
- Université Claude Bernard Lyon 1,
- Université de Bourgogne,
- Université de la Méditerranée,
- Université de Nantes,
- Université de Nice Sophia Antipolis,
- Université de Rennes 1,
- Université des Sciences et Technologies de Lille,
- Université François Rabelais,
- Université Joseph Fourier Grenoble,
- Université Louis Pasteur Strasbourg,
- Université Paris 12 Val de Marne,
- Université Paris 7 Denis Diderot,
- Université Paris Sud 11,
- Université Paul Sabatier,
- Université Pierre et Marie Curie,
- Université Robert Schuman,
- Université de Caen Basse-Normandie.

Top Group Physics
8 French Institutions/116 European Institutions
- École normale supérieure,
- Université de la Méditerranée,
- Université de Rennes 1,
- Université Joseph Fourier Grenoble,
- Université Paris-Sud 11,
- Université Pierre et Marie Curie,
- Université Robert Schuman,
- Université de Caen Basse-Normandie.

Source : Working paper No. 99 February 2008 : "Identifying the Best:The CHE Ranking of Excellent European Graduate Programmes in the Natural Sciences and Mathematics

Table 16: French institutions in the *Financial Times* ranking

Rang 2006	Rang 2005	Nom de l'établissement	Nom du programme
1	1	HEC Paris	Master of Science in Management
3	2	ESCP-EAP	Master in Management (Grande École programme)
4	8	Grenoble Graduate School of Business	Master in International Business
5	9	EM Lyon	MSc in Management
6	7	ESSEC Business School	Masters in Strategy & Management of International Business
7	12	EDHEC Business School	Master in Management (Grande École programme)
10	16	Audencia	Master in Management (Grande École programme)
15	-	ESC Rouen	Master in Management (Grande École programme)
23	-	ESC Lille	International Master in Management - IMiM (Grande École programme)
28	-	Reims Management School	Master of Science in Management Sup de Co
30	-	ESC Toulouse	Masters in Management

Source : http://www.ft.com/businesseducation/pdf/table_msc.pdf

Table 17: The French Institutions in the LEIDEN Ranking

European Rank	Institution
52	Paris University XI Sud
55	Grenoble I Joseph Fourier University
59	Paris University V Rene Descartes
64	Paris University VI Pierre & Marie Curie
67	Paris University VII Denis Diderot
86	Lyon I Claude Bernard University
87	Toulouse III University

Source : http://www.universityrankings.ch/fr/results/results_main_rankings

(table 9). It should however be pointed out that the vast majority of major company leaders have the same nationality as the company itself. Therefore, most of the top French executives identified in the ranking are leaders of CAC 40 companies. Thus, this ranking largely reflects the position of the companies within the worldwide economy.

Assessment of the 7 rankings

What does one learn from the results of these seven rankings realised with methodologies using very different criteria? How can the position of French institutions be analysed?

Certain French universities appear in the top 100 of international rankings of scientific institutions such as the ARWU and THE. However, they are never at the very top, far behind US and UK universities.

In the "excellence group" of the CHE European ranking, France, in terms of the number of institutions ranked, is behind the UK, Germany, the Netherlands and Italy, on a par with Sweden.

Grandes écoles, when eligible in the selection of institutions to be ranked (the Leiden ranking only takes universities into consideration), occupy an average position. This situation is due to lower relative investment in research, but also to the sensitivity of the indicators to the size factor, as the bibliometric visibility of an institution largely depends on its number of publishing authors.

This size factor is less of an issue in the Financial Times ranking, exclusively focused on European management master's programmes. This is why French business schools occupy a very favourable position.

The CSIS ranking (Spanish council for scientific research) is the only one highlighting French research organisations. This result shows the difficulty in evaluating French research exclusively via its higher education institutions. In France, a lot of advanced research is carried out in other structures which are very seldom considered in these rankings.

Are these international rankings relevant ?

Most of these rankings are mentioned and commented upon by the media. Therefore, their audience reaches far beyond the education sector and they have a significant impact on the image of the institutions as well as that of the national systems as a whole.

To date, the most significant effect is probably that of the Shanghai ranking, particularly unfavourable to French institutions and the first of them appears in the 39th position in the global ranking 2007 (see, *Sources, reference 5*). More generally, our national system, characterised by the sum of higher educations ranked in the

Table 18: French institutions in the "Webometrics Ranking"

World rank	Institute	Size	Visibility	Rich files	Scholar
5	Centre national de la recherche scientifique	13	11	27	13
13	Institut national de recherche en informatique et en automatique	14	30	25	16
23	Institut national de la recherche agronomique	22	51	38	76
50	Commissariat à l'énergie atomique	56	130	45	61
59	INSEE	73	21	254	241
63	Institut national de physique nucléaire et de physique des particules	67	171	12	24
74	FR71 Institut informatique et mathématiques appliquées de Grenoble	113	184	35	81
75	Institut de recherche pour le développement	99	183	119	37
79	UMR8623 Laboratoire de recherche en informatique	98	159	66	189
80	Institut national de recherche en informatique et en automatique Rhône-Alpes	153	151	79	136
86	UMR7503 Laboratoire lorrain de recherche en informatique et ses applications	121	207	46	117
95	Observatoire de Paris	201	133	74	301
103	UMR6074 Institut de recherche en informatique et systèmes aléatoires	145	243	54	105
107	UMR9912 Sciences et technologies de la musique et du son	63	170	167	373
111	Institut français de recherche pour l'exploitation de la mer	62	277	73	157
123	Institut Pasteur	298	109	149	388
125	UMR7606 Laboratoire d'informatique de Paris VI	142	280	72	120
127	Centre national d'études spatiales	305	83	230	421
128	Institut géographique national	125	39	334	706
135	Institut national de recherche pédagogique	123	193	284	366
143	Maison des sciences de l'Homme	334	182	256	269
159	Centre national du machinisme agricole, du génie rural et des eaux et forêts	353	286	169	251
169	UMR5506 Laboratoire d'informatique, de robotique et de microélectronique de Montpellier	265	405	53	179
174	UMR5800 Laboratoire bordelais de recherche en informatique	114	456	81	204
194	UMR5505 Institut de recherche en informatique de Toulouse	394	411	91	146
199	Institut national d'études démographiques	240	392	310	229
210	UPR8001 Laboratoire d'analyse et d'étude des systèmes	332	478	98	172
236	UFR927 UFR des sciences de la vie	282	318	279	793
240	Centre interuniversitaire de calcul de Toulouse	207	326	191	984
242	Centre scientifique et technique du bâtiment	196	385	288	721
269	European Research Consortium for Informatics and Mathematics	1,072	187	481	305
270	Bureau international des poids et mesures	251	298	445	1,067
335	UMR7095 Institut d'astrophysique de Paris	523	444	319	854
336	UMS832 Observatoire des sciences de la Terre, de l'Univers et de l'environnement, Grenoble	272	764	129	317
348	FR636 Institut Pierre-Simon-Laplace	155	678	187	766
356	Bureau de recherches géologiques et minières	619	396	531	783
362	UMR7154 Institut de physique du Globe de Paris	513	659	189	425
363	UPR3251 Laboratoire d'informatique pour la mécanique et les sciences de l'ingénieur	891	556	267	210
366	GDR2602 Centre de calcul recherche et enseignement	752	338	747	671
381	Office national d'études et de recherche aérospatiales, Toulouse	1,062	535	161	256
386	AGROPOLIS Portail de coopération internationale en recherche et formation agronomiques	444	598	388	731
393	UMS2552 Institut des sciences de l'Homme, Lyon	223	731	544	476
395	UMS831 Observatoire Midi-Pyrénées	252	854	90	513
415	Centre de ressources informatiques de Haute-Normandie	156	218	963	2,076
416	UMR7118 Analyse et traitement informatique de la langue française	162	142	1,436	1,864
420	UMR7126 Preuves programmes et systèmes	561	623	651	548
432	Institut national de l'environnement industriel et des risques	433	547	913	803
443	UMR7089 Laboratoire d'information algorithmique : fondements et applications	671	812	228	380
467	UPS837 Direction des systèmes d'information	270	660	339	1,532
481	Institut national de recherche sur les transports et leur sécurité	727	841	330	429
487	UMR5187 Centre d'études spatiales des rayonnements	692	755	353	777
489	DSG1619 Institut national des sciences de l'Univers	1,095	439	465	1,198
494	UMR7501 Institut de recherche mathématique avancée	1,303	498	824	384
497	UMR8028 Institut de mécanique céleste et de calcul des éphémérides	774	738	272	906
498	International Agency Research Cancer	1,222	323	662	1,302

GDR : Groupement de recherche (Research Group)
FR : Fédération de recherche (Research Federation)
UFR : Unité de formation et de recherche (Training and Research Unit)
UMR : Unité mixte de recherche (Joint Research Unit)
UMS : Unité mixte de service (Joint Service Unit)
UPR : Unité propre de recherche (Own Research Unit)

Source : http://www.webometrics.info/top1000_r&d.asp

Table 19: French institutions in the École des Mines ranking

Rank	Institution	Score	Shanghai
4	École polytechnique	55,1	Yes
5	HEC	50	No
8	Sciences Po - Paris	37,3	No
9	ENA	32,9	No
10	École des Mines, Paris	31,6	Yes
25	INSEAD	19,6	No
60	Paris-Dauphine	11,4	No
89	École centrale - Paris	7,6	No
89	École nationale supérieure des arts et métiers	7,6	No
89	ENSEEIHT	7,6	No
89	Université Montpellier II	7,6	Yes
205	Télécom Paris	6,3	No
214	Institut catholique de Paris	3,8	No
214	École nationale supérieure de sécurité sociale	3,8	No
214	Ecole normale supérieure de Paris	3,8	Yes
214	École supérieure d'agriculture - Purpan	3,8	No
214	ESSEC	3,8	No
214	Université Paris-Sorbonne	3,8	No
214	Université Strasbourg I	3,8	Yes
318	École du pétrole et des moteurs	2,5	No
335	École nationale de l'aviation civile	1,9	No

Source : http://www.ensmp.fr/Actualites/PR/defclassementEMP.html#Chapitre5
http://web-index.ensmp.fr:10000/cgi/public?_q=Ranking&A=-2

ARWU, is in 6th position worldwide in 2006 [6]. This position was already taken by France in 2004 in international comparisons using bibliometric indicators alone. More surprising is the variation observed, in particular in relation to the USA and, closer to home, the UK. Another disturbing point in this research-oriented ranking system is the limited influence of ***grandes écoles*** in this type of assessment. This is contrary to the prestige associated with these institutions in our country. The results of the Financial Times business school rankings or that of the ***École des Mines*** show that it is possible, using other criteria, to produce more flattering representations.

In these conditions, how relevant are international rankings? To answer this question, it should be stressed that any global ranking system is arbitrary by nature when dealing with something as varied and complex as higher education institutions: it depends on the observer's point of view and the observation environment.

The principle of any ranking is to assess several objects on a single scale. This operation is easier for objects of a similar nature characterised by a figure which can be measured in the same way for all objects to be ranked. This can, for example, be the number of students or professors. However, higher education institutions can vary in nature (public or private, universities or schools, general or specialist education etc.) and their activities cover multiple missions more or less independent of one another (training, research, innovation, development, social responsibility etc.). The challenge of ranking systems is to represent each institution by a single point and grade all the points along a single axis. In other words, the coordinates must be created to position each institution as a point in a multidimensional space and then project these points onto a straight line.

This operation obviously involves simplifications but the final result depends on the choice of the dimensions taken into account to characterise the institutions, on the choice of indicators to measure the coordinates within these dimensions, and finally on the projection method onto the ranking axis. This is based on an explicit or implicit representation of the quality of higher education. In the case of the ARWU, for example:

- *dimensions taken into account to characterise the institutions:* the ARWU focuses its evaluation on the research dimension, based on the principle that the quality of a university is measured by its ability to produce research excellence [7]. This approach neglects other dimensions such as student success or graduates' access to working life. The choice of research as a reference criterion is justifiable but does not begin to cover the entire scope.
- *indicators used:* a lot of dimensions relate to qualitative notions, such as research excellence. How can "excellence", a qualitative data, be translated into a mark on a scale? Bibliometric indicators, established based on the number of citations, seem to provide an objective response to this question. They are often cited as robust, as

NOTES

6. Statistics by country for 2006 : http://adsitu.edu.CM/rank/2006/ARWU2006/statistics/htm

7. The research dimension was also selected because it was easier to measure based on the databases accessible from Shanghai.

opposed to opinion surveys, deemed more fragile. Nevertheless, citation indexes are after all no more than the reflection of the reputation of a journal or author, without any real guarantee of the actual value of the content and impact of the publication other than the opinion of their peers. The ARWU also offers other indicators such as honours received (Nobel Prize, Fields medals), which raises the issue of the correlation with the first indicators as well as the issue of timing, as honours are often awarded long after the work has been carried out. Finally, the ARWU decides on the weighting of all these indicators. Again, the choices can be explained but remain one of many other possible solutions.

- *projection onto the ranking axis:* it determines the respective influence of the dimensions taken into consideration when evaluating the institutions. For example, how to balance research, education and development? This is not a direct issue for the ARWU because only one dimension, research, is taken into consideration. However, for the Times' Higher Education ranking, the influence of research is set at 20%. The higher education institutions which carry out no research can therefore appear in the latter ranking although they are excluded from the former by definition. The weighting of the different dimensions is therefore also decisive.

The ranking of higher education institutions therefore depends on multiple choices. These rankings are guided by the objectives underpinning their creation, which vary depending on the user. A government may use a ranking to determine its public policy decisions. According to the ARWU, French institutions are not amongst the most attractive in terms of research. This assessment, even though its foundations can be disputed, should result in the examination of the nature of and reasons for the gap between our universities and their better-ranked counterparts and lead to adapted measures to improve the situation. At the other end of the spectrum, students' interest in rankings may be totally different. Being enrolled in a renowned university is no doubt a source of motivation, notably for the best of them, but the vast majority of students may be more interested in more specific information on the courses best suited to their ambitions: the content of the curriculum, accommodation conditions, chances of success, integration rates, the practical and cultural environment etc. A vision more refined than the overall representation of the institution is necessary to compare similar courses of different institutions, all the more so as the course targeted differs from the criteria selected to measure the excellence of the institution. In addition, other types of stakeholders may be looking for specific information: teachers, companies or the institutions themselves. For each of them, the dimensions sought after determine a different analysis framework. In other words, before a ranking system can be established and used, its purpose must be clarified and the objects of the ranking and the selected criteria must be in line with the objectives. No type of ranking, regardless of its quality and relevance, can respond to all the requirements and questions.

Another difficulty lies in the relationship between ranking and evaluation. A ranking system prioritises, therefore evaluates, in relation to a determined number of criteria selected to attain a given objective. It is a snapshot taken in a specific perspective. An actual evaluation must take other elements into account, such as the nature of the unit to be evaluated (the institution, the training unit, the research team etc.), its objectives, the resources implemented or the current dynamics. Using the ARWU ranking, which is very sensitive to the size factor, it is possible to conclude that Paris VI University is more suited than ENS to the characteristics of excellence embodied by worldwide-oriented higher education institutions. However, it would be totally inappropriate to conclude that Paris VI is "better" than ENS.

An approach consisting of equating ranking with evaluation would generate adverse effects on the use of these rankings. It may encourage action on the criteria which influence the ranking without improving the quality of the service provided. The objective would therefore become the ranking itself rather than the improvement of the service. The systematic merger of universities or the standardisation of the distribution of publications, although very useful in other aspects, are examples of actions affecting the indicators without necessarily impacting governance efficiency or research productivity.

Finally, ranking systems tend to define a uniform excellence model which everyone is meant to refer to, although the requirements are very diverse. Excellence institutions competing for the top places in the worldwide research elite can be a crucial driving force in the overall dynamics of the system. However, they represent a small part of the overall system which must fulfil the very diverse educational requirements of society. Dissemination should probably be

avoided. While diversity is an undeniable asset, profile uniformity is undesirable.

■■■

The major benefit of ranking systems is to provide simple and clear-cut messages, easily delivered and understood. The position of French universities in an international ranking system is much easier to convey than a comprehensive evaluation which distinguishes between the issues, objectives, dimensions and components. It should however be remembered that these are always extreme simplifications, applied to very diverse objects in the case of higher education, and that they only portray an image in relation to relatively valid points of view, using pre-established references. These imperfections do not mean that they cannot be used. They still are a good method for tackling such complex systems and raise basic questions on the possible improvement in public policies. As part of this approach, any new ranking system is a good thing, regardless of the criteria adopted, as the multiplicity of rankings can only add extra perspective to the overall picture.

Nevertheless, this type of generic ranking system is only marginally useful to the students who wish to enrol in a course, job-hunting teachers or companies looking to create partnerships. This target audience needs more specific information and above all another focus. The work of the CHE, primarily dedicated to helping students make a choice, therefore produces a very different representation of the institutions, focusing on their disciplines so that they can be compared with each other. More than an actual ranking system, it is a decision-making aid which enables everyone, based on a specific analysis framework, to make their choice based on the component best suited to the criteria they are looking for.

Rankings do not respond to a genuine evaluation approach either. The extreme simplification leads to the comparison of objects with very different missions, objectives and resources. A comparative evaluation approach between higher education institutions can only be carried out based on a preliminary typology in order to identify, amongst the institutions or even within these institutions (departments, faculties, schools, UFR etc.) or inter-institution organisations, the elements whose proximity makes the comparison possible.

Typology has the added benefit of providing a more comprehensive representation of the diversity of the institutions and their missions, unlike the hierarchical ranking process, which favours a uniform model. For a country to boast several excellence institutions among the major universities topping the Shanghai ranking is certainly a boost to the entire system. France and Europe should be able to rely on a significant number of major education centres recognised on a worldwide scale. However, the higher education system as a whole should also fulfil the very diverse educational requirements at all levels of society. Maintaining balance between the different components of higher education also represents a crucial challenge for public policies. This statement has led to make an evolution since 2007/2008 toward a presentation by fields.

Thus, international rankings should be used as food for thought with a view to improving French and European higher education policies and designing institutional strategies. It is also important to help create new ranking systems taking into account a broad array of quality criteria, notably those relating to higher education per se as well as those focusing on the benefits of diversity. The limitations of these rankings should be kept in mind and their use as steering or decision-making tools rather than evaluation or prioritisation instruments should be promoted. ■

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3. CHE Centre for Higher Education Development Working paper No. 99 December 2007 : "Identifying the Best: The CHE Ranking of Excellent European Graduate Programmes in the Natural Sciences and Mathematics"
http://www.che.de/downloads/CHE_ExcellenceRanking_AP99.pdf

4. Website of the Swiss Secretary of State for education and research (SER) and of the Conference of Swiss university rectors (CRUS) **http://www.universityrankings.ch/fr/home**

5. Results of the different rankings: **http://www.universityrankings.ch/fr/results/results_main_rankings**

Summary presentation of the different systems

Ranking System (Ranking year)	Number of institutions (Coverage)	Broad subject fields	Research Weight
Shanghai (2008)	230 universities 538 "faculties" or départments (World)	Natural Sciences and Mathematics Engineering / Technology and Computer Sciences Life and Agriculture Sciences Clinical Medicine and Pharmacy Social Sciences	100%
Times Higher Education (2007)	200 universities (World)	Natural Sciences Life Sciences and Biomedicine Technology Social Sciences Arts and Humanities	20% (1)
CHE (2007)	250 universities 500 "faculties" or départments (Europ)	Biology Chemistry Mathematics Physics	100% in the selection (2)
Financial Times (2007)	40 institutions (World)	Economie et commerce	0%
Leiden (2007)	100 universities (Europ)	All fields	80%
Webometrics Ranking (2007)	500 units (World)	All fields	100%
École des Mines de Paris (2006)	335 institutions (World)	All fields	0%

(1) More personal criteria of experts who can take into account the quality of research.
(2) The selection of institutions is almost exclusively based on search criteria.

List of abbreviations

ACA: The Academic Co-operation Association.
Independent European association founded in July 1993, dedicated to the management, analysis of and improvement in education, primarily higher education. Its secretariat is based in Belgium.

AIU: International association of universities.
The AIU, an organisation affiliated to UNESCO, was created in 1950 to encourage cooperation between higher education institutions throughout the world. It is a **global organisation** uniting member universities of approximately **150 countries** to examine and act upon common concerns.
The association publishes a magazine four times a year, **AIU Horizons**, *News of higher education throughout the world*. Its May 2007 issue focuses on the ranking of universities.

ARWU: Academic Ranking of World Universities, established by Shanghai's Jia Tong University, selects criteria almost exclusively relating to research (number of citations, most cited researchers, Nobel Prizes etc.).

CEIHE: Classifying European Institutions for Higher Education.
Establishes a new typology of higher education institutions.
Recent conference: "Building a typology of Higher Education Institutions in Europe", Santander, April 24 - 26, 2008. The next conference will be held in Berlin on 10 and 11 July.

CEPES: European Centre for Higher Education-UNESCO.
Jan Sadlak, director.

CHEPS: The Centre for Higher Education Policy Studies (CHEPS) is the inter-disciplinary research institute of the Twente University (Netherlands). It publishes a series of reports on higher education systems in the following European countries: Great Britain, Sweden, the Netherlands, France, Germany and Belgium (Flanders).
Each report reviews higher education and research infrastructures, finance, governance and evaluation methods.

CHE: Centre for Higher Education Development (The CHE Ranking of Excellent European Graduate).
Gero Federkeil.
Unlike other rankings, the CHE ranking does not classify higher education institutions according to the total number of points they are awarded. It is based on the idea that it is impossible to aggregate the results obtained as per the different evaluation criteria and, consequently, that it is impossible to know what the best university is.
There is therefore no university ranking but excellence groups are established for each study branch.

IHEP: Institute for Higher Education Policy.
This is an independent organisation founded in 1993 and based in Washington DC. Its purpose is to improve access to and success in higher education throughout the world.

IMHE: Institutional Management in Higher Education.
This is one of the seven programmes making up the Directorate for Education within the OECD. The programme on institutional management in higher education (IMHE) is a forum designed for decision-makers from national and regional government authorities, university directors and managers and researchers. The activities [?] carried out by the IMHE relate to higher education institutions and the development of their region, research management, the funding of the institutions and globalisation.

IREG: International Rankings Expert Group.
Deliberation, sharing of information on the methodologies used for those who produce rankings (group of approximately 20 international experts). Its role is to provide Unesco-Cepes and the institute [?] with advice on higher education policies. The objective is to ensure that ranking systems are a more accurate reflection of the quality of higher education.

THES: The Times Higher Education Supplement publishes a world ranking of universities each year, based on varied indicators.
The THES ranking uses the following criteria: peer judgement (40%); the ratio of the number of students to the number of academics, i.e. student/teacher ratio (20%); the number of citations in scientific journals divided by the number of academics (20%); the opinion of recruiters in international companies (10%); the percentage of foreign teachers (5%); the percentage of foreign students (5%).

Detailed composition of the indicators selected for the CHE ranking

Indicator (mas. = master's doc. = doctoral students)	Short description
Overall study situation (mas.& doc.)	Comprehensive judgement looking at the overall situation.
Advisory (mas.&doc.)	Comprises judgements on the availability of advisors, their assistance in career planning, their caring for the student's personal development and the quality of counselling.
Career centres (mas.& doc.)	Judgements on the assistance in finding an adequate employment position by the university's career centre, on informational events, student initiatives, partnerships with companies or research institutes, and the possibilities of internships.
Examinations (mas.& doc.)	Contains judgements on the transparency of study and examination requirements, whether the coursework is in line with the content of the examinations, the fairness of examinations and the awarding of marks and organisational aspects.
Laboratories (mas.& doc.)	Considers judgements on the state of the laboratories as well as the space and the equipment of laboratories.
Library (mas.& doc.)	Judgements on the stock of literature (whether it is up-to-date, available and accessible) and on services such as search facilities or opening hours
Training (mas.& doc.)	Includes judgements on the quality of theory and methodology training, the level of interdisciplinarity, the variety of course content and quality of instruction.
Study organisation (mas.& doc.)	Comprises judgements on the transparency of admission conditions, assistance regarding formal procedures, and the organisational framework.
IT-infrastructure (mas.)	Includes judgement on hardware equipment, subject-specific software, condition of computers and service.
Counselling (mas.)	Judgements on admission, counselling on studying abroad, social and psychological counselling, counselling in relation to studies.
Websites (mas.)	Judgements on the web sites of the department: information on organisational aspects, courses and research team. Availability of an English website.
Rooms (mas.)	Students' opinions on the rooms: their condition, space and technical facilities
Social relations (mas.)	What students think about student organisations, contact to other students, teamwork and the relation to academic teaching staff.
Conference attendance (doc.)	Doctoral students' opinions about the information on conferences, the time to prepare contributions for these and the financial support for visiting conferences.
Contact with other doctoral students (doc.)	Doctoral students' opinions about the teamwork with other PhD-students, PhD student organisations and discussions outside own team.
Publication possibilities (doc.)	What doctoral students think about their opportunity to publish and the counselling services on writing and placing papers.
Research community (doc.)	Doctoral students' judgements on the informal contact to the scientific community and guest researchers.
Teamwork (doc.)	What doctoral students think about team communication, organisation and social relationships.
Time for PhD project	Doctoral students judge whether they have enough time for writing their thesis.
Workroom (doc.)	Doctoral students' opinions about the state of the workroom, the space and the computer equipment.
Workshops (doc.)	What doctoral students think about the possibilities to participate in workshops, whether they get enough information about these and financial aid for them.
Research stay (doc.)	Doctoral students' opinions about their possibilities to arrange a research stay abroad.

Sources : Working paper No. 99 February 2008 : "Identifying the Best: The CHE Ranking of Excellent European Graduate Programmes in the Natural Sciences and Mathematics. Page 25

Annex 2

CHE ranking: Medals Table (Excellence group)

Country	Gold Medals	Silver Medals	Bronze Medals	Medals total
United Kingdom	62	24	4	90
Germany	29	47	8	84
Switzerland	17	7	1	25
The Netherlands	16	26	6	48
Sweden	13	12	3	28
France	12	8	0	20
Denmark	5	6	0	11
Italy	4	14	2	20
Spain	4	7	0	11
Belgium	4	5	0	9
Finland	2	1	0	3
Norway	1	3	0	4
Austria	1	2	0	3

Annex 3

CHE ranking: Medals Table (Top group)

Country	Gold Medals	Silver Medals	Bronze Medals	Medals total
United Kingdom	111	91	81	283
Germany	64	128	91	283
France	31	48	33	112
Switzerland	30	20	17	67
The Netherlands	27	40	23	90
Italy	20	46	32	98
Sweden	19	27	16	62
Spain	14	26	9	49
Denmark	12	13	16	41
Belgium	7	20	13	40
Finland	6	9	5	20
Norway	3	6	4	13
Ireland	3	5	4	12
Poland	3	4	3	10
Austria	2	11	6	19
Hungary	1	4	4	9
Czech Republic	1	1	0	2
Greece	0	4	3	7
Portugal	0	1	1	2
Slovenia	0	1	0	1

Early school-leavers in Europe

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"Early school leavers" are young people who are no longer in education and who have not successfully completed upper secondary education. There are more early school leavers in southern and western Europe than in eastern and northern Europe, proportionally speaking. Such disparities reflect historical differences in the education systems of European Member States. Two interrelated characteristics of the education systems seem to be conducive to a low national proportion of early school leavers. The first is the structural continuity between primary and lower secondary education levels, taking the form of a non-selective single structure. The second is the development of upper secondary vocational education. However, such inclusive education systems are not necessarily all equitable and open to all. Cultural background may have a strong influence. For instance, the educational attainment of the students' parents continues to have a strong impact on the likelihood of dropping out of school in many Eastern European countries. Also, the specific difficulties experienced by young migrants raise problems in different countries.

This study analyses European indicators relative to young people with a low level of general and vocational education. The first section describes the purpose and the nature of the Lisbon monitoring indicators. It explains why the early school leaver criterion is given priority over the upper secondary education completion criterion. In the second section, we present early school leaver rates for different countries which reveal that disparities have usually existed for a long time. In the third section, we analyse the features of inclusive education systems. We describe rules concerning compulsory education and the different ways in which lower and upper secondary education is organised. We then evaluate the effects of single structures and the importance of upper secondary vocational education on statistical aggregates. The fourth section provides information on the disparate effects of cultural background. These findings are older and more fragmentary.

This study and its developments are based on the premise that European Community statistical conventions reflect a balanced vision of education systems. Reservations regarding the statistical comparability of indicators have been eluded in order to discern and learn what the organisation of education systems in neighbouring countries tells us about the early school leavers issue.

Scope and sources

The study covers the main countries involved in the Lisbon Process. This means the 27 European Union (EU) Member States, together with Norway, Iceland and Switzerland. It is primarily based on statistics published by Eurostat and on qualitative data regarding the organisation of education systems published by Eurydice. Certain aspects are based on an important comparative description of early school leavers, produced by the OECD and the Canadian Policy Research Networks (CPRN) **[1].**

Ensuring young people attain a "minimum level of qualification"

The challenge: social cohesion and economic and social growth

People who *have completed** an upper secondary education are better integrated in the labour market than less educated people. Among people aged from 25 to 59, the risk of not having any occupation[1] is halved if they have completed an upper secondary qualification (19%) than if they did not (38%), throughout the entire European Union (2006). The risk of not having any occupation is 30 percentage points higher for people with a low education level than for those with higher *qualifications** in Slovakia, Bulgaria, Hungary and Malta. It is higher by at least 9 points in all the other Member States.

In all the Member States, adults of both sexes are at a disadvantage due to a low level of general or vocational education. In Slovakia and the Czech Republic, and even in Lithuania, men poorly educated are at a greater disadvantage than women. In the other countries, women are at the greatest disadvantage due to poor education.

Workless *households** are characterised by a low level of education even more selectively than the individuals mentioned above. In the United Kingdom, in 2004, over a quarter of unqualified people lived in a workless household (28%), compared with only 5% of people with a tertiary education qualification **[11]**. In France, in 2002, 19% of children aged 11 to 14 lived in a workless household where the mother held no qualifications, and 13% where the father held no qualifications, compared with 2% where either one of the parents held a tertiary education qualification[3].

Moreover, the parents' lack of occupation has an adverse effect on the child's chances of academic success. In France, in the 1990s, three times more young people living with workless parents left school early than was the case with other young people **[12]**.

More highly *qualified** adults have more opportunities to continue learning than the less qualified, which is confirmed in all European Union countries. The chances of keeping one's skills and knowledge up-to-date throughout one's working life thus depend on general opportunities and on the level of education attained, usually acquired when young.

The directions in which the economy is developing imply a greater need for knowledge. Society is more competitive. In this context, raising education levels by guaranteeing an upper secondary education *qualification** for the greatest number is one of the key challenges for educational and vocational training systems in the European Union. This is crucial to ensure a cohesive society and essential for scientific and economic progress (see Box "The Lisbon Process and its objectives").

The Lisbon Process and its objectives

Launched in March 2000 by the heads of State, the Lisbon Process is designed to develop skills and competitiveness. It involves improving education and training systems in terms of quality and efficiency and opening them up to the population and to the outside world **[2]**. The European Union Member States have authority in matters of education and vocational training. European strategy consists in discussing common directions. The Member States thus establish regular assessments with the Commission to review their concrete progress and, at the same time, to assess the effectiveness of the policy measures deployed. At the Council meeting in May 2003, a limited number of objectives were defined (benchmarks for Europe's educational performance levels) reflecting common perspectives: to extend lifelong participation in education and training, extend access to higher education *qualifications** in mathematics, science and technology and to upper secondary education completion; decrease the rates of illiteracy and early school leavers **[3]**[2]. The latter three benchmarks involve minimum qualifications for young people, in terms of knowledge and level of education (which form the focus of this study).

3. Calculations based on the French Labour Force Survey for 2002 (data concerning adults and children). Samples of 9,300 children, 9,000 mothers and 8,000 fathers; data from *"Le milieu social des collégiens: confrontation des sources"*, in *Éducation & formations* no 74, DEPP, 2006. In this context "no qualification" means no degree nor diploma at all.

NOTES

* Definitions of the *terms in italics* are given in the methodological index.

1. People unemployed or not in the labour force; the indicator is higher than the unemployment rate, because inactive people are taken into account.

2. Many of these indicators are structural indicators, which underpin the annual synthesis report from the Commission to the Spring European Council, and several are also cited and monitored within the framework of EC social cohesion, employment (national reform plan) and research policies. The specific list of indicators on education and training was renewed by the Education Council in May 2007, which reaffirmed the importance of these 5 benchmarks.

European benchmarks regarding completion of upper secondary education and early school leavers

The Council has specified the sources used to define the benchmarks **[3]**. Those regarding educational attainment are based on European labour force surveys. Both comply with the same conventions (*educational attainment of the population** and ISCED *level 3**).

The first indicator is formulated positively. Completion of upper secondary education is assessed, in countries where this level of education is recognised by a diploma, according to the percentage of young people aged 20 to 24 who have obtained at least an ISCED 3 diploma requiring at least 2 years of education on a *full-time** basis. In France, this is equivalent to the percentage of young people who have successfully completed a *Baccalauréat*, a *Brevet d'Études Professionnelles* (BEP) or a *Certificat d'Aptitude Professionnelle* (CAP) (ISCED 3 degrees).

The second indicator is formulated negatively. The proportion of early school leavers is the percentage of young people aged 18 to 24 who have not attended any education, training, educational lectures or seminars in the four weeks preceding the survey and whose educational attainment is lower than upper secondary level. In France, this means the proportion of young people who have not received any education or training in the four weeks preceding the survey and who have no degree nor diploma or, at most, the *Brevet* (ISCED 2 certificate).

The early school leaver criterion is a better indicator of school attendance at the ages of 16 and 17 and of educational attainment of birth cohorts

Statistical findings show that the early school leaver criterion is a better indicator than upper secondary completion. It provides a more precise statistical relation with *enrolment rates**, based on sources other than those used for the benchmarks, than the completion of upper secondary education criterion. The first indicator does not provide an equitable picture of education systems in the different countries. It does not give an accurate view of countries where secondary education lasts for a relatively long period.

Attending school at the age of 17 is a decisive factor for the early school leaving issue. Young people who successfully complete the *ISCED 3 "long minimum" level** following compulsory education are necessarily still in school at this age. Children begin primary education at the age of six or seven in practically all countries[4]. After nine years of primary and lower secondary education, students usually enter upper secondary education at the age of 15 or 16 years **[5]**. Two or three years of upper secondary education should therefore keep young people in school up to the age of 17, 18 or 19.

Comparing the values for different countries shows that the early school leavers criterion is more closely related to the proportion of students "not in education" at age 17 (0.62) than the upper secondary education completion criterion (-0.51) *(Table 1)*. More closely correlated to the proportion of young people (aged 25-34) who have a low level of education, the early school leaver criterion therefore seems to be a more reliable basis for forecasting the educational attainment of a birth cohort than the completion of upper secondary education criterion.

The correlations are practically the same for the 27 countries of the European Union. They are also very similar to those obtained on earlier data, comparing the benchmarks for 2004 with the enrolment rates for 2002-2003 (see *Table 6* in the Appendix).

Variations relative to completion of upper secondary education criteria from one year to the next faithfully reflect variations relative to young people's access to this level of education in France. France's financial law *(LOLF, Loi organique relative aux Lois de finances)* therefore assesses trends in the educational attainment of young people using this indicator. On the other hand, the ages of 20 to 24 are too young for this assessment in Northern Europe, in the Netherlands and Germany, where secondary education programmes are long. In Scandinavia, furthermore, temporary interruptions in schooling are common. Large proportions of young people do not complete their secondary education by the age of 20. This is demonstrated by the enrolment rates in upper secondary education between the ages of 20 and 24. In 2004-2005, over 10% of people aged 20-24 were enrolled in upper secondary education in Denmark (21%), Finland (14%), Sweden, Germany and the Netherlands (12 to

NOTE

4. Only at the age of 5 in the United Kingdom (in September, not the end of December).

Table 1 - The early school leaver criterion provides a more precise statistical correlation with enrolment rates than the completion of upper secondary education criterion - Student correlation coefficient*

	Source	Upper secondary education completion	Early school leavers	Population aged 25-34 with low educational attainment (ISCED 0-2)	Poor readers at age 15 **
		European Labour Force Surveys 2006			PISA 2003
Upper secondary education completion	European Labour Force Survey 2006	1	-0,89	-0,80	-0,41
Early school leavers		-0,89	1	0,94	0,42
Women born between 1951 and 1961 with low education level (ISCED 0-2)		-0,62	0,81	0,91	0,32
Men born between 1951 and 1961 with low education level (ISCED 0-2)		-0,57	0,80	0,89	0,25
Not enrolled in education at age 16	Education (UOE) and demographic statistic 2005	-0,43	0,58	0,61	0,37
Not enrolled in education at age 17		-0,51	0,62	0,64	0,39
Enrolled in upper secondary education at age 17		0,83	-0,71	-0,58	-0,35
including: students in upper secondary vocational training programmes		0,54	-0,64	-0,63	-0,29
including: students in general secondary education or pre-vocational training programmes		-0,10	0,28	0,34	0,12

Source: DEPP calculations based on Lisbon monitoring indicators, demographic data, enrolment in educational institutions in 2004-2005 (UOE 2005) and educational attainment of the population (EU LFS) published by Eurostat, and based on detailed OECD data on enrolment in educational institutions.

* Correlation coefficients are weighted according to the number of young people aged 20 to 24 (January 2006).

** Given the scope of PISA, correlation calculations in this column cover twenty-two of the thirty countries.

Abbreviations: PISA = Programme for International Student Assessment.

Interpretation: comparing the 30 countries involved in the Lisbon Process (see Inset "Scope and sources"), the percentage of early school leavers shows a correlation (Student coefficient) of 0.94 with the percentage of low education levels attained by people aged 25 to 34, the weight of each country being proportionate to the number of young people.

11%), compared with an average of 6% in the other European Member States and 3% in France[5]. The completion of upper secondary education criterion therefore provides two distinct, and sometimes contradictory, items of information: first, young people's access to upper secondary education, and second, the shortness of secondary education programmes[6].

In northern European countries, breaks in education are acceptable, if not encouraged. We may wonder about the possible consequences of temporary interruptions on the early school leaver criterion. Breaks in studies occurring between secondary and higher education would not have any effect, *ISCED 3** being attained in this case. We may also be concerned about breaks in education having the effect of limiting the reliability of enrolment rates at age 17. However, this reservation is unfounded. Enrolment rates at age 17 are generally higher in northern countries than the European Union average. In contrast, the chances of attaining an upper secondary level qualification seem significant in Finland and Sweden between the ages of 25 and 29, where 7% to 5% of students still attend ISCED 3 education. After the age of 25, early school leavers may take advantage of a "second chance" to attain a qualification. This is the advantage of measuring the educational attainment between the ages of 25 and 34; the disadvantage of this indicator being the amount of time it takes (in many countries) to transform policy into fact.

Low numbers of early school leavers in the north and east of the Union, higher numbers in the south

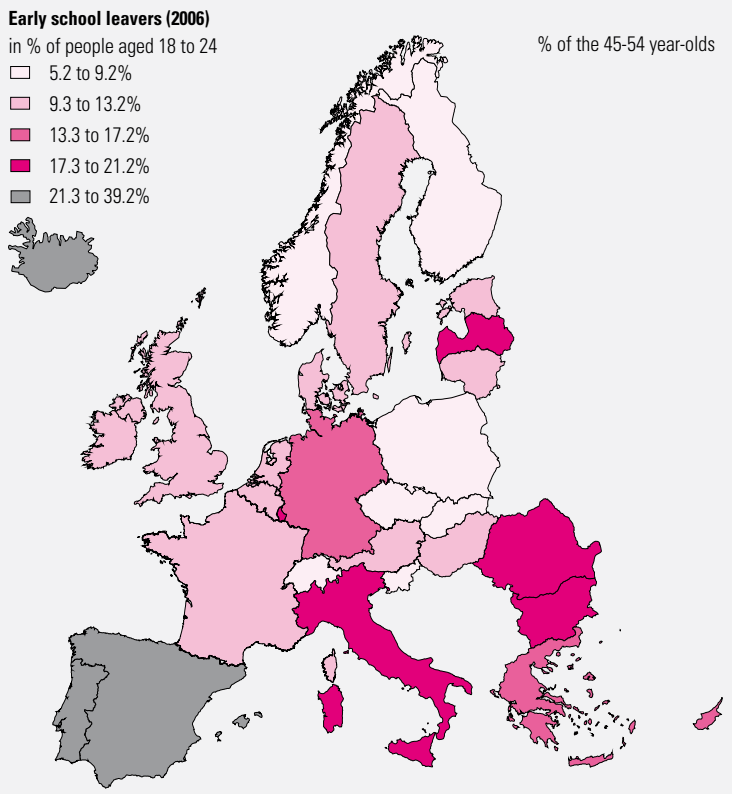
In 2006, two Scandinavian countries (Norway and Finland) and six countries in continental Europe (Slovenia, Czech Republic, Poland, Slovakia, Switzerland and Austria) achieved a better result than the 10 % of early school leavers expected in 2010 for the entire European Union *(Map 1)*.

NOTES

5. Average of the five enrolment rates for young people aged 20 to 24 in 2004-2005.

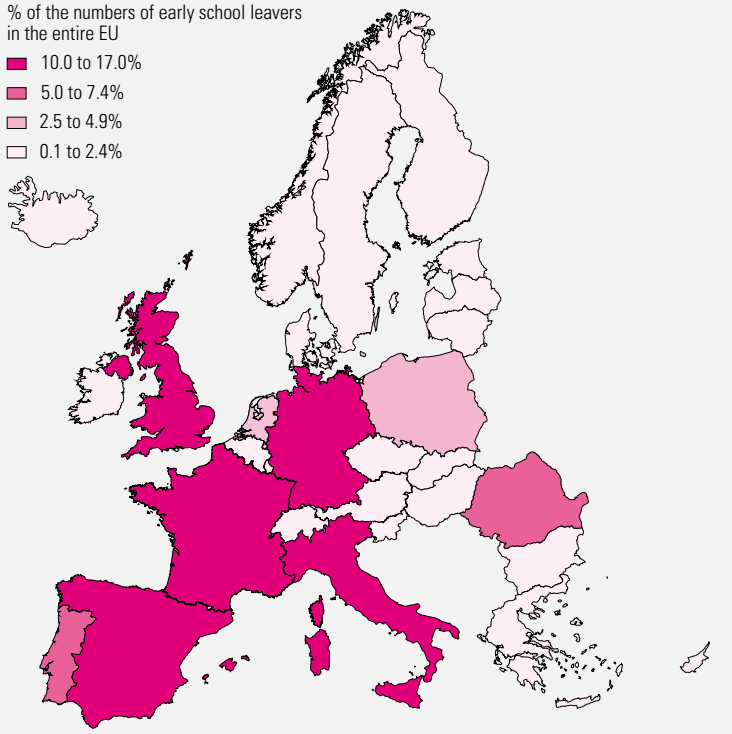
6. Like the completion of upper secondary education criterion, the rate of enrolment in upper secondary education at the age of 17 is the source of two types of information, the first involving access to upper secondary education, the information we aim to evaluate, and the second involving the length of secondary programmes. This probably explains the close statistical correlation (0.83) with completion of upper secondary education when comparing countries *(Table 1)*. It also explains why the early school leaver criterion and the completion of upper secondary education criterion are similarly closely correlated with education system descriptors *(Table 5)*, although the early school leaver criterion is more relevant.

Map 1 - % of early school leavers



Source: annexed table 3 (DEPP calculations from Eurostat EU-LFS)

Map 1b - Geographical distribution of early school leavers



Source: DEPP estimates from Eurostat early school leavers criterion (EU-LFS) and demographic data.

Most of the other Member States in the north and east of Europe have less than the Union average number of early school leavers, i.e. between 10% and 15% of young people aged 18 to 24 (12% in France). In contrast, there are relatively high numbers of early school leavers in the southern Member States, in Latvia and Iceland. In Malta, Portugal, Spain and Iceland, more than 25% of young people are early school leavers.

Young men currently attain lower levels of education than young women in practically all countries. They attain much lower education levels than women in several southern European countries (Portugal, Spain, Greece and Cyprus). This is also the case in Estonia, Slovenia, Lithuania and Poland, where the risk of leaving school early is much lower. In contrast, young men have an educational level that is comparable to young women in Romania and Bulgaria, as in several countries where large proportions of young people attend combined school- and work-based vocational education programmes (Austria, Germany and Czech Republic).

Geographical contrasts have usually existed for a long time

In countries where there are currently few early school leavers, the generations of the 1950s attained high levels of general or vocational education. These generations were largely those of the parents of current early school leavers[7]. In the Baltic and

NOTE

7. Statistics from 2006 Labour Force Surveys concerning people aged 45 to 54 (people born between 1951 and 1961).

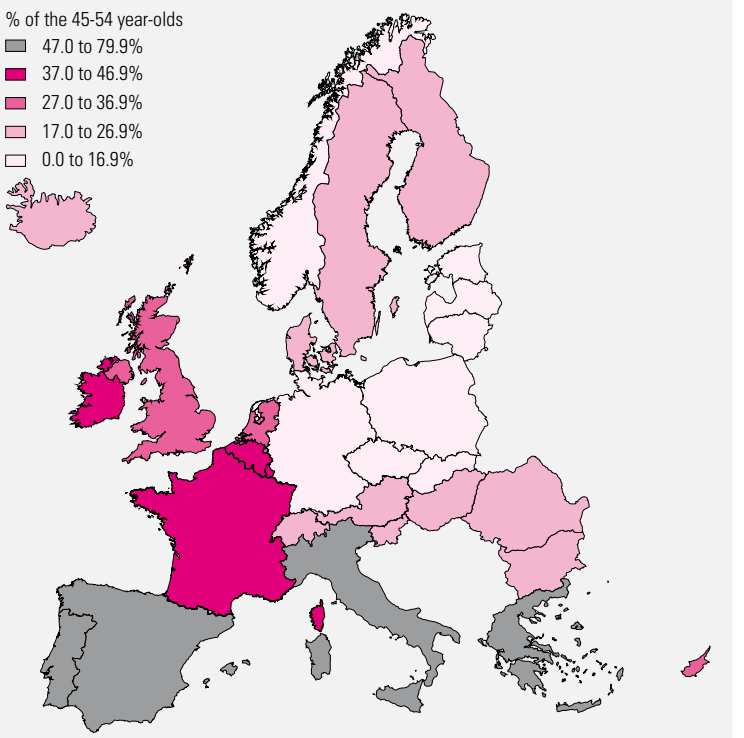
Scandinavian countries, in the Czech Republic, Slovakia, Poland, Germany, Switzerland, Bulgaria, Austria, Slovenia and Hungary, over 75% of these generations completed upper secondary education. This list includes all the countries where less than 10 % of young people are early school leavers. Only two, Latvia and Bulgaria, have more than the 15 % average.

In contrast, few men and even fewer women born in the fifties in the Mediterranean area and, to a lesser degree, in Ireland and Belgium, received an upper secondary education. In these countries, educational attainment has considerably improved for recent generations. None of these countries, where the "parents" had very limited access to upper secondary education, have less than 10% early school leavers. However, Ireland, Belgium, France and Greece have largely made up for their former backwardness.

Going further back in time, more than 75% of the male generations who began school after the Second World War had access to upper secondary education in several Central European countries (Czech Republic and Slovakia, Switzerland, Austria and Germany), Denmark and Norway, according to statistics on educational attainment in the year 2000. This seems to be the case a few years later in the Baltic States, such as Slovenia, Poland and Hungary. This is also the point where, in many countries, access to upper secondary education opened up for women.

Indicators relative to the educational attainment of young people show a close statistical correlation with the education of their elders, if we compare the different countries with one another. Young people appear to have more chances of benefiting from educational institutions and well-organised schooling when these facilities were well-established 25 or 30 years earlier. Generally speaking, progress with regards to school and educational infrastructure thus seems to be a cumulative process. Nonetheless, the education level attained by young people in the Baltic States seems to be lower than that attained by their parents. According to Eurydice, this can be explained by the evident changes that have occurred since independence and the restructuring of upper secondary education **[8]**.

Map 2 - Education level attained by "parents" population



Source: annexed table 3 (DEPP calculations from Eurostat EU-LFS)

Positive factors found in education system organisation

"Inclusive" education systems are characterised, to a certain extent, by structural continuity within the compulsory education system and by widespread participation in further education. Continuity in compulsory education is institutionalised in the form of a non-selective single structure covering primary and lower secondary education. The effective enrolment of students up until the end of compulsory schooling is a prerequisite introduced in this section.

Following the end of compulsory schooling, the development of upper secondary vocational education appears to ensure widespread participation in further education in countries involved in the Lisbon Process. The accuracy of the statistical regression and the classification of borderline cases determine the scope and limits of this analysis.

Schooling at age 15

Full-time schooling is now compulsory up to the age of 15 or 16 in the countries involved in the Lisbon

Process[8]. Nonetheless, at the beginning of 2005 significant proportions of teenagers aged 15 were not enrolled in school in Romania (13%), Lithuania, Luxemburg, Bulgaria, Portugal (10% to 8%), nor, to a lesser degree, in Italy and Austria (6% to 5%)[9]. In these countries, it is likely that a significant proportion of early school leavers will have interrupted their studies at a very young age.

Statistical data on the age at which students leave school refer to the 1990s and are fragmented. The less educated (*ISCED 0 to 2**) interrupt their schooling at the average age of 14 or 15 in Greece, Italy and Hungary, and under the age of 16 in Slovakia, Romania, Spain and Slovenia, according to statistics in the ad-hoc module on the transition from school to working life in the 2000 Labour Force Surveys **[7]**. Since 2000, according to European benchmarks, the percentage of early school leavers has fallen significantly in Italy (-15 points between 1992-1994 and 2004-2006), Greece, Spain (from -9 to -7 points over the same period) and Portugal. This decrease appears to have been particularly fast at the beginning of the period in the first three countries. In the last eight years, enrolment at age 15 has also improved in Italy and Spain, where the rate has now reached 98%. Consistent improvement in enrolment at this age has also been observed in Bulgaria.

Institutional continuity in compulsory education

Except in the case of Austria and Switzerland, the countries with less than 10% early school leavers organise, or have organised for a long time, compulsory education in the form of a non-selective single structure providing a common -core curriculum. In these countries, students advance from primary education, where classes are given by a single teacher, to the first years of secondary education, where more specialised teaching staff is introduced gradually, while remaining in the same school, without any intermediate selection process.

The single structure has replaced the transition from primary school to secondary school, still widespread in many countries. These reforms were promoted during the 1960s in Sweden and Norway and in the 1970s in Finland and Denmark. The aim was to improve social cohesion and reduce the number of students "left by the wayside".

This organisation also prevailed in Eastern Continental Europe and the Baltic States under Soviet rule. Since then, it has been changed in the Czech Republic, Slovakia, Hungary and Poland. Children can now be enrolled in the basic education system, which is unchanged, or, from the age of 10 or 11, take entrance examinations for secondary school **[6]**. As regards the conditions for entry to secondary education, Eurydice classifies these three countries in the "single structure" category **[8]**; this rule has been applied here.

In Poland, however, since 1999-2000 the single-structure curriculum has been split into primary education lasting 6 years and lower secondary education lasting 3 years. Since then, in 2002, aptitude tests were introduced for children at the end of primary school, although this is not for the purposes of selection **[6]**. Given that the reform was only introduced in 1999-2000 for young students aged 13, it only affected a minority of young people aged 18 to 24 by 2006[10]. Thus, the fact that the majority of young people had access to the former single structure should be taken into account in these calculations.

In Portugal, basic education is split into three stages within a single structure. However, transition from one class to the next is not systematic between the second and third cycles nor within a cycle **[6]**. These single structures are therefore considered to be selective.

In spite of non-selective structural continuity, the numbers of early school leavers in Latvia, Estonia and Iceland are relatively high.

In contrast, secondary education is selective or highly stratified in many European Member States. In Cyprus, as in Italy until recently, secondary education was selective, a certificate being required as a prerequisite for entrance **[8]**. Secondary education is stratified in Germany, Austria, the Netherlands, Luxemburg and Belgium. Pupils are admitted to different subjects and institutions depending on their primary school results. Nonetheless, as seen in Italy, ongoing deve-

NOTES

8. In Italy, school was compulsory only up to the age of 14 for many years. In application of the reform introduced in 2003, the Decree of 2005 provides for a right to education up to the age of 18, on a full- or part-time basis. Fees for enrolment in upper secondary level education were cut in 2006-2007 **[6]**.

9. Complement of the enrolment rate at age 15 (academic year 2004-2005).

10. The first cohorts concerned by the reform were 13 years old in 1999-2000 and thus were 19 at the beginning of 2006. Consequently, about a third of the young people aged 18-24 in 2006 have received their education after the reform. None of them sat the examinations, introduced in 2002, at the end of primary education.

lopments involve doing away with selection processes that depend on certificates and, in countries where lower secondary education is stratified, putting off distinctions between students to a later stage.

As for the integration of disabled students, the widespread philosophy regarding children with learning disabilities or with "special needs" is to integrate children into the mainstream education system while providing appropriate support. The proportion of students educated in special institutions or in special classes varies from less than 1% in some countries to over 4% in Czech Republic, Slovakia, Estonia, Latvia and Germany **[9]**.

Break-off point of greater or lesser significance upon entering upper secondary education

In many countries, the end of full-time compulsory education implies major changes in the organisation of education. It marks the transition from *ISCED* 2 (lower secondary)* to *ISCED* 3 (upper secondary)*. Education and training programmes are more specialised than at lower secondary level, and are generally taught at a wide variety of institutions. Entry to general and technical education generally depends on the results attained at the end of full-time compulsory education: examination results, continuous assessment or school reports in Continental Europe and Denmark, and lower secondary school certificate in Mediterranean countries.

Fees, which may be symbolic (Iceland), are occasionally required for enrolment. In the Netherlands, enrolment fees were payable from the age of 16 upward until 2005 and from the age of 18 since then **[6]**.

This break-off point has not been applied for many years according to the same terms in Austria, France, Sweden and Norway. In Austria and France, entry to upper secondary education precedes the end of compulsory education. All young people therefore begin upper secondary education, albeit, as before, at a variety of institutions and study branches, streamed according to results. Unlike any of the other countries studied, the various "post-compulsory" education options at upper secondary level are organised by the same municipal institutions in Sweden and Norway, and this has been the case since the 1970s.

… the significance of vocational education

Early school leavers are now uncommon in countries where the *enrolment rates** in upper secondary vocational programmes are high. Over two-thirds of boys aged 17 are enrolled in an upper secondary *vocational** or *pre-vocational** education or training programme in the Czech Republic, Slovakia and Austria, and this is also the case for over 50% of boys in Slovenia, Belgium, Norway, France[11], Sweden (2004-2005) and Bulgaria in 2002-2003. It is also the case in Italy, where most upper secondary students take a pre-vocational course. In contrast, less than 25% of boys are enrolled in this type of programme in Spain, Ireland and Cyprus (2002-2003) and less than 30 % in Portugal, Greece and Hungary.

Some of these young people study *part time** and have special study timetables that are more spread out in time than normal timetables, allowing them to combine their studies with a job. In view of the fact that apprentices in France and students enrolled in the dual education and training system have a heavy study and training programme in terms of weekly timetables, organised according to alternate periods based at school and at the workplace, they are considered to attend full-time education [5]. Part-time studies involve an average 3% of young people aged 17 in the 24 European countries taking part in the OECD Indicators of the Education System (INES) programme. This is most common in the United Kingdom (12%), Spain, Iceland, Estonia (7% to 6%) and Belgium (3%).

Low enrolment figures for vocational education and training programmes goes hand-in-hand, in most countries, with low participation rates in education at age 17 and, consequently, with high proportions of young people who are "not in education". Thus, in 2004-2005,16% to 29% of boys aged 17 were not enrolled in any educational institution, even in part-time education, in Ireland, Italy, Spain and Portugal (and in Cyprus in 2002-2003). In the southern European countries, more boys of this age have been enrolled in vocational programmes in the last two years and there are fewer male youths "not in education".

Impact in figures

If we compare the 2006 indicators for the 30 countries, the statistical correlations between academic

NOTE

11. This figure includes the upper secondary technological programmes that the percentage of technical education may classify as "pre-vocational" education.

success and organisation of the compulsory education system in the form of non-selective single structures are moderate but significant. They give 0.61 if we look at the completion of upper secondary education criteria, and -0.53 if we look at the early school leaver criteria. For these calculations, a specific variable takes a value of 1 in countries where they have a non-selective single structure system and a value of 0 in other countries.

The same kind of statistical correlations between successful completion and the development of upper secondary vocational education are also moderate and significant. They give 0.54 if we look at the completion of upper secondary education criteria, and -0.64 if we look at the early school leaver criteria. The development of upper secondary vocational education is assessed according to the enrolment rate at age 17 in this category of programme in 2004-2005 (about 39% on average).

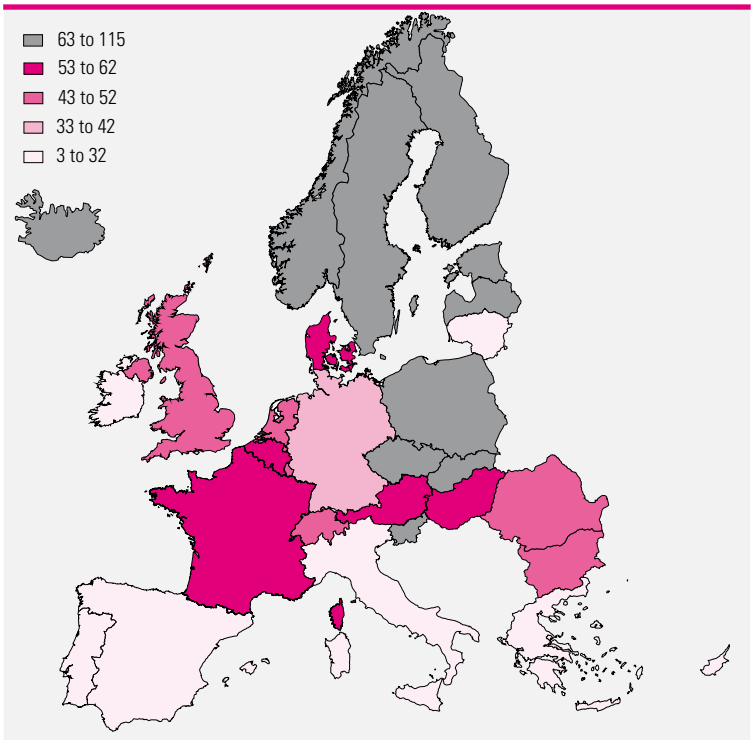
The composite indicator adds this enrolment rate at age 17 in upper secondary vocational education to 39 times the non-selective single structure dummy indicator, to give comparable weight to the two characteristics. Comparing the composite indicators for the 30 countries with those for academic failure, the statistical correlations come to 0.77 (completion of upper secondary education) and -0.78 (early school leavers).

The same comparison performed two years earlier, based on the 2004 Labour Force Surveys and data on education for the school year 2002-2003, gives practically identical results.

.. or in terms of typology

To sum up, countries are grouped according to the development of vocational education at age 17 and the existence of, or lack of, a non-selective single structure. The best performance is expected in the group of countries represented at the top (single structure) and on the left (developed vocational education) of *Graph 1*. Mediocre performance is expected in the group shown at the bottom of the graph (discontinuity between primary and secondary school or selection) and on the right (little vocational education), and median scores are shown on the diagonal. These two factors can be used to classify most countries according to their proportion of early school leavers. All the same, this fails to explain the position of some countries, such as Lithuania, Ireland, Cyprus, Estonia and Hungary, where particularly high proportions of young people receive general or pre-vocational education.

Map 3 – Education systems organization



Source: annexed table 5

Cultural background and social advancement thanks to education

In terms of comparable effectiveness and, therefore, similar proportions of early school leavers, do these education systems provide the same opportunities of social advancement?

Parents' education level

Two separate groups can be identified, according to the parents' level of education, among young people living in the fifteen countries covered by the CPRN and OECD study **[5]**. When their parents have completed upper secondary education, the risk of young people dropping out of school are low and fairly homogeneous, ranging between 2% (Slovakia) and 12% (Netherlands). In contrast, when their parents are poorly educated, the risks

of young people dropping out of school are high and fall within a broad range of values. The risk ranges from 17 % (Austria) to 50% (Portugal) *(Table 2)*. In this section of the study, only young people living with their parents are concerned (2002).

The differences between categories are generally lower in European countries where data regarding cohorts of early school leavers have been disseminated **[7]**. In Finland and Slovenia, the risk of dropping out of school for young people whose parents have a low level of education is moderate and more or less the same as for other young people. In Italy, the frequency of school drop-out appears to be "not as low" when one parent has had access to upper secondary education, and bringing the rate closer to that of poorly educated people[12].

The parents' educational attainment therefore appears to be a particularly discriminatory factor in the Czech Republic, Slovakia, Hungary, Romania and Portugal, and has a very strong impact in Luxemburg, Belgium and Spain. Nonetheless, this cultural background appears to be less of a determining factor in Finland, Sweden and Slovenia, and, to a lesser extent, in Austria, France and the Netherlands. Assessed on the basis of *odd ratios**, inequalities regarding the risk of young people being early school leavers according to their parents' education level range from 1 to more than 3.

… Integrating migrants

This section refers to 2004. Young people of foreign nationality attain much lower education levels than "nationals" in Cyprus, Estonia and Luxemburg, where they account for a substantial proportion of young people aged 20 to 24, and also in Greece, France and Czech Republic, where they account for a low or very low proportion of young people. In contrast, young people of foreign nationality attain higher levels of education than nationals in Poland, Ireland, Portugal and the United Kingdom **[10]**.

The specific problems encountered by young people of foreign nationality may account for a difference of nearly 10 points in the indicators for Luxemburg, 3 to 4 points in Cyprus, Estonia and Germany, 2 points in Austria and Greece, 1 point in France, Belgium and the Netherlands. However, they could have no impact in Portugal, Spain, Poland, Ireland and the United Kingdom. Our reservations concern ambiguities in these indicators. They involve two different population groups. The first is the group of young people who have recently come to the country to complete their studies or to work, whose presence biases the indicators. The second is the population group consisting of immigrant children who have been educated in the country, and are the particular focus of the indicators. Nonetheless, the very poor literacy results achieved by non-native students, compared to native students, at the age of 15 in Belgium, Germany, France, Austria, Luxemburg and Sweden tend to confirm integration problems, which, viewed from this angle, appear to be more limited in the Netherlands, Denmark and Greece **[10]**. ■

NOTE

12. Parents' education levels were unknown in over 10 % of cases in Italy (YALLE). In Italy, Spain and Greece, information regarding the education level of each parent was collected by the European ad hoc module.

Graph 1 - Early school leavers (%)

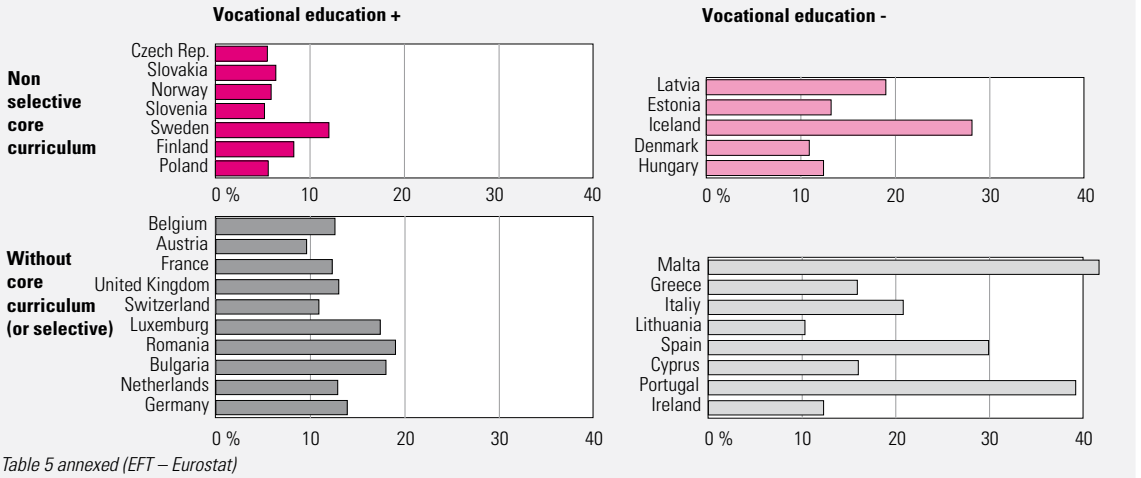


Table 5 annexed (EFT – Eurostat)

Table 2 - Risk of leaving school early according to the parents' education levels

Population	*Young people who left training during the 1990s*			*Young people aged 20-24 in 2002 living with their parents*			
Highest education level attained by parents	**% of early school leavers**	**Upper secondary education or higher (ISCED 3-6)**	**Odd ratio to be an early leaver when the parents have low education level**	**Young people who live with their parents (%)**	**Low education level (ISCED 0-2)**	**Upper secondary education or higher (ISCED 3-6)**	**Odd ratio to be an early leaver when the parents have low education level**
	% of early school leavers	% of early school leavers			% of early school leavers	% of early school leavers	
Germany				53			
Austria	24	12	2	67	17	6	3
Belgium	26	8	4	67	22	6	5
Spain	40	16	4	87			
Finland	13	12	1				
France	26	14	2	53	24	9	3
Greece	20	7	3	73	28	6	6
Hungary	33	8	6	72	31	5	9
Italy	38	18	3	88	34	7	7
Luxemburg				70	23	4	7
Netherlands				56	26	12	2
Poland				76	21	5	5
Portugal				78	50	9	11
Czech Rep.					23	4	8
Romania	47	13	6				
United Kingdom				46			
Slovenia	10	6	2				
Slovakia	14	2	9		24	2	13
Sweden	18	11	2				
Switzerland				76	20	4	6

Source: Data on young people who left education and training programmes in the 1990s are sourced from specific questions in the ad hoc module on transition in the Year 2000 Labour Force Surveys, Eurostat [7]; data on young people aged 20-24 who live with their parents are sourced from the 2002 Labour Force Surveys (the «YALLE» report), OECD and CPRN [1].

Interpretation: in France, in Year 2000, among the young people who interrupted their studies during the 1990s, 26% of those whose parents had attained, at most, a lower secondary certificate (ISCED 0-2) also attained the same low level of education, compared with 14% of young people whose parents had higher education levels (ISCED 3-6); the odd ratio of the former was 2. The same ratios show a slightly greater contrast if we consider young people aged 20 to 24 who were living with their parents in 2002 (odd ratio of 3). In principle, the parents' highest education level was taken into account in both cases.

Methodological index

International Standard Classification of EDucation (ISCED – or *CITE* in French): agreement between countries undertaken under the aegis of UNESCO **[5]** aiming at producing statistics on the numbers of people in education and training and on education and training resources, in order to compare the many different types of education system. The basic unit used in ISCED is the education or training programme. The different classification levels are stages in education, defined according to their content and specific classification criteria, such as entry conditions, the theoretical length of the education programme starting from the beginning of compulsory education, the specialisation and qualifications of teaching staff.

Organised vocational training leading to a qualification (especially apprenticeships) is taken into account on the same basis as general education programmes in ISCED 1997 (for more details, see: "enrolment rate").

French classification of training levels: this classification, defined in 1967 and 1969, is used in France by the state and social partners to manage educational programmes and certification. Secondary education levels are defined according to the highest grade completed (rather than the obtained qualification).

Diplomas, qualifications and certificates: the procedures for assessing knowledge and skills and the legal rights relative to degrees, diplomas, qualifications and certificates may vary from one country to another.

Methodological index *(suite)*

European Labour Force Survey: national household surveys, focused on employment, which contain comparable questions and classifications. These surveys are submitted to the European Commission (Eurostat) by the various European Member States which carry them out (INSEE in France).

Household: people who live together in the same home (usually a "family").

Poor readers: young people who, at best, can identify information explicitly stated in a text, identify the main theme of a familiar text and make a simple connection between this information and their common, everyday knowledge (levels 0 and 1, i.e. less than 407 points in the Programme for International Student Assessment).

ISCED 3, upper secondary education: education programmes normally beginning after completing full-time compulsory education; teaching content and teaching staff are usually more specialised than at the preceding level (lower secondary education). Usually accessible following nine years of full-time education after the beginning of compulsory education, at the age of 15 or 16 **[5]**. Includes vocational training in the form of apprenticeships for young people and adults.
To measure a person's educational attainment using labour force surveys, the minimum education level (or "qualification threshold") is the ISCED "long minimum" level 3. For the European Union, a "long minimum" level 3 lasts at least 2 years (full time or equivalent) **[4]**.
Currently accessible at the end of lower secondary education, the French *Certificat d'aptitude professionnelle* (CAP) is thus an upper secondary level diploma

VI and Vb training levels: the lowest levels under the *French classification of training levels** referred to in French policies aiming to reduce the number of early school leavers. They include breaks in lower secondary education and breaks occurring after only one year in upper secondary vocational education. Young people who leave Level VI and Vb programmes early (6% of young people aged 20 to 24) are a small proportion of those who terminate their education at ISCED 0-3 short-term (17% of people aged 20-24) (2005, French labour force surveys, INSEE) **[14]**.

Educational attainment of the population, level of education achieved, or successful completion (of upper secondary education), "qualified" young people: assessed, for the purpose of comparison between EU Member States, on the basis of *ISCED classification levels**. In other words, the level of "general and vocational" education, where vocational training is classified by ISCED on the same basis as general education programmes.
Educational attainment is identified using labour force surveys, based on the degree, diploma or certificate obtained, or, "in cases (i.e. countries) where there is no certification, successful completion must be associated with full attendance" **[4]**.
To establish indicators across different generations, who may have gone through different education systems, many countries calculate educational attainment on the basis of the actual path taken by the people involved (nurses without the *baccalauréat* at ISCED 3); other countries, including France, use the current path (nurses at ISCED 5), thus attenuating differences in educational attainment across generations.

Vocational, pre-vocational: vocational or technical education is education mainly designed to allow the participants to acquire practical skills, know-how and knowledge for use in a trade or profession or in a group of professions or trades. Students who have successfully completed this type of programme are awarded a qualification that can be used in the labour market and is recognised by the relevant bodies and authorities in the country where it is awarded (e.g. by the Ministry of Education, employers associations, etc.) **[5]**. Otherwise, the proportion of vocational or technical subjects distinguishes pre-vocational educational programmes (25 % or more) from general subjects (less than 25 %). (The nature of the education programme defined in this manner is an additional dimension used in ISCED classification, at secondary level only.)

"Odd ratio": measures the difference between two risks (rates); approaches 1 when performance rates are uniform; moves away from 1 in proportion to the difference between rates. These indicators are useful in comparing the difference between pairs of rates representing different levels. The ratio is calculated according to the "is or is not" principle (see example in Note **13**).

13. In France, the difference between the chance of belonging a "no parent working" household with poorly educated parents (ISCED 0-2) and a household where the parents have higher degrees (ISCED 3-6) is measured using an odd ratio of 4.2 (parents of children aged from 10 to 14 year-olds in 2002). 13% of poorly educated parents belong to a "no parent working" household (close to a workless household), compared with 3% of those with higher qualifications. This ratio of 4.2 means that situations where less-educated parents belong to a "no parent working" household and more qualified parents belong to a household in which at least one is employed, [i.e. 13% x (100% – 3%)] are 4.2 times more common than the opposite [i.e. (100% – 13%) x 3%]. The difference between the individual "non-employment" risk (being unemployed or inactive) among people having the same educational levels is lower, reaching 2.9 (34 % versus 14 %) in the same sample. Data: March 2002 Labour Force Surveys, sample of 17,000 educative "parents" (i.e. living the child), those retired being classifed in the same category as those who are employed (see Note **2**).

Methodological index *(suite)*

Enrolment rate, percentage of young people enrolled in education: the ratio, at a given age, between the number of students enrolled, sourced from harmonized administrative data collected from educational institutions (referred to as "UOE" for Unesco OECD Eurostat) and the total number of young people, sourced from demographic estimates. The result covers organised educational and training programmes (organised ie programmes, timetables and enrolment), lasting at least six months and including at least 10 % of school-based lessons.

Age is measured, in administrative data, on 1 January. Young people aged 17 in the academic year 2002-2003 were born in 1985. Age is measured, in labour force surveys, in the reference week (no significant difference with the principle applied in administrative data).

Full- or part-time: pupils and students participating in education and training programmes under the regular timetable (in their country) are classified as full-time students; those who have less intensive timetables allowing them to work as well are classified as part-time students. Students enrolled in dual education and training systems (Germany, Austria, Switzerland) and apprentices under contract are classified as **full-time**, because their education and training programmes are organised on an alternating work/study basis and involve long hours every week. This classification method has been used since the introduction of ISCED 1997 **[13]**.

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The "YALLE" report concerns early school leavers in twenty-six countries (aged 20-24) and is mainly based on the 2002 European Labour Force Surveys. Data regarding cultural background concerns young people living with their parents in fifteen countries: Austria, Belgium, France, Greece, Hungary, Italy, Luxemburg, the Netherlands (not cited due to lack of response), Poland, Portugal, Czech Republic, Slovakia and Canada, Switzerland and the USA. Other aspects of the study also include Germany, Australia, Denmark, Spain, Finland, Ireland, Iceland, Norway, the United Kingdom, Sweden and Switzerland.
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Poland. Summary Sheets on Education Systems in Europe, Eurydice, December 2004. In particular, see Section 'f', page 2, on non-selectivity in end-of-primary examinations.
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http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-NK-03-006/EN/KS-NK-03-006-EN.PDF

[8] Key Figures on Education in Europe, European Commission 2005
http://www.eurydice.org/portal/page/portal/Eurydice
On the conditions relative to access to lower secondary education, see pages 282 and 283.
On the educational attainment of young people in the Baltic States, see page 292.

[9] Progress Towards the Lisbon Objectives in Education and Training. Indicators and Benchmarks 2007, SEC (2007) 1284, Brussels, 02.10.07.
On the proportions of special-needs students in special classes or institutions, see page 17. This indicator is low and rather ambiguous. It may reflect, as hoped, the quality of integration for children with special needs. But it may also reflect the fact that these children are not enrolled in any educational programme.
http://ec.europa.eu/education/policies/2010/progressreport_en.html

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See Indicator 10 on "low levels of education", particularly Table 03 (page 31).
http://www.education.gouv.fr/pid271/l-etat-de-l-ecole.html (available in English)

Table 3 - General and vocation education levels attained by young people and their elders (2006) (%)

	Low education level	Upper secondary education	Higher education	?	Low education level	Low education level	Low education level
Educational attainment	ISCED 0-2	ISCED 3/4	ISCED 5-6	ISCED ?	ISCED 0-2	ISCED 0-2	ISCED 0-2
Age	Age 25-34	Age 25-34	Age 25-34	Age 25-34	Age 45-54	Women age 45-54	Men age 45-54
Survey	LFS 06	LFS 06	LFS 06	LFS 06	LFS 06	LFS 06	LFS 06
Source	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat
Germany	15	63	22	0	16	19	13
Austria	13	68	19	0	23	30	15
Belgium	18	40	42	0	40	40	40
Bulgaria	20	56	24	0	23	22	24
Cyprus	16	39	45	0	37	40	34
Denmark	12	48	41	0	22	24	19
Spain	34	25	41	0	56	58	55
Estonia	5	57	37	0	0	0	0
Finland	10	51	38	0	20	17	24
France	18	41	41	0	39	42	36
Greece	25	49	26	0	47	47	47
Hungary	14	65	21	0	23	28	17
Ireland	17	38	40	5	41	39	44
Iceland*	24	27	23	26	26	29	23
Italy	33	50	17	0	53	54	51
Latvia	20	57	23	0	11	7	15
Lithuania	14	47	39	0	5	3	7
Luxemburg	22	45	33	0	40	45	35
Malta	56	22	22	0	90	100	80
Norway	5	55	40	0	14	13	15
Netherlands	19	46	34	1	31	35	27
Poland	8	64	28	0	15	15	14
Portugal	56	24	20	0	80	79	80
Czech Republic	6	79	15	0	11	16	7
Romania	21	64	15	0	26	34	19
United Kingdom	20	43	36	1	29	35	22
Slovakia	6	77	17	0	14	18	9
Slovenia	8	64	27	0	23	27	19
Sweden	9	51	39	0	18	14	21
Switzerland	13	55	32	0	18	23	13
Average EU 27	**21**	**50**	**29**	**0**	**32**	**35**	**29**
Relative standard variance	0,50	0,27	0,33		0,52	0,47	0,60

*: 2005.

Source: DEPP calculations based on statistics from Eurostat Labour Force Surveys.

Interpretation: in 2006, in France, 18% of young people aged 25 to 34 attained, at most, a lower secondary education (ISCED 0-2) compared with 39 % of people aged 45 to 54.

Table 4 - Enrolment rate according to age (age 15 to 17) and orientation of educational programme (2004-2005)

	Enrolled (%)	Enrolled (%)	Enrolled (%)	Enrolled (%)	Enrolled upper secondary (%)	Enrolled vocational upper secondary	Enrolled general upper secondary
Level of education	**Total ISCED**	**Total ISCED**	**Total ISCED**	**Total ISCED**	**ISCED 3**	**ISCED 3 Vocational programme**	**ISCED 3 General programme**
Age	Age 15	Age 15	Age 16	Age 17	Age 17	Age 17	Age 17
Survey	UOE 00	UOE 05	UOE 05	UOE 05	UOE 05	UOE 05	UOE 05
Source	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat	OECD Eu	OECD Eu
Germany	99	99	96	93	74,7	39,4	35,3
Austria	94	95	92	91	76,4	55,4	16,3
Belgium	100	102	102	100	95,4	57,2	38,2
Bulgaria	88	91	85	81	79,6	43,4	36,2
Cyprus	89	97	91	86	78,7	10,6	68,1
Denmark	96	98	93	85	73,8	22,6	51,2
Spain	98	100	94	83	67,3	16,6	50,7
Estonia	98	99	97	92	84,8	24,8	60,0
Finland	99	99	96	95	94,3	40,1	54,3
France	98	97	97	91	87,8	53,0	34,9
Greece	89	96	101	92	75,4	23,6	51,7
Hungary	92	100	96	92	90,1	13,7	66,6
Ireland	104	105	99	89	75,0	3,4	48,7
Iceland*	99	100	94	83	83,1	24,3	57,6
Italy	91	94	88	83	82,7	19,8	32,7
Latvia	96	98	96	94	83,9	29,8	54,1
Lithuania	100	101	100	97	77,9	19,7	58,1
Luxemburg	92	88	82	78	75,0	47,1	28,0
Malta	102	106	75	73	60,1	25,5	34,6
Norway	100	99	94	92	92,2	59,3	32,9
Netherlands	103	96	96	90	71,7	42,8	29,0
Poland	96	98	97	95	92,0	36,5	55,5
Portugal	94	92	81	76	67,3	8,1	45,4
Czech Republic	100	100	100	97	95,2	76,4	18,7
Romania	80	87	84	70	69,9	45,6	24,3
United Kingdom	104	101	94	82	79,4	51,1	28,3
Slovakia	100	99	95	91	89,2	66,0	23,2
Slovenia	100	98	98	94	92,9	57,1	35,7
Sweden	98	99	97	99	96,0	54,5	40,8
Switzerland	100	98	92	88	79,1	48,6	30,6
Average EU 27	**95**	**97**	**91**	**88**	**80,7**		
Relative standard variance			0,80	0,58	0,11	0,40	0,30

*: The enrolment rate at age 15 is for the academic year 2003-2004 instead of 2004-2005 (UOE 2004).

Source: DEPP calculations based on Eurostat and OECD education statistics (UOE).

Note: in EC countries participating in the OECD's INES indicators programme, enrolment rates in upper secondary vocational education are calculated on the basis of numbers according to age and education level with a distinction made between vocational and pre-vocational programmes (data published by the OECD). In the other countries, the enrolment rates at age 17 are estimated on the basis of numbers of people detailed according to age and education levels. The breakdown according to programme orientation is assumed to vary only slightly according to age.

Table 5 - European benchmarks on low education levels and education system indicators (2006)

	Number of Young people (in thousands)	Completion of upper secondary education criterion	Early school leavers criterion	Low education level	Development of vocational education and training	Non-selective single structure	Education system indicator
Level of education		ISCED 3+	ISCED 2-	ISCED 2-	ISCED 3 Vocational programme		
Age	Age 20-24	Age 20-24	Age 18-24 not in education	Age 25-34	Age 17		
Survey	*	LFS 06	LFS 06	LFS 06	UOE 05		
Source	Eurostat	Eurostat	Eurostat	Eurostat	OECD Eurostat		
Germany	4 854	71,6	13,9	15,2	39,4	0	39
Austria	529	85,8	9,6	12,7	55,4	0	55
Belgium	637	82,4	12,6	18,4	57,2	0	57
Bulgaria	536	80,5	18,0	20,0	43,4	0	43
Cyprus	64	83,7	16,0	16,1	10,6	0	11
Denmark	291	77,4	10,9	11,6	22,6	1	62
Spain	2 891	61,6	29,9	34,1	16,6	0	17
Estonia	104	82,0	13,2	5,4	24,8	1	64
Finland	334	84,7	8,3	10,4	40,1	1	79
France	4 073	83,2	12,3	17,7	53,0	0	53
Greece	732	81,0	15,9	24,7	23,6	0	24
Hungary	675	82,9	12,4	14,4	13,7	1	53
Ireland	344	85,7	12,3	16,8	3,4	0	3
Iceland*	22	49,3	28,1	24,0	24,3	1	63
Italy	3 163	75,5	20,8	32,9	19,8	0	20
Latvia	179	81,0	19,0	20,4	29,8	1	69
Lithuania	259	88,2	10,3	14,3	19,7	0	20
Luxemburg	28	69,3	17,4	21,8	47,1	0	47
Malta	29	50,4	41,7	56,0	25,5	0	25
Norway	275	93,3	5,9	5,2	59,3	1	98
Netherlands	965	74,7	12,9	18,7	42,8	0	43
Poland	3 316	91,7	5,6	7,9	36,5	1	75
Portugal	703	49,6	39,2	55,9	8,1	0	8
Czech Republic	699	91,8	5,5	5,8	76,4	1	115
Romania	1 607	77,2	19,0	21,2	45,6	0	46
United Kingdom	3 992	78,8	13,0	20,2	51,1	0	51
Slovakia	448	91,5	6,4	6,0	66,0	1	105
Slovenia	139	89,4	5,2	8,5	57,1	1	96
Sweden	527	86,5	12,0	9,3	54,5	1	93
Switzerland	443	76,0	10,9	12,8	48,6		
EU 27	**32 117**	**77,9**	**15,2**	**20,9**	****39.6**		
Relative standard variance		0,12	0,49	0,50	0,40	1,92	0,50
Successful completion of secondary education criterion (2006)		1,00	-0,89	-0,80	0,54	0,61	0,77
Early school leavers criterion (2006)		-0,89	1,00	0,94	-0,64	-0,53	-0,78
Low education level (2006)		-0,80	0,94	1,00	-0,63	-0,57	-0,81

* Demographic estimates. ** Estimated.

Source: DEPP calculations based on Eurostat benchmarks and Eurostat education statistics (UOE) (benchmark criteria available in June 2008)
Note: people whose education level is unknown are not taken into account by the benchmark criteria.

The education system indicator is the result of the multiplication of dummy variable indicating wheter "there is" (1) or "is not" (0) a non-selective single structure in the country (weighted by 39) by the enrolment rate in vocational education (at age 17).

Table 6 - European benchmarks on low education levels and education system indicators (2004)

	Number of young people (in thousands)	Completion of upper secondary education criterion	Early school leavers criterion	Low education level	Development of vocational education and training	Non-selective single structure	Education system indicator
Level of education		ISCED 3+	ISCED 2-	ISCED 2-	ISCED 3 Vocational programme		
Age	Age 20-24	Age 20-24	Age 18-24 not in education	Age 25-34	Age 17		
Survey	*	LFS 04	LFS 04	LFS 04	UOE 03		
Source	Eurostat	Eurostat	Eurostat	Eurostat	Eurostat		
Germany	4 841	72,8	12,1	14	40,9	0	41
Austria	493	85,8	8,7	13	58,9	0	59
Belgium	646	81,8	11,9	20	59,2	0	59
Bulgaria	559	76,1	21,4	22	46,1	0	46
Cyprus	57	77,6	20,6	20	10,2	0	10
Denmark	308	76,2	8,5	13	22,8	1	62
Spain	3 102	61,2	31,7	39	15,7	0	16
Estonia	97	80,3	13,7	11	21,9	1	61
Finland	327	84,5	8,7	11	39,5	1	78
France	3 899	81,7	13,1	20	53,7	0	54
Greece	805	83,0	14,9	24	20,4	0	20
Hungary	748	83,5	12,6	16	15,8	1	55
Ireland	334	85,3	12,9	20	0,0	0	0
Iceland*	22	51,7	27,4	30	24,6	1	64
Italy	3 293	73,4	22,3	35	19,4	0	19
Latvia	168	79,5	15,6	18	29,0	1	68
Lithuania	245	85,0	9,5	13	13,4	0	13
Luxemburg	26	72,5	12,7	26	45,7	0	46
Malta	30	51,0	42,0	60	8,1	0	8
Norway	275	95,1	4,5	6	55,9	1	95
Netherlands	973	75,0	14,0	19	37,5	0	38
Poland	3 197	90,9	5,7	9	50,6	1	90
Portugal	756	49,6	39,4	60	17,2	0	17
Czech Republic	774	91,4	6,1	6	75,8	1	115
Romania	1 727	75,3	23,6	20	43,1	0	43
United Kingdom	3 651	77,0	14,9	23	41,6	0	42
Slovakia	464	91,7	7,1	6	67,4	1	106
Slovenia	149	90,5	4,2	10	60,2	1	99
Sweden	517	86,0	8,6	9	47,2	1	86
European Union (EU27)	**32 187**	**77,2**	**15,9**	**22,5**	**38,8**		
Relative standard variance		0,12	0,52	0,52			
Successful completion of secondary education criterion (2004)		1,00	-0,88	-0,83	0,65	0,64	0,79
Early school leavers criterion (2004)		-0,88	1,00	0,93	-0,69	-0,55	-0,76
Low education level (2004)		-0,83	0,93	1,00	-0,70	-0,56	-0,78

* Demographic estimates.

Source: DEPP calculations based on Eurostat education statistics (UOE) (benchmark criteria available in June 2008).

The education system indicator: see Table 5..

Gender and skill promotion on European labour markets

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An original survey was carried out in fifteen European countries on 40,000 young higher-education graduates, five years after they had finished their studies. This aim of this survey is to study the early stages of careers, detect any tendencies common to European countries and understand their specificities, especially concerning the graduates' professional situation, their opinion of their education, their skills and their relationships with their jobs and families. Over the past twenty-five years, the average number of students enrolled in higher education has more than doubled in Europe and parity has been achieved or exceeded in many countries. This increase in qualifications should mean that qualified women are in a better position than ever before to compete for executive and management positions. This being the case, in which European countries are young women breaking the glass ceiling?

If we examine the changes which have occurred in the situation of women on the European labour market, the outcome is not entirely satisfactory. There has indeed been an unprecedented growth in women's activity since the beginning of the sixties. But this is often at a cost: women with higher education qualifications have been hit by unemployment and part-time employment, their employment has been restricted to a limited number of sectors. Women do better at school but their performance on the labour market is less successful. Their access to top executive positions seems to be limited by what American and other Anglo-Saxon women know as the *"glass ceiling"*, invisible and transparent. To illustrate the impediments to their progression in the higher organisational levels, women from Quebec refer to the *"sticky floor"*, other women authors speak of *"evaporation"*, the *"inverted pyramid"*, the *"lead sky"* (Marry, 2004) or of *"picking edelweiss"* (Meynaud, 1988). This scarcity is due to a number of factors such as the flows, symbols, history and culture specific to each country, the traditions regarding promotion and organisation in the professional world, or imbalanced sharing of family responsibilities (Marry, 2004; Laufer, 2005). These impediments also result in fairly substantial wage disparities in most European countries (Ponthieux and Meurs, 2004).

In studying young graduates, both men and women, at the outset of their career on the various European labour markets, we hope to gain a better understanding of the recent changes in each country and detect tendencies common to Europe. Our method is based on the REFLEX *(Research into Employment and Professional Flexibility)* survey carried out in 15 European countries[1] on 40,000 students, 60% of which were women, five years after their graduation in 2000, namely, in Austria, Belgium (Flanders), the Czech Republic, Estonia, Finland, France, Germany, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. The aim of this article is to compare access to employment for women and men in different European countries based on the skills acquired during education

NOTE

1. The REFLEX survey was also carried out in Japan but this country is not taken into account in this publication.

and the first years of professional activity. Focusing this study on their professional situation five years after graduation, as well as on their perception of professional experience and on their skills is all the more interesting in that we observe the development of a gender-based differentiation in access to the labour market, which is more or less marked depending on the country.

In which European countries are young women breaking the glass ceiling? To answer this question, we have divided our article into two parts. The first will summarise the main differences in the beginnings of women's and men's careers on the European labour market. The second part will focus on an econometric analysis of gender-based disparities in salary, applying decomposition methods to the wage gaps.

The imbalanced situation of young graduates on the European labour market

The individuals questioned during the REFLEX survey had graduated at the end of the 1999-2000 academic year at different levels of first-stage tertiary education at university and in specialised business and engineering schools. In most cases, they had an enviable career in front of them, with quick access to permanent employment. Nearly 61% of women and 68% of men had been constantly employed since their graduation. Indication of successful integration: 46% of women and 57% of men achieve stable employment with their first contract; 40% of women and 46% of men stay in their first job. Five years after graduating, 5% of women and 3% of men are unemployed, three quarters are in salaried positions and most of them are in permanent top management positions with permanent contracts. In analysing their answers, there appears to be a strong link between their education and the quality of their jobs, their involvement in introducing innovations into their companies, and an undeniable recognition of their skills which is appreciated differently according to gender and country.

The mark of gender

Changes in society have made all professional sectors open to women. However, these changes conceal inequalities in the access of women and men to training and education and to the labour market. In the vast majority of European Union member states, women with university qualifications are more numerous than men. Generally speaking in 2005, 30% of women in the 30-34 age-group were higher education graduates compared to 27% of men (Eurostat, 2007). And yet there are still differences in the subjects studied as we see from the REFLEX survey. Nearly a third of male graduates studied engineering whereas the proportion is only 7% for female graduates. On the contrary, one third of women studied the humanities and arts as against only 13% of men.

Girls and boys are brought up differently both at home and at school and this difference in education is going to point them in clearly distinct professional directions, leading to different lines of work. Women enter into a limited number of feminised sectors with respect to training and jobs even though they are on average more highly qualified than men. And yet, the role of women in economic activity has changed. Their level of activity shows steady growth, on a par with the increase in their level of qualification. The results of two surveys (REFLEX, CHEERS, *cf.* box "The REFLEX project") carried out in Europe six years apart are constant over time. Like men, women graduating at the highest levels of the education system are protected against unemployment and this relative security lasts over the years. The same constants also appear in the Generation surveys carried out by the CEREQ in France. Generally speaking, four or five years after graduating, three quarters have a permanent contract or job and 80% work full time. Women's unemployment remains at the same level in 1999 and 2005, a little above that of men (5% against 3%). Both European surveys reveal quick access to a first job and also demonstrate a geographical ranking with young individuals educated in southern European countries encountering more difficulties and a greater risk of unemployment. Disparities also appear according to discipline. At the top of the bill, we find business and engineering disciplines together with computer science and at the bottom, arts and humanities.

Professional insertion is less favourable to female populations in southern Europe than to female graduates in Europe as a whole. In Spain, Italy and Portugal, more time than average is needed to find a first job and women's unemployment rate at the time of the survey is twice that of men in their countries. The rate of women's unemployment is high in France: at 8%, it is just behind Spain and Italy but it is more or less on a

par with that of men. Graduates in northern European countries benefit from the best possible conditions for insertion into professional life, with a low rate of unemployment. Inequalities concerning women's career paths exist, more or less pronounced depending on the country. The characteristics of education systems and labour markets often explain the differences, as for instance, the large amount of part-time work in the Netherlands, the impact of the public sector in the Scandinavian countries…

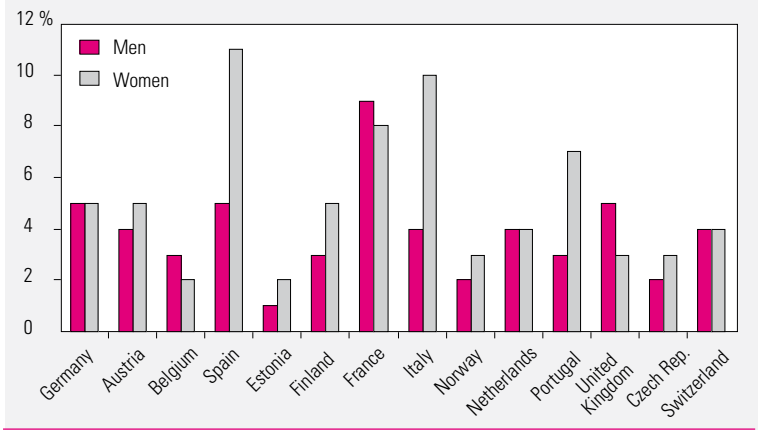
Women are more prone to unemployment. Nearly 39% of women and 32% of men have been unemployed at one time or another since graduating. The rates are the lowest in Norway, Estonia and the Netherlands (25% with no significant gender-based differences) The most significant differences are to be found in Finland, Germany, Portugal and Spain. Two thirds of Spanish women declare having been unemployed at some time (as against 55% of Spanish men).

The public sector is the principle employer of women in Europe and accounts for half the women employed (35% of Spanish, Belgian and Italian women, 71% of Norwegians) as opposed to a third of men (20% of Italian and 44% of Norwegian men). France conforms to the average with 49% of women and 31% of men employed in the public sector. Women are present in varying numbers in all sectors of the economy but predominantly in education (25% as against 13% of men), health (21% against 8% of men). The female population represents 38% of individuals employed in industry but most of them are in the service industries.

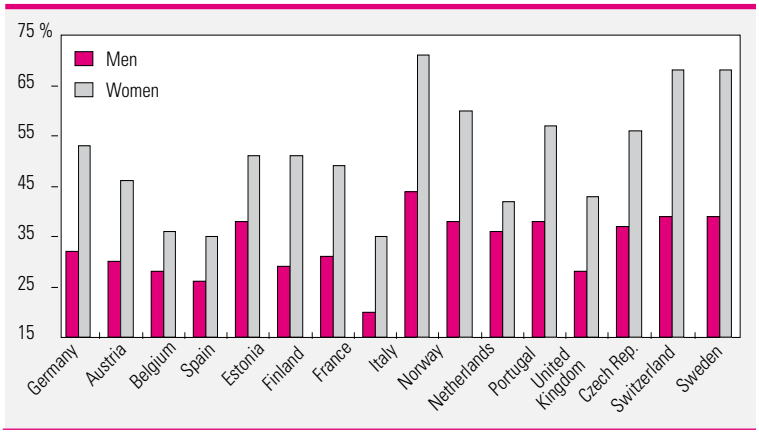
Another characteristic common to women in Europe concerns the form of employment. Thus we find that temporary employment for women is much more developed in southern countries and particularly in Spain. In northern countries, resorting to external flexibility (and so to temporary work) is less widespread due to the legislation and the action of social partners limiting this practice. 22% of women and 17% of men were on fixed-term contracts at the time of the survey. Five years after graduation, young individuals in France, Norway, Estonia and the Czech Republic stand out by displaying more stability, with firm contracts for both women and men. The Spanish, Italians and Portuguese are characterised by a larger amount of temporary employment (nearly 30%) with significant differences to the detriment of the female population (38% of women and 30% of men in Spain, 32% of women and 21% of men in Italy, 31% of women and 19% of men in Portugal). Finland also stands out here with the most significant disparity to the detriment of women (29% against 13% of men).

Part time work illustrates another national specificity regarding women's employment. The average working hours declared by graduates amount to forty-two hours per week. A quarter of women work less than thirty-two hours per week in their company or institution (12% in Sweden, 44% in the Netherlands) as opposed to 9% of men (5% in Sweden, 14% in France). There are different reasons for part time work[2]: it gives access to employ-

Graph 1 - Rate of youth unemployment in 2005 (%)



Graph 2 - Proportion of employment in the public sector (%)



ment for women in the Netherlands, is linked to inadequate child-care options in the United Kingdom, is the result of employee action in Sweden and Finland, is linked to government policy in France to combat unemployment while providing a solution to a company's flexibility requirements...

On the whole, women stay in their first job less frequently[3] (40% against 46% of men) except in Estonia and France; the tendency to stay with a company or institution is the most pronounced in the Czech Republic (57% of women, 60% of men), and the least in Spain and the United Kingdom (a quarter of women and a third of men). Finland stands out here with the most significant disparity to the detriment of women (40% against 49% of men). France distinguishes itself by the most significant disparity in favour of women (46% against 38% of French men).

An incomplete victory

Progress in professional equality on the labour market is reflected in the number of women in top positions. They have as much access to professional[4] positions as men (63%) and a little less to management positions (7% as opposed to 11%) five years after graduation. Nearly three quarters of graduates in the fifteen European countries hold executive positions, 20% of women and 19% of men hold middle-management positions, 10% of women and 7% of men are employees or skilled workers. More often than not, former women students hold "professional" positions in Austria (88%), Norway (76%) and France (71%). In Estonia, management positions are clearly awarded to higher education graduates and more often to men (34% against 17% of Estonian women); in Switzerland, 12% of women and 16% of men become managers and in France, 9% women and 17% of men. Echoing education, the proportion of women graduates working as engineers in science and technology is only 10% for 31% of men with disparities in different countries *(graph 3)*.

While the REFLEX survey shows that there are women in decision-making positions, they do not always have the same opportunities for accessing positions of responsibility. The proportion of women and men is equal when it comes to responsibility for defining their own objectives (74%), the way they achieve their tasks (83%), and determining company objectives and strategies (26%). However, more men supervise other staff members in their institution or company (on average, 40% for 30% of women). It is in Estonia that we find the most women and men managers (47% of women and 65% of men), followed by the United Kingdom (47% of women and 51% of men); in Germany, there is less management (19% of women, 32% of men). Disparities disappear in teaching positions where management concern 18% of women and 21% of men. There are also less European women assessing the quality of other staff members' work (16% against 32% of men).

Values and skills declined in the masculine and the feminine

Nearly 68% of feminine and masculine higher education graduates were satisfied with their professional activity when the survey was carried out. The Norwegians, Austrians and Belgians were the most satisfied (74%), both women and men; the most discontented were the Italians (58%), Spanish and Portuguese (62%), women and men. Surveyees' appreciations were all the more positive if they were in a stable employment situation. If they were to choose again, nearly 60% of both women and men would choose the same specialist studies and the same higher education institution, with some disparities depending on country and gender: more than 67% of French, Belgian and Swiss women; nearly 50% of Spanish and Estonian women; more than 70% of French, Austrian and Belgian and 50% of Spanish men. France tops the bill.

Women feel more or less the same as their masculine counterparts concerning the importance of autonomy in their work, a high salary, the opportunity to learn something new, social status. Their attitude is different when it comes to job security (84% for 77% of men), the opportunity to do something useful for society (68% for 57% of men), and having time for leisure activities (75% for 69% of men).

Good career prospects seem to be as important to women as to men, par-

NOTES

2. In the absence of an international definition of full-time and part-time employment, we have adopted the option chosen by the REFLEX project research teams i.e. thirty-two hours (Allen, van der Velden, 2007).

3. A few women left the labour market (7% against 3% men).

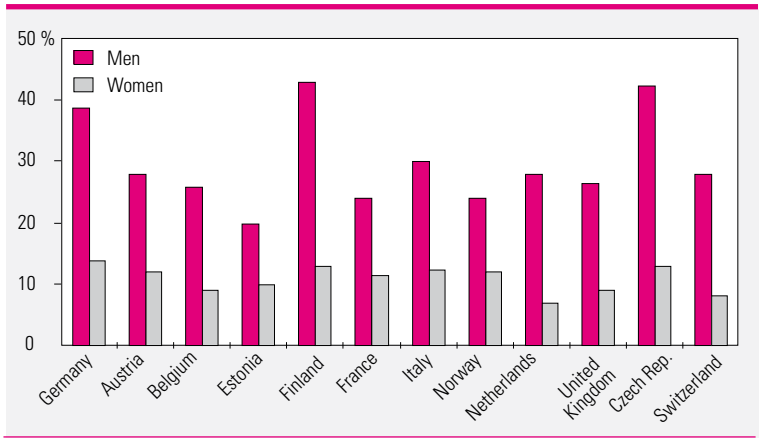
4. The term professional includes all professions requiring a high level of education, i.e. top managers, engineers, IT specialists, legal specialists, doctors...

ticularly in Spain, Italy, Portugal and the Czech Republic *(graph 4)*. In many countries but not all, the proportion of men is higher. And above all, in all the countries under study, women show a marked preference for the opportunity to reconcile work and family life (78% against 69% of men), especially in southern countries when the weight of the traditional family model remains considerable *(graph 5)*.

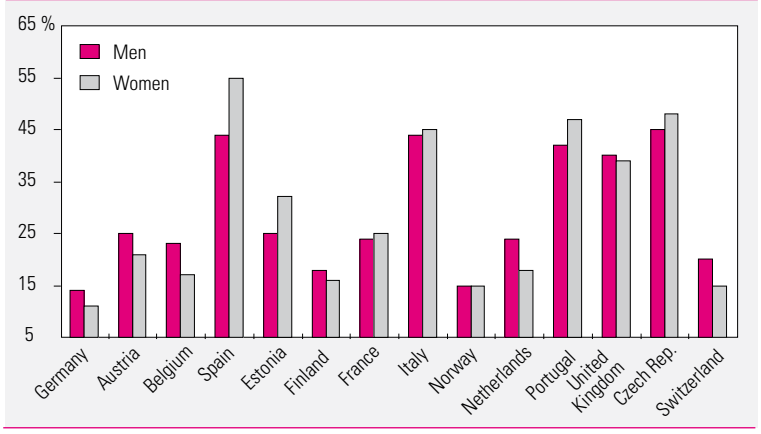
Nearly 74% women and 70% of men declare that they use their knowledge and skills in their work. This proportion is greater in Portugal (88% of women and men), Sweden (84% of women and 79% of men) and lesser among the Spanish, the Czechs and the British, women and men. Right from their first employment, 58% of women and 55% of men feel that they are employed according to their level of skill and knowledge.

Graduates graded (on a scale of 1 [very low] to 7 [very high]) their level of skills and the level required by their current employment (*cf. table 4* in appendix). Among the nineteen skills proposed, those required most often on the labour market (with a mark of 7) are, in decreasing order of importance: ability to work efficiently under stress (34% of women, 29% of men), ability to manage time efficiently (34% of women, 25% of men), Internet and computer literacy (28% of women, 30% of men), ability to work well with others (31% of women, 23% of men), ability to explain things perfectly clearly to others (29% of women, 22% of men), and a good command of one's own discipline and field (25% of women, 21% of men). An interesting observation: while 11% of graduates declare having an excellent command of their own discipline, this skill is not at the top of the list in accomplishing their professional tasks. Ability in other non cognitive skills appears to be preponderant. The ability to manage time efficiently and work well with others are the two most acquired and required skills in the female population's opinion. And the Internet and computer literacy highly recommended by the male population is in fact fundamental for as many men as women in their job (nearly 29%).

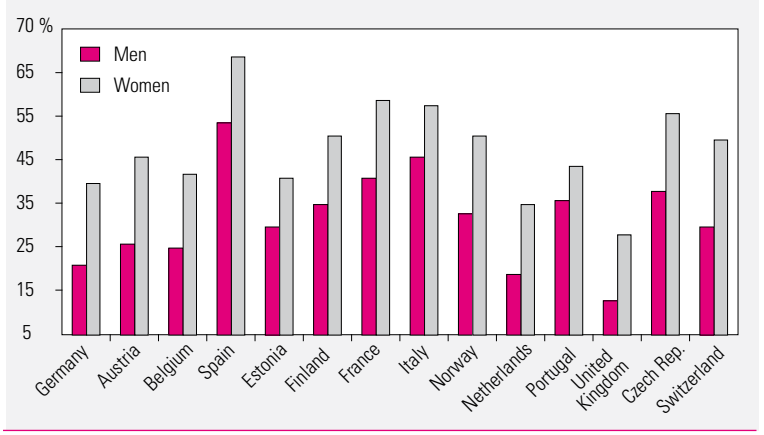
Graph 3 - Proportion of science and technology engineers (%)



Graph 4 - Importance of having good career prospects (%)



Graph 5 - Importance of reconciling work with family life (%)



Between North and South?

Norway could be the European country where young women are breaking the glass ceiling. Their professional outlook is enviable if they wish to work in the public sector (education or health). Their rate of unemployment (low) is practically the same as men's (rate or unemployment history), they are also often engineers, executives or managers and part-time positions are infrequent. In addition to which, the better part of Norwegian women feel that they are indeed hired at their level of skill and knowledge and declare playing a role in innovation within their company or institution. They are also more satisfied with their jobs. Dutch women work in the same advantageous conditions but must agree to work in the public sector and the start of their career is often overshadowed by part time work. Switzerland also seems promising, up among the leaders especially with respect to the best jobs, however, the number of temporary contracts is fairly significant. At the other end of the scale, Spain appears to be among the countries where inequalities are the most pronounced. In comparison to the men in their country, Spanish women are subject to a higher level of unemployment and career paths which are often precarious, to temporary contracts and a lack of recognition regarding their qualifications…

To examine the first elements of this summary in more depth, we need to take a look at salaries and gender-based wage gaps in the surveyed countries.

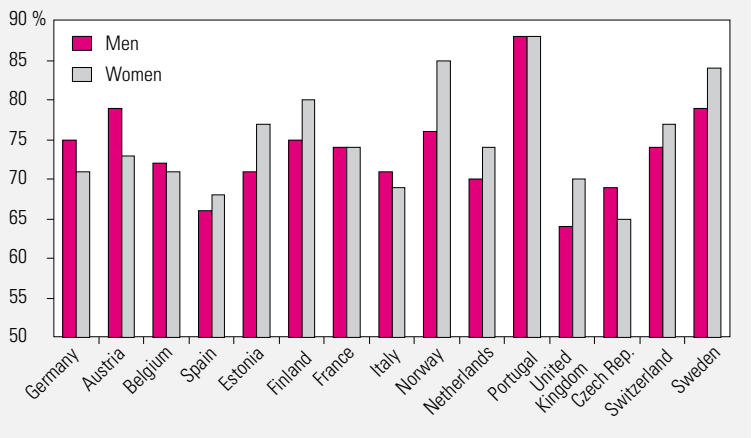
A study of wage gaps between women and men in Europe

To begin with, we will separate earning functions into two and evaluate them separately for female and male populations The following are introduced as explanatory variables: working hours (in number of hours), overall professional experience since graduation, the level of qualification[5], the discipline broken down into eight categories, the fact of having worked in a job linked or not to studies and scales of acquisition of different skills. The REFLEX survey questions individuals on the nineteen skills acquired during their studies or the first years of their career. We have adopted four of the most significant skills in the earning function: the ability to negotiate efficiently, the ability to expound ideas, products or reports in public, the ability to mobilise the capacities of others, the ability to rapidly acquire new knowledge. Finally, we introduced variables per country to account for wage gaps specific to different countries.

Disparities between countries actually explain the greater proportion of variance in earnings (the proportion of variance explained by the models ranges from 20 to 67%), which demonstrates the enormous heterogeneity of salary scales for higher education graduates. Based on the earnings function, we can also calculate the estimated wage gaps between the two genders for all these countries. The difference amounts to 20% in favour of men.

If we focus on the effects of variables introduced into each earnings function, the results *(table 1)* show some disparities in the respective weights of coefficients. As expected, the salary is a growth function of professional experience, the number of working hours and the level of qualification. Generally speaking, the experience-based returns are higher for men while the coefficient associated to qualification (Master's) and working hours is slightly higher for women. Discipline-linked coefficients show that the mainly feminine specialities are often the less well paid (educa-

Graph 6 - Use of skills and knowledge in their current employment (%)



NOTE

5. The survey notably differentiates between two categories of higher education qualifications: those giving access to doctoral studies and the others (corresponding to the distinction between MA and BA).

tion, humanities) but in general, women are slightly better paid than men in these areas. When students have worked during their studies and this work has had a link with what they were studying, the impact on salary is positive for both women and men. However, the impact is slightly more significant for the latter. Finally, the levels of skills declared by the young individuals also had a positive impact on salary but this was relatively insignificant compared to the other variables. In addition to which, disparities in the coefficients are relatively small between men and women except with respect to the ability to mobilise the capacities of others which pays better for men than for women.

It is also interesting to compare the fixed effects per country (the Netherlands being the reference). The lowest wages are to be found in southern European countries but the wage gaps between men and women remain fairly moderate, although they are always to the detriment of women. Wages are also low in two former East-block countries (Estonia and the Czech Republic) with relatively marked disparities in men's and women's wages in the latter. Along the same lines, in countries such as Austria and Germany where wages are higher on average, young women appear to be at more of a disadvantage than young men. While salaries in France are lower, the situation is the same. On the other hand, Nordic countries with their higher salaries show relatively little disparity.

To pursue our analysis, we use a relatively simple salary decomposition method based largely on research by Oaxaca and Ramson (1994), which allows the decomposition of wage gaps between young men and women into two effects:

- an effect linked to individual characteristics[6]: In this case, the hypothesis is that wage gaps between men and women are linked principally to their "productive" characteristics, i.e. the characteristics explaining the salaries. This notably takes into account the fact that the female population might possess less remunerative characteristics (due to their specific education, for instance);
- an effect linked to disparities between men and women in the remuneration of these characteristics, which could be interpreted as an effect ascribable to discrimination (although we are not taking into consideration the effect of any unobserved characteristics here).

Table 1 - Earnings functions for men and women

	Women		Men	
	Coef.	Std. Err.	Coef.	Std. Err.
Working hours	0,011	0,000	0,006	0,000
Professional experience (in months)	0,002	0,000	0,004	0,000
Level of qualification (ref. degree)				
Master's (Baccalaureate +5 yrs) or more	0,116	0,008	0,076	0,009
Disciplines (ref. Humanities, business, law)				
Generalist discipline	-0,336	0,264	-0,699	0,363
Education sciences	-0,120	0,010	-0,163	0,018
Humanities, arts	-0,164	0,011	-0,280	0,016
Exact sciences	-0,034	0,013	-0,023	0,012
Engineering sciences	0,028	0,013	0,028	0,009
Agronomy	-0,194	0,023	-0,177	0,021
Health	-0,061	0,010	-0,081	0,015
Work during studies (ref. no work during studies)				
Work during studies and linked to them	0,022	0,007	0,034	0,008
Other work during studies	-0,001	0,007	-0,010	0,008
Acquired skills (ref. grades 1 to 6)				
Ability to present products, ideas in public	0,010	0,002	0,006	0,003
Ability to negotiate efficiently	0,008	0,003	0,006	0,003
Ability to mobilise capacities of others	0,005	0,003	0,022	0,003
Ability to acquire new knowledge	0,006	0,003	0,005	0,003
Country (ref. Netherlands)				
Italy	-0,506	0,016	-0,467	0,018
Spain	-0,550	0,014	-0,524	0,017
France	-0,143	0,017	-0,088	0,022
Austria	-0,203	0,018	-0,039	0,020
Germany	0,090	0,018	0,176	0,019
United Kingdom	0,086	0,017	0,075	0,021
Finland	0,028	0,014	0,064	0,018
Norway	0,352	0,015	0,375	0,018
Czech Republic	-1,218	0,013	-1,170	0,015
Portugal	-0,752	0,024	-0,700	0,030
Belgium (Flanders)	0,043	0,018	0,035	0,020
Estonia	-1,151	0,020	-1,040	0,027
Constant	*6,964*	*0,025*	*7,178*	*0,030*

NOTE

6. The individual characteristics are those in the previous model: gender, qualification, professional experience, discipline, work during studies, working hours, the four acquired skills (public speaking, negotiation, getting colleagues involved, new knowledge acquisition).

In general for all European countries, the effects linked to individual characteristics only represent 37% of disparities in salary whereas the effects linked to the remuneration of these characteristics explain 63% of the disparities *(table 2)*. This first result suggests that discrimination exists in all European countries. However, the analysis here includes fixed effects in each country which capture a proportion of the overall variance in salaries but also the variance between men and women. We have therefore repeated the previous analysis, grouping countries which are practically homogeneous from the salary perspective:

- the Nordic countries: Norway and Finland,
- the former East-block countries: the Czech Republic and Estonia,
- the southern countries: Spain, Italy and Portugal,
- the Germanic countries: Austria and Germany,
- the United Kingdom and the Netherlands,
- Belgium and France.

The estimated wage gaps are highest in the Germanic countries. They amount to 31% for Austria and Germany. The decomposition of these deviations shows that 52% of them are due to individual characteristics, while 48% are linked to remunerating these characteristics. This distribution of wage gaps is more or less identical in the Nordic countries although the estimated disparities in men's and women's salaries is lower (24%). The observation is similar for France and Belgium, the United Kingdom and the Netherlands where the wage gap (respectively 19% and 21%) can be explained in the same proportions by the differences in characteristics and returns.

For Estonia and the Czech Republic, the estimated deviations between men and women are slightly lower (by 17%) but this is due to differences in returns, i.e. discrimination for three quarters of them. For southern European countries (Italy, Spain and Portugal), the wage gaps are slightly higher (by 21%) but discrimination explains only 60% of these deviations.

These initial results tend to confirm those obtained by Ponthieux and Meurs (2004), although the latter concern the entire population, not only higher education graduates. Wage gap and discrimination are not necessarily connected. The existence of significant wage gaps in a country does not necessarily mean that certain characteristics are less well remunerated in this country (e.g. qualifications or professional experience).

■■■

Ultimately, disparities between men and women at the beginning of their careers are pronounced in all European countries. On the basis of the REFLEX survey, most of the insertion indicators adopted confirm the following observation: that young women find it more difficult to access the professional world and the top level executive positions. There are indeed slight differences depending on the country and the indicators used. The southern European countries are generally the ones where graduates encounter the most difficulty and particularly women graduates. Northern European countries appear to be more egalitarian but inequalities subsist. Concerning salary after five years of professional activity, on average, wage gaps result in salaries which are 20% higher for men, with some disparities however between countries. In most countries, disparities linked to discrimination explain half of these gaps. In other words, characteristics being equal (in particular with respect to education and professional experience), women are on average paid less than men. The phenomenon is more pronounced in in southern and eastern European countries.■

Table 2 - Wage gaps for all countries under study

	Coef.	Standard deviation	%
Women's estimated salary	7,28	0,01	
Men's estimated salary	7,47	0,01	
Deviation	**-0,2**	**0,01**	
Deviation decomposition			
Deviations linked to characteristics	-0,07	0,01	0,37 %
Deviations in remuneration of characteristics	-0,12	0,01	0,63 %

Table 3 - Decomposition of wage gaps per group of countries

	Estimated wage gaps M/W	Deviations linked to individual characteristics	Deviations linked to discrimination
Finland, Norway	24%	51%	49%
Italy, Spain, Portugal	22%	41%	59%
Germany, Austria	31%	52%	48%
France, Belgium	19%	47%	53%
United Kingdom, Netherlands	22%	48%	52%
Estonia, Czech Republic	17%	24%	74%

The REFLEX project

The REFLEX project was carried out by a consortium of research teams from 16 countries (15 European countries and Japan), lead by the Research Centre for Education and Labour Market, University of Maastricht and partly funded by the European Union in the framework of the 6th FRDP. REFLEX aims to answer three questions: which skills acquired by higher education graduates do employers use? How do institutions contribute to skill-building? What tensions could arise between graduates, education and training institutions and employers and how could they be attenuated? In 2005, a survey was carried out on higher education graduates in 15 European countries five years after they graduated: At ISCED 5A level, the sample population is representative of the different higher education options available in each country (in France: *licence* [degree], *maîtrise* [master], DEA and DESS [post-graduate diplomas], specialised institutions [health, social, architecture…], IUFM [teachers' training college], business and engineering schools, medical and pharmaceutical doctors). The average response rate is 30%, ranging from 70% in Sweden to 18% in Estonia. Nearly 40,000 young individuals, of which 60% were women, participated in this survey on insertion which is unique in Europe. There were some hundred items in the questionnaire which in particular concerned the graduates' education and professional situation, their opinions regarding the skills acquired during their studies and required by their jobs.

For further information:
www.reflexproject.org ; www.fdewb.unimaas.nl/roa/reflex/

This project was partly based on a previous European survey named CHEERS *(Careers after Higher Education: a European Research Survey)* carried out in 1999 partly by the same consortium and lead by the International Centre for Higher Education Research, University of Kassel. Nearly 35,000 young individuals responded to this survey, half of whom were women graduating with the same higher education training in 11 European countries and Japan.

For further information:
www.uni-kassel.de/incher/cheers

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Table 4 - Acquired and required skills (very high level, level 7) (%)

List of skills	Acquired Women	Acquired Men	Total	Required Women	Required Men	Total
Write and speak a foreign language	14	13	14	15	15	15
Analytic mind	13	18	15	18	19	19
Good command of your discipline and field	10	12	11	**25**	**21**	**23**
Present products, ideas in public	12	13	12	19	17	18
Internet and computer literacy	**28**	**40**	**33**	**28**	**30**	**29**
Write reports, memos, documents	20	18	19	25	21	23
Acquire new knowledge quickly	21	21	22	25	22	24
Demonstrate authority	9	8	9	18	14	17
Negotiate efficiently	9	10	9	18	19	18
Work well with others	**23**	**18**	**21**	**31**	**23**	**28**
Knowledge in other fields or disciplines	3	4	3	7	6	7
Work well under stress	**20**	**20**	**20**	**34**	**29**	**32**
Efficient time management	**22**	**14**	**19**	**34**	**25**	**30**
Provide new ideas and solutions	13	17	15	22	20	21
Mobilise capacities of others	10	9	10	19	16	18
Ability to question your own ideas and those of others	16	18	17	16	15	16
Coordinate activities	21	16	19	28	22	25
Be alert to new opportunities	11	11	11	17	15	16
Know how to explain things clearly to others	17	15	16	29	22	27

Interpretation: 28% of women and 40% of men gave 7 to Internet and computer literacy when asked how they would grade their level of acquired skills. 28% of women and 30% of men gave 7 to Internet and computer literacy when asked how they would grade the level of skills required in their current jobs.

Young people combining education and employment: comparison between European countries

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Department of Statistical Studies on work/study programmes, youth integration, continuous training and the relations between education and economics
DEPP (Assessment, Forecasting and Performance Directorate)

The proportions of young people of 15 to 24 year-olds combining participation in education and employment vary widely between countries in the Community. What is distinctive about these young people is that they hold a job while participating in education or training. This phenomenon reflects complex transitions between school and working life, such as access to a first job before leaving education. This study looks at the national educational contexts in which this situation takes place, that is at the educational programmes and modes of learning underlying them. Due to the fairly early age at which the phenomenon is seen, the study is limited to secondary-level vocational education and training programmes. The latter are reviewed in fifteen countries, typical of the wide development, or conversely, of the scarcity of this phenomenon.

High proportions of young people holding a job while continuing to acquire knowledge embody two Community policy axes[1]: raise employment rates, and open up education and training systems more widely "to the world and to the population". Odile Chagny and Olivier Passet of the Conseil d'Analyse Stratégique confirm the significant contribution to the overall employment rate from those employments held by young people in education **[2]**. Are these performances commensurate to ambitions? Are they transposable from one country to another?

The *combination of education and employment** is described in *Education at a Glance*, the OECD's collection of indicators on education systems, since the end of the nineties **[11]**. It describes transitions between school and working life by the mean of statistical distributions according to both professional and educational statuses (ie whether they participate or not in education) of young people. This double break-down was initially an idea of the French-speaking representatives[2]. They expected thereby to illustrate the complexity of individual transitions from school to work (see Box "School/working life individual transitions responsible for the combination of participation in education and employment"). They also wanted, using this information, to help explain the variations between countries of the activity and unemployment rates amongst 15-24 year olds.

The sources of this study come mainly from the Community (see Box "Sources and the Lisbon process"). They are qualitative (Eurydice, Cedefop) and quantitative (Eurostat, sometimes also OECD) data, disseminated by specialists in both education and work areas. Data on the combination

NOTES

1. The European Community, also called Union since 1995, includes Germany (since 1957), Austria (1995), Belgium (1957), Bulgaria (2007), Cyprus (2004), Denmark (1973), Estonia (2004), Spain (1986), Finland (1995), France (1957), Greece (1981), Hungary (2004), Ireland (1973), Italy (1957), Lithuania (2004), Luxembourg (1957), Latvia (2004), Malta (2004), Netherlands (1957), Poland (2004), Portugal (1986), Czech Republic (2004), Romania (2007), United Kingdom (1973), Slovenia (2004), Slovak Republic (2004) and Sweden (1995). The scope of this study also covers Iceland, Norway and Switzerland, which participate fully or partially in the Lisbon process.

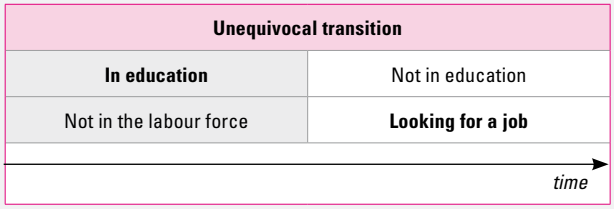
2. Michel-Henri Gensbittel and Christine Mainguet.

School/working life individual transitions responsible for the combination of participation in education and employment

By individual transitions we mean individuals moving between phases (of significant duration) of education without employment and phases (of significant duration) of seeking or holding a job.

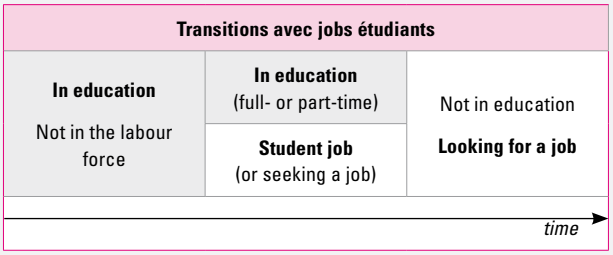
The **transition** is **unequivocal** when job-seeking clearly follows the education or training period adjacent to compulsory education. This is the simplest, most frequent model in Latin countries *(graph 1)*.

Graph 1 - For reference: simple (or unequivocal) transition



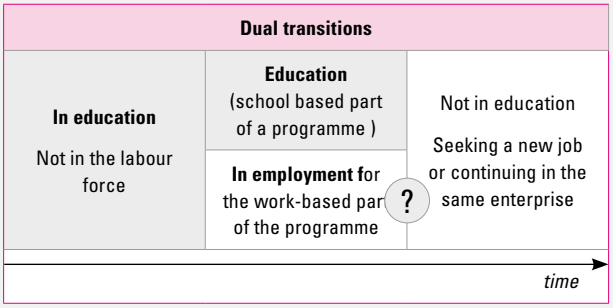
Transitions with **student jobs** include an intermediate stage *(graph 2)*. During this intermediate stage, the young person continues schooling and holds (or seeks) a job "to make ends meet", which does not necessarily have any relation to his educational programme (common in the United Kingdom, USA and Canada, and also it seems in Denmark and the Netherlands). The student may benefit from an adapted educational programme (*part-time**). During the intermediate stage, the young person combines education with employment.

Graph 2 - Transitions with student jobs



So-called **dual transitions**, referring to the structured alternating school- and work-based learning programmes in Germany, Switzerland and Austria, include an intermediate stage, where a young individual is in education and holds a job *(graph 3)*. However, this model displays two decisive differences from the previous model. On the one hand, the job sought is the work-based component of the educational programme, strongly matched to its school based one. On the other hand, the existence of a second transition, consisting of a departure from the company where has been provided the work-based component of the programme, is hypothetical.

Graph 3 - Dual transitions



So-called externalized **vocational training** creates transitions whose stages are quite similar to dual transitions (same uncertainty about the second), but whose organisation of the alternating between the school- and work-based learning components is less structured, creating fewer constraints for the company.

Lastly, **transitions** are **recurrent** when adults return to *formal** education programmes (of a significant duration) *after* being engaged in the labour force (frequent amongst Scandinavian population). Put simply, two single transitions occur consecutively for a given person (two *graph 1* side-by-side).

of participation in education and employment in the European Union were communicated by Eurostat and indicators have been calculated by the author.

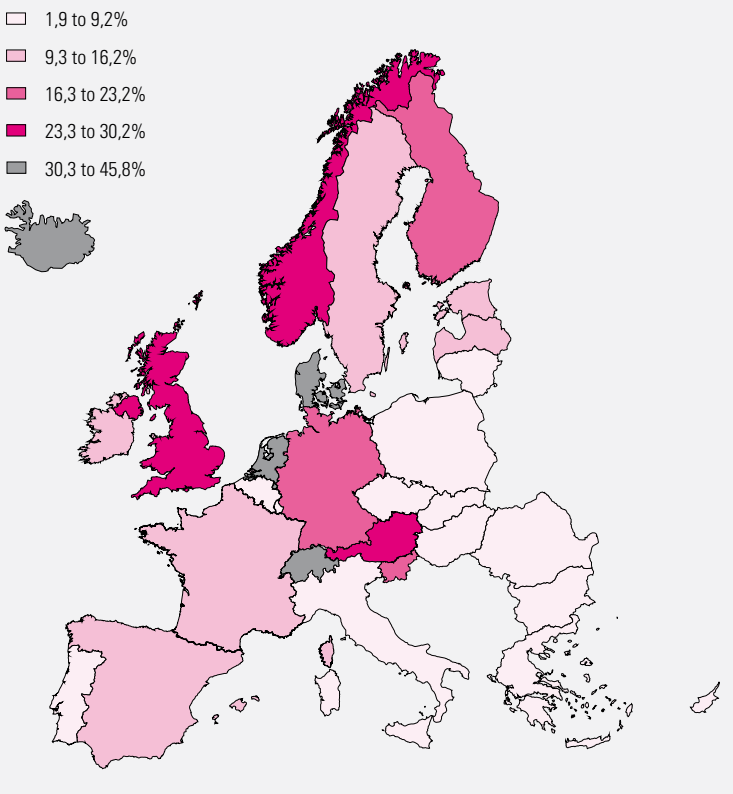
Education conditions in the Community allow us to distinguish different models of individual transitions. Three models are manifest through the combining by young people of participation in education and employment: "dual" transitions *(graph 3)*, externalized vocational training, transitions with student jobs *(graph 2)*. In order to distinguish other dual-type training programmes, this study compares enrolment rate in *combined school- and work-based programmes* measured from education statistics[3] with the phenomenon frequency amongst young people measured through labour force surveys.

After a preliminary look at the main impact of secondary levels of education on the phenomenon, two graphs guide a review of the underlying education conditions, by presenting the prevalence of combining participation in *secondary* education and employment (from labour force surveys), compared with the extent of vocational education programmes (from enrolments in education institutions). *Graph 5* focuses on structured combined school- and work-based programmes or "dual" programmes[4]. *Graph 6* refers to vocational education as a whole.

Combining higher education and employment, which is not very prevalent at this age, is looked at summarily. Then we will consider the capabilities that countries have to reconcile a high level of employment amongst young people with large quotas in higher education and few poorly educated.

In conclusion, we shall draw up a summary of what these vocational education conditions offer us; one will wonder whether possibilities exist to transpose from countries to others and on what seems to be the most relevant way to meet the different challenges, or else avoid pitfalls.

Map 1 - combination of participation in education and employment
% of young people aged between 15 and 24



Source: DEPP calculations from European Labour Force Surveys (2005) distributed by Eurostat

THE PREVALENCE OF COMBINING PARTICIPATION IN EDUCATION AND EMPLOYMENT DRIVEN BY SECONDARY EDUCATION, AT THIS AGE

From 0 to 44 % of young people combine participation in education and employment depending on the country

Between 44 % and 20 % of young people between the ages of 15 and 24 combine participation in education and employment in Denmark, Iceland, the Netherlands, Switzerland, Norway, the United Kingdom, Austria, Germany and Finland, against less than 5 % of young people in the Czech Republic, Slovak Republic, in the south-east of

NOTES

3. Further, participation in education and *employment* refers to labour force surveys data and *school- and work-based programmes* refers to education statistics.

4. Elaborated statistical typologies integrating a bigger number of characteristics were abandoned, due to the lack of a suitable set of variables on the subject. In particular, many countries did not have any data on the prevalence of education programmes *combining school- and workplace* neither on *part-time* enrolled students.

the Community (Hungary, Romania, Bulgaria), in the south (Greece, Italy, Malta, Cyprus and Portugal) and in Lithuania and Luxembourg *(map)*.

Differences between countries driven by the combination of employment and participation in secondary education

In 2005, in the countries of the European Union, 7% of young people aged from 15 to 24 year-olds combined employment and participation in *formal** secondary education. The highest proportions are recorded in Denmark and the Netherlands, in Switzerland and in countries where the phenomenon is generally most widespread. On the other hand, less than 1 % of the age group participates in secondary education while holding a job in the south, southeast, and, generally speaking, in countries where the overall phenomenon is exceptional. Thus, by comparing countries with each other, the proportion of young people combining participation in education and employment is driven by the proportion of secondary education combined with a job *(graph 4)*.

... REFLECTING THE DIVERSITY OF THE VOCATIONAL EDUCATION AND TRAINING MODES

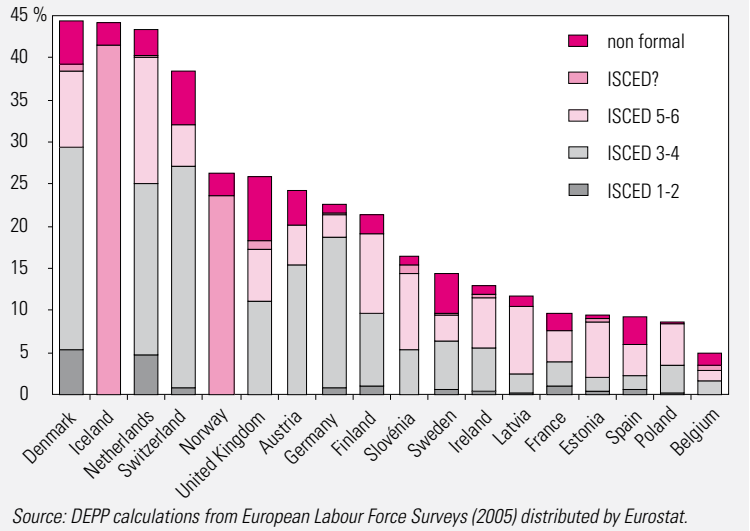
The respective influences of the labour market and education traditionally distinguish three modes of vocational education and training: models centred on workplace or externalized, those offering regulated alternation between practical training in a company and education at school, and lastly modes of learning centred on educational institutions. Representative of these are, respectively, the British work-based training system, the German dual system and the French school-based vocational education **[3]**.

These vocational education and training modes are highlighted by different statistical notions. The externalized mode is manifest in *non-formal** training and *part-time** vocational education, the dual mode in *combined school- and work-based** programmes and the last in *full-time* school-based** vocational education.

The countries where regulated alternating school- work-based programmes are solely responsible for the combination of participation in secondary education and employment present indicators aligned on the bisector in *graph 5*. Thus, countries with traditional dual systems (Germany and Austria) present an exact correspondence between labour surveys and educational indicators and high proportions of young people combining secondary education and employment. The indicators are also similar in Ireland, Finland and France, but the phenomenon is infrequent there and is not examined in detail.

In the Netherlands, Denmark and Switzerland, "champions" in this area, the proportions of young people combining participation in secondary education and employment are higher than the enrolment rates in combined school- and work-based programmes. Enrolment rates classify Switzerland unquestionably amongst the countries with a dual system and bring Denmark and the Netherlands much closer to it. The high values of indicators based on labour force surveys convey there the conjunction of, on the one hand, prevalent programmes combining school- and workplace and, on the other hand, significant access to those jobs weakly related to the educational programmes called here *student jobs*.

Graph 4 – Level of education combined with an employment
% of young people aged between 15 and 24



Source: DEPP calculations from European Labour Force Surveys (2005) distributed by Eurostat.

NOTE

* Expressions in italics are defined in Box "Statistical notions on vocational education and training" at the end of the article.

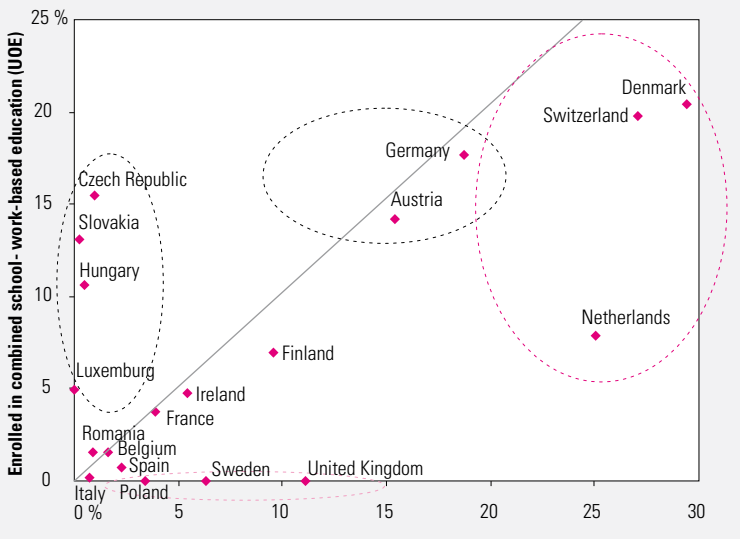
Indicators, which are high according to labour force surveys and low according to enrolment in educational institutions, bear witness to the existence of externalized vocational training or (confusingly) of "student jobs". In the United Kingdom, for instance, the divergence between a frequent combination of secondary education and employment according to labour force surveys and an inexistent according to the educational "school- work-based programmes" standard, reflects a tradition of externalized vocational training.

The Scandinavian countries have in common individual and multiform education pathways open to all ages and statuses. Norwegian apprenticeships, which are relatively well developed, are difficult to identify using educational institution statistics, as pupils and apprentices follow the same education programmes in the same institutions[5]. Recurrent transitions, or return to studies in the regular education system, should not, in principle, cause participation in both education and employment (Box "School/working life individual transitions responsible for the combination of participation in education and employment"). Also, apart from Denmark where a form of dual system prevails, the distinctive features of Scandinavian countries are barely identifiable through these indicators.

Lastly, a huge group of countries stands out on the left of *graph 6,* made up of countries from the east and south where young people do not have a job when studying and poorly participate in the labour market. In the Czech Republic, Slovak Republic, Slovenia and Belgium, high proportions of young people are enrolled in vocational educational programmes, quite high proportions in Luxembourg, Italy, Romania and Bulgaria, and, in contrast, relatively low proportions in the Baltic countries, Greece, Hungary, Portugal, Spain and Cyprus.

Amongst those countries where the phenomenon studied is infrequent, we are interested in the Czech Republic, Slovak Republic and Hungary, where education data sources identify structured systems of alternation between school and work, contrary to sources on employment, as well as Italy, where the literature reports forms of apprenticeship ignored by education sources.

Graph 5 – Pupils or apprentices enrolled in combined school-work-based vocational secondary education, compared with young people combining participation in secondary education and employment
% of young people aged 15 to 24



Source and further details: data from EU-LFS (2005) and education statistics (UOE 2004); see Table 1.
NB: as both sources do not cover the same year, gaps of less than 2 points are not significant
Help reading: Position 4 % on the vertical axis and 4 % on the horizontal one for France reflects that the enrolments in combined school- and work-based programmes (all ages taken together) represent 4 % of the young people aged 15 to 24 in 2003-2004 (vertical axis) and that 4 % of this age-group combine participation in secondary education and employment in 2005, according to labour force surveys (horizontal axis).

Traditional dual systems in Germany and Austria

Education statistics about young people in vocational dual-system programmes provide indicators similar to those from labour force surveys in Germany (18/19%) and in Austria (14/15%) *(graph 5).* Amongst one cohort, this proportion is clearly higher, at 60% in Germany in 2004, where training lasts as a general rule three years, and 40 % in Austria **[7]**. School based vocational education is as important in Austria as the dual system, and is less prevalent, on the other hand, in Germany *(table 1).*

In Germany, the dual system

NOTE

5. Furthermore, Norway or Iceland did not provide data about educational attainment in 2005, which prevents us knowing which education level is "combined" with employment.

Table 1 - Vocational education modes, prevalence amongst young people - % (see "denominator" below")

	Combine part. in secondary education and employment	Combined school-work-based educational programmes	All vocational and prevocational educational programmes at upper and post sec. levels	In which: Part-time	Combined school-work-based vocational educ. programmes	School-based vocational education programmes	Prevocational education programmes	General education programmes
Ages	*15-24*	*All*	*15-24*	*15-24*	*All*	*All*	*All*	*All*
Education level	*ISCED 2-4*	*ISCED 3,4*	*ISCED 3,4*	*ISCED 3,4*	*ISCED 3*	*ISCED 3*	*ISCED 3*	*ISCED 3*
Year	*05 (Q1-Q4)*	*03-04*	*03-04*	*03-04*	*03-04*	*03-04*	*03-04*	*03-04*
Survey	*EU-LFS*	*UOE*	*UOE*	*UOE*	*UOE*	*UOE*	*UOE*	*UOE*
Data dissemination	*Eu.*	*OECD*	*OECD, Eu.*	*OECD*	*OECD*	*Eu.*	*Eu.*	*Eu.*
Denominator	*Young people = Population aged 15 to 24*				*ISCED 3 numbers (all ages)*			
	(2)	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**
Germany	18,7	18	22,8	0,1	47,0	14,2	0	38,8
Austria	15,4	14	32,1	(m)	33,6	38,8	6,2	21,4
Belgium	1,6	2	27,1	4,0	2,6	65,6	0	31,8
Bulgaria	0,2	(m/a)	18,1	(m)	55,2		0	44,8
Cyprus	0,0	(m1)	3,6	(m)	13,4		0	86,6
Denmark	29,5	20	15,4	0	46,1	0,7	0	53,2
Spain	2,3	1	7,0	1,0	3,8	34,9	0	61,3
Estonia	2,0	(m/a)	11,5	(m)	29,9		0	70,1
Finland	9,6	7	18,9	0	11,2	48,9	0	39,9
France	3,9	4	18,7	0	11,4	* 45.1	* 0	43,5
Greece	0,9	(m2)	11,4	1,3	(m)	34,0	0	66,0
Hungary	0,5	11	14,1	0,5	12,1	0,0	11,6	76,3
Ireland	5,5	5	15,8	0,9	0	0,0	33,5	66,5
Iceland	(m)	9	14,7	2,1	17,0	20,2	1,2	61,5
Italy	0,8	(m3)	22,7	0	(m)	25,5	37,3	37,2
Latvia	2,5	(m/a)	12,0	(m)	36,8		0	63,2
Lituania	0,4	(m/a)	6,6	(m)	24,7		0,1	75,2
Luxemburg	(m)	5	23,2	0,9	13,9	50,0	0	36,1
Malta	1,6	(m)	10,6	(m)	55,0		0	45,0
Norway	(m)	21,4		0,4	60,5		0	39,5
Netherlands	25,1	8	19,4	0,3	22,9	46,2	0	30,9
Poland	3,4	(a)	19,9	4,8	0	49,5	0	50,5
Portugal	1,9	(m4)	7,8	0	(m)	9,1	19,4	71,5
Czech Republic	< 1.6	15	32,0	1,1	36,2	43,1	0,2	20,6
Romania	0,9	2	20,2	(m)	64,8		0	35,2
United Kingdom	11,1	(m5)	24,4	10,1	(m)	71,5	0	28,5
Slovakia	0,2	13	26,7	0,4	37,2	36,9	0	25,9
Slovenia	5,4	0	29,9	(m)	68,6		0	31,4
Sweden	6,3	(a)	19,9	1,4	0	54,3	0	45,7
Switzerland	27,1	20	22,1	0,4	58,7	6,1	0	35,2
UE 27	**7,3**	**19,7**			**55,7**		**4,8**	**39,5**

Sources: education statistic (UOE), European labour force surveys (EU-LFS) – Data dissemination: Eurostat and OECD (web-site)

* of which 30,2 % of total numbers attend a vocational programmes and 14,9 % a "technological" one

Missing data (m): Data are missing in the UOE 2004 but are quoted by the ISCED mappings or other documents (mainly from Cedefop or Eurydice) in those cases: (m1) Cyprus: Systima Mathitias [ISCED mapping]; (m2) Greece: TIE [ISCED mapping]; (m3) Italy: Apprendistato and various contracts [Cedefop]; (m4) Portugal: Aprendizagem, at ISCED 2 [Cedefop]; (m5) United Kingdom: Traditional apprenticeships [ISCED mapping]

(a): not applicable (ie does not make sense in the national education system)

(m/a): not quoted in ISCED mappings or non applicable

Other specifications: In EU countries that are not members of OECD, the proportion of young people (15-24 age-group) enrolled in vocational ISCED 3-4 educational programmes (column 10) is estimated under two assumptions; firstly, their percentage amongst the 15-24 age-group is supposed to be similar than amongst ISCED 3 as a whole; secondly, ISCED 4 programmes are all supposed to be vocational second cycle programmes. The percentage, amongst the young people aged 15 to 24, of those enrolled in combined school - workplace programms, is estimated dividing the enrolled numbers at all ages by the numbers of the whole 15-24 age-group.

The others indicators focused on the 15-24-year-olds are averages of those at 15-19 and at 20-24, aiming to reduce the effect of demographic choc (moreover, an analysis by age group is instructive on a broader scale).

entitles to do skilled work in one of currently about 350 *annerkante Ausbildungsberufe* occupations. Training is given at the workplace and at a vocational school, the *Berufsschule*. The latter offers pupils general and vocational education; school-based education there occupies twelve periods (of approximately one hour) per week, 4 of general education (German, social economics, religion and sport), and 8 of vocational education, as a general rule. Students spend up to two days at the *Berufsschule* and three or four days per week in the training company. The training company and the trainee sign a contract under private law. Taking on apprentices currently appears to be raising difficulties in different sectors and regions. The latter train a selection of candidates leading to increased difficulties of access for the lowly educated young people. And prevocational educational programmes have developed significantly since 1995 **[12]**.

In Austria, the *Berufsschulen* provide vocational education, made up of over two-thirds general subjects, alternating with work-based training. The dual system programmes prepare for 250 professions, under the dual jurisdiction of the Ministry of Education or of the provinces in relation to the school, and of the Ministry of Economic Affairs for the work-based component of the training.

Vocational education solely through school/work alternation in Switzerland, Denmark and the Netherlands

Young people hold more jobs in parallel with secondary education than enrol for vocational educational programmes combining school- and workplace in Denmark (30/21%), Switzerland (27/20%) and particularly in the Netherlands (25/8%) *(graph 5)*.

Switzerland and Denmark organise their vocational education mainly in alternation between school- and work-based components, which has also tended to be the case since the new act on vocational education and training in the Netherlands. A distinctive feature of the Danish situation is that general and technological education dominates the numbers in upper secondary education *(table 1)*.

In Switzerland, vocational training is provided according to a dual-system related to those in Germany and Austria. Most participants there follow three- or four-year programmes. Apprentices spend between half and three-quarters of training time at workplace. Switzerland differs from its neighbours in the low importance it pays to its vocational school-based education. Moreover, high proportions of young people there participate in *non-formal** on-the-job training with no school counterpart (6% of young people between the ages of 15 and 24 on average); this kind of non-formal trainings also involves significant proportions of young people in Austria (4%), but not in Germany.

Apprenticeship, originated in guilds and the ancient Dutch *gild*, is a determining feature of the Danish education and training system. Vocational apprentice training lasts four years and starts with a preliminary "orientation" period of six months, devoted to equipping the young people with information on a whole "family" of vocational programmes and facilitating access to a company. Apprenticeships there were reorganised in 1977 after the creation of the core curriculum encompassing primary and secondary education, under interesting conditions. The reform aimed to maintain the attractiveness of apprenticeships and planned for future apprentices to receive general instruction on a wide range of vocational programmes and trades for one preparatory year, before undertaking their practical training. This new programme was a victim of its own success, of labour market pressure and also perhaps of professional reluctance[6], and young people did not find enough places in companies for practical training at the end of their preparatory year. The training that came out of the reform and the more profession-centred training from the old system were recast at the beginning of the nineties around joint missions and a preparatory orientation period of six months **[7]**.

Young people in the Netherlands have followed secondary vocational training programmes leading to similar qualifications, with more or less practice and theory, since the 1996 Act on vocational education and training (WEB), designed to improve consistency between the vocational training of young people and adults. Four consecutive vocational training programmes are spread out from lower secondary education to post-secondary education, accessible via three pathways. The first one, inherited from traditional apprenticeships, comprises over 60 % practical training at work-place and subject to apprentice employment contracts (*beroepsbegeleidende leerweg* or BBL). The second, more theoretical, comprises a minimum

NOTE

6. The training programmes according to the old regulations had been maintained few years.

20 % practical work-based training (*beroepspraktijkvorming* or BOL). The third and more practical pathway consists of part-time education programmes aimed at young and adult employees[7] **[8]**. The proportion of young people combining employment and secondary education, provided by the labour force survey, is similar to the 25 % calculated by dividing the overall numbers of students enrolled in the four full-time programmes in 2002-2003 by the total number in the age group.

"Light alternation", which constitutes the BOL in the Netherlands, helps explain that a high proportion of young people combine secondary education with a job of less than 10 hours a week (13% of young people aged from 15 to 24 in 2005). The proportion is similar in Denmark, where information gathered on the organisation of education does not provide an immediate explanation. This suggests that secondary education students who wish to do so can easily find a job of a few hours, probably in any of these countries.

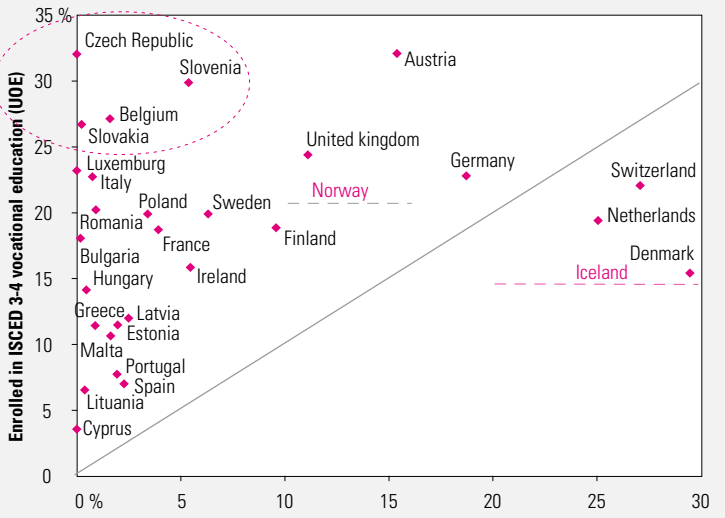
Part-time and school-based vocational education in the United Kingdom

The idea of a programme regulating the combination of school- and work-based components does not seem to be relevant in the United Kingdom, due to lack of rules comparable to the previous ones. Also, its school system is better represented by *graph 6*, which presents the combination of secondary education and employment according to the overall enrolment in vocational and pre-vocational education than by *graph 5*. Young people there enrol in vocational education, full- and part-time taken together, as much as young Germans and Swiss people, and combine employment and formal secondary education as much as young Finnish people.

In the United Kingdom, the combination by young people of formal education and employment can be attributed to *part-time** vocational education, the instruction time of which suit the low availability of young workers and in which are enrolled 10% of the 15-24 year-olds. This is also the case, to a lesser extent, in Poland (5% of young people). Also, in the United Kingdom young people of this age have often participated in a *non-formal** course or training during the last month (8%).

Part-time secondary education is provided by *further education colleges*, which register almost 5 million students, of which four-fifths part-time students. According to the terms

Graph 6 – Pupils and apprentices enrolled in vocational or prevocational education at ISCED 3-4 compared with young people combining participation in secondary education and employment
% of young people aged 15 to 24



NB: as both sources do not cover the same year, gaps of less than 2 points are not significant
Help reading: Position 19 % on the vertical axis and 4 % on the horizontal one for France reflects that 19 % of young people aged 15 to 24 have been enrolled in prevocational or vocational ISCED 3 or ISCED 4 education in France in 2003-2004 (technological baccalaureate included) (vertical axis) and that 4 % of this age-group combine participation in secondary education and employment in 2005, according to labour force surveys (horizontal axis).

Source and further details: data from EU-LFS (2005) and education statistics (UOE 2004); see Table 1.

NOTE

7. Students enrolments statistics distinguish 4 full-time programmes from their 4 part-time equivalents. The 4 consecutive levels of qualification are called "WEB-assistentenopleiding", "WEB-basisberoepsopleiding", "WEB-vakopleiding", "WEB-middenkaderopleiding". The same regional institutions, called the *regionale opleidingscentra* (ROC), tend to support the institutions providing education to both young people and adults in organising relationships with companies.

of the Department for Education and Skills, the *modern apprenticeship* is the dominant mode for training young people at workplace **[9]**. Approximately 20% of a cohort participated in a foundation modern apprenticeship in 2003-2004 and 7% in an "advanced" apprenticeship[8].

Full-time vocational education programmes are, moreover, relatively well developed in the United Kingdom as in Poland, providing education to 14/15% of young people, percentage close to the provision of school-based vocational and technological upper secondary education in France *(table 1)*. The *Vocational Certificate of Education*, also called Vocational A-Level, validates upper secondary education completion. Moreover, new technological and vocational subjects have been introduced at lower secondary level.

Thus, the low provision of school-based vocational education characteristic of Anglo-Saxon countries, topical in the United States and Australia, no longer seems very appropriate in the United Kingdom, whose situation is approaching that of other European countries.

Recurrent transitions, individual education pathways and institutional cohesion in Sweden, Finland and Norway

Proportions of young people close to the Community average enrol in vocational education in Norway, Sweden and Finland (approximately 20% from 15 to 24 year-olds). The percentage of this kind of education amongst the total numbers enrolled in upper secondary education is also median (approximately 60 %) (*graph 6* and *table 1*). Young people combine slightly more than average employment and secondary education in Finland (and probably more in Norway and Iceland where data sources on year 2005 are incomplete).

The five Scandinavian countries stand out for their frequent enrolments, after 25 years of age, in full- and part-time education programmes. Access to education and training is free and students benefit from study grants. Students often take a sabbatical year after the end of compulsory schooling or at the end of their secondary studies. In Finland, only 90 % of adolescents enrol in education immediately after compulsory schooling **[7]**. In Sweden, according to a government report on education and Community objectives, young people accumulate further education in upper-secondary in order to increase their chances of being admitted to higher education **[13]**.

Education pathways are individual and organised in modular form from upper secondary education onwards (Finland, Sweden, Iceland). Young people accumulate "credits", validating learning acquired in studying according to suitable instruction time and modes. General upper secondary education is accessible part-time, both in Sweden and Iceland. 4% of young people participate in from 15 to 24 year-olds, on average. Individual part-time vocational education is provided to young Swedes who do not have the sufficient skills to participate in one of the usual upper secondary field of education (approximately 2% of the age group). Moreover, significant proportions of young people from 15 to 24 year-olds benefit from *non-formal** courses and training (5%).

Sweden, Finland and Norway have undergone convergent reforms of upper secondary education, aiming to group their different fields of education and provide them in the same institutions, one only in Sweden *(Gymnasieskola)* and Norway *(Videregäende skole)*, and two in Finland, the *Lukio* (providing general upper secondary education) and *Ammatillnen oppilaitos* (providing vocational upper secondary education).

In Norway, vocational education was traditionally rooted in apprenticeships and has been administered separately from general education up to the middle of the seventies; the aim of the reforms of the seventies and eighties was to coordinate general education and vocational training in one comprehensive system, giving equal status to practical and theoretical education **[7]**. Upper secondary education comprises at present two years in a school institution, followed by one year of specialisation, which is split into two when provided combining school- work-based components under an apprenticeship contract (so-called "2+2 model"). The pupil may however attend school-based education if he/she does not find a place as an apprentice. Apprentices, who are indistinct in education statistics, represent approximately 5 % of young people from 15 to 24 year-olds at the end of 2004 **[10]**. Forms of apprenticeship under contract also

NOTE

8. According to our estimate, calculated in dividing 136.5 thousands entrants into *Foundation modern apprenticeships* and 55.9 thousands inflows into *Advanced modern apprenticeships* **[9]**, by the average number of the birth cohorts aged from 15 to 24 year-olds.

exist in Finland *(graph 5)*, an individual learning programme being attached to the contract.

On the other hand, Sweden does not have any widespread apprenticeship contract mode, but some experimental ones.

Iceland is similar to Denmark and the Netherlands in the prevalence of education/employment combination at these ages. But general education there is in the great majority in upper secondary education *(table 1)*. In Iceland, specialist upper secondary education institutions coexist with institutions offering general and vocational courses, which resulted from the mergers of vocational education colleges and general upper schools in the middle of the seventies. Vocational education and training are organised in modules and take up to 4 years in full-time equivalent. The respective parts of the practical work-based training under apprenticeship contract and of the theoretical school-based education are modular. The prevalence of education/employment combination appears more due to the vitality of the labour market than to the mode of vocational education.

Weak education/ employment combination in eastern Europe and divergence between sources

In the Czech Republic and Slovak Republic, high proportion of young people attend technological and vocational upper secondary education programmes *(graph 6)*, which have an overwhelming relative weight, as in Austria *(table 1)*.

In the Czech and Slovak Republics, education is provided by two types of institutions, on the one hand the *střední odborné uciliste* (SOU), apprentice training centres connected to education at the end of the seventies, and on the other hand, the *střední odborná skola* (SOS), which are technological and vocational upper secondary schools. Education there lasts from 2 to 4 years. The ratio between the total numbers enrolled and the total numbers of young people aged from 15 to 24 provides proportions of young people combining school-based education and training at the workplace of 13% (Czech Republic) and 11% (Slovak Republic). Detailed statistics confirm the prevalence of *stúdium bez maturity* and *stúdium s maturitou* programmes provided in *střední odborné uciliste*. The Czech Republic and Slovak Republic labour force surveys count 10% and 8% of young people in *work-study programmes** at these ages, via specific questions, but those young people do not seem to be considered as holding a job according to the ILO standard status.

The existence of apprenticeship modes in Slovak Republic is discussed: "although students from secondary vocational schools are often considered apprentices. They are regular secondary school students, according to the law, and as a rule, with no contract with employers. Their practical training is usually school based. Even if organised outside the school, in centres (or workplaces) of practical training, it is ensured by a contract between the schools and the provider. Nevertheless, students may be educated for individuals and legal entities at SVS (i.e. SOU) in theory, receiving practical training at the workplace of this entity. This is however a marginal case, permanently below 1% in contrast to the 1980s, when SVS (i.e. SOU) students were under contract with an organisation co-financing their training and offering students pocket money" **[10]**.

In Hungary and Luxembourg, according to the same principle, the education services organise (and keep records of) vocational training programmes alternating school- and work-based components, but it appears that the European labour force surveys do not count young people combining education and employment *(graph 5)*. Vocational education dominates in Luxembourg, where, otherwise, the rate of unemployment is low[9]. In Hungary, on the other hand, the relative share of general education is amongst the highest (76%), whereas the prevalence of pre-vocational education equals the one of vocational education, that is provided entirely through combined school- and work-based programmes.

"Separate" apprenticeship in Italy

In Italy, only 37% of the total numbers in upper secondary currently fall under general education, the same percentage falling under *pre-vocational* programmes, which are more developed than vocational education, strictly speaking. By aggregating these two types of orientation, the proportion of young people enrolled in vocational or prevocational education

NOTE

9. In Luxemburg, the problem appears to be statistical. The labour force survey does not identify any young person participating in formal education, although 5% of the age group is enrolled in an education programme combining education at an institution and training at work place.

is comparable to that in Germany, United Kingdom (including part-time) and Switzerland *(graph 6)*. On the other hand, participation in secondary vocational education, strictly speaking, puts Italy near Greece.

Regionalised Italian vocational training seems to have little relation with education. According to the Italian Ministry of Labour, Italy had at the end of the 1990s over 400,000 apprentices aged between 16 and 24 **[8]**. The employment contract between the young person and his or her employer was for a period of between 18 months and 4 years, the employer ensuring that the young person acquired a vocational qualification, the young person being obliged to attend training courses provided by regional bodies outside the company. At the end of the apprenticeship, apprentices could request a certified qualification but few seemed to request it. A new system has prevailed since 2003, differentiating several types of apprenticeship, the first intended for the youngest and falling within the right to education, the second targeting young people aged between 18 and 29 focusing on trades, and the third leading to a diploma in secondary university education **[10]**.

A word about Greece, for the interest of comparison. General education dominates vocational education, which is relatively weakly developed although rapidly growing (11% of young people). A structured form of apprenticeship exists, involving approximately 1% of the total number in the age group at the end of the 1990s and poorly taken into account by education statistics until 2004.

In both cases, apprenticeship modes seem to exist, although there is no solid education tradition. Perhaps a certain gap between the worlds of enterprise and education also compromises statistical circuits and figures.

Jobs combined with higher education in northern Europe

Young people conciliate participation in *higher education* and holding a job in almost every country *(graph 4)*. The prevalence of the phenomenon varies less from one country to another than the combination of employment and participation in secondary education, the latter "explaining" better therefore the differences between countries in the situations of young people of this ages.

These jobs held in parallel with higher education are common in the Netherlands and in Denmark, like jobs held during secondary education, as well as in Finland, Slovenia and Latvia – over 15% of young people aged between 20 and 24. This is also the case, at this age, of approximately one young person out ten in Estonia, Poland, Switzerland, Austria and the United Kingdom.

In the Netherlands, higher education programmes are accessible *via* structured apprenticeships (HBO). Education statistics are not very revealing on this subject, as they do not consider the possibility of regulated apprenticeships in higher education. Moreover, high proportions of young people benefit from part-time higher education schemes in Poland (7%), Finland and Sweden (5/6%), with modularity, that should become widespread through the Bologna process, being experienced for many years now in higher education system in both Scandinavian countries.

The lack of Community statistics distinguishing according to age full- and part-time educational programmes prevents us, for the time being, saying more about the Baltic countries. And giving more detail about higher education structures would take us too far ahead.

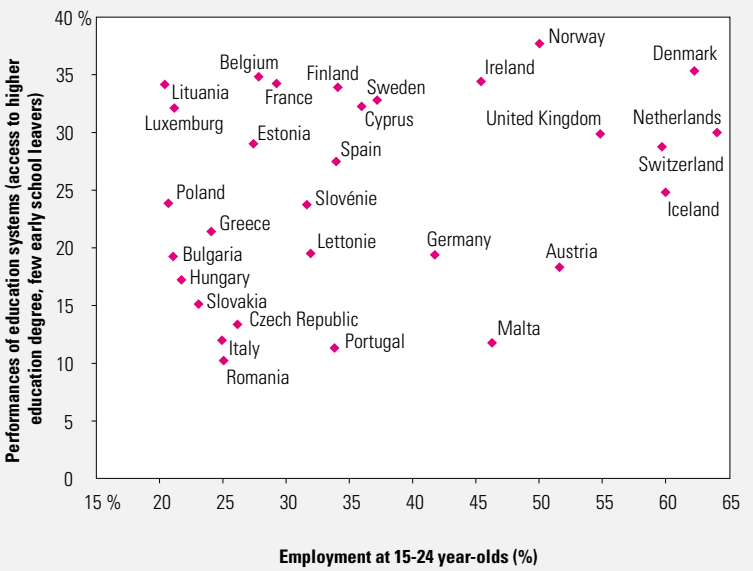
Performances of education systems and of young people employment

We often reproach specialised studies for poorly considering broad issues and pointing out narrow problems regardless to the main issues in the area. Thus it seems legitimate to question the ability to reconcile a strong vocational education, associated with employment during the education pathway, with good performances of education systems, that achieves of the weakest pupils and widespread access to higher education and research.

Comparing countries with one another shows that the development of vocational education helps reduce the number of early school-leavers (see article "Early school-leavers in Europe"). However, an excessive development of vocational education, which is potentially rich in employment during the course of education, could be accused of drying entrant flows in more abstract education leading to higher education. To assess the capability that countries have to strike a balance between employment of young people, abounding in the combination of participation in education and employment, with protection against early school leaving and wide access in higher education, we summarise the performances of education systems using a composite indicator.

The highest performing education systems, according to these criteria, are four of the five Scandinavian countries (without Iceland), Ireland, Belgium (3rd position), France (6th position), Lithuania, Cyprus and Luxembourg (upper part of *graph 7*). The «combination» of education and employment and, more generally speaking, early employment of young people are more frequent in the Netherlands, Denmark, Switzerland, and Iceland, the United Kingdom, Austria and Norway (on the right of *graph 7*). Thus, with over 38% higher education graduates and respectively 9 % and 5 % early school leavers, Denmark and Norway strike a balance between high performing education systems and abundant employment for the youngest. The Netherlands and United Kingdom have had a few less higher education graduates in current generations and more early school leavers (14%). The performance of the Swiss education system comes close with two times fewer early school leavers and, on the other hand, a more closed higher education. The concentration of secondary education on vocational fields in Austria, Czech and Slovak Republics gives them effective protection against dropping-outs among the weakest students, but, on the other hand, limits access to higher education and opening up to innovation. Conversely, Cyprus and Spain owe their honourable positions in this regard to their high proportions of higher education graduates and median employment levels, despite high numbers of early school leavers (Spain).

Graph 7 – performances of education systems and participation of young people in employment
performance points (vertical) and % (horizontal)



Help reading: Position 38 on the vertical axis and 50 % on the horizontal one for Norway reflects that Norway presents a performance indicator for its education system of 38, in multiplying its proportion of higher education graduates amongst people aged 25 to 34 (40 %) by the complement to 100 (95 %) of its early school leavers rate (vertical axis) and an employment to population ratio of 50 % amongst young people aged 15 to 24 (horizontal axis).

Source and further details: data from EU-LFS (2005); see Table 3.

■■■

Is the phenomenon transferable from a country to another? The review of the education received by young people combining participation in education with employment shows that its frequency depends to a large extent on the vitality of labour market. «Student jobs» and jobs with few hours seem accessible in countries where per capita income is comfortable and the level of unemployment low. In Denmark, Switzerland and Iceland, young people seem therefore to have opportunities to hold (very) part-time jobs while participating in technological or general education. Moreover, countries may experience cyclical economic difficulties in guaranteeing the work-based component of structured alternating programmes. The higher the proportion of young people trained in this way, the wider its economic base and the greater the potential share of industry, which is very reactive to the markets. Denmark experienced these difficulties at the end of the 1970s, as is currently the case in Germany. Data gathered by Cedefop suggest difficulties in paying or hosting apprentices in the Slovak Republic. Decisive for the continuity of education and training systems, this sensitivity to the economic situation is however a minor dimension, compared to the benefits expected in the relations structured by the dual system between the economy and education. Predominant aspects such as the impact on the interaction between professionals, tutors and teachers would

be a useful addition to the study of the subject.

Young people cope more or less easily with the so-called «intermediate» stage between education and working life *(graph 2 and graph 3)*. In the case of the dual system, this stage could be more fairly described as a transition as a whole. More research is needed into these aspects. Transitions between secondary school and employment are structurally so diverse that to date no international survey has developed concepts able to describe them or evaluate their returns with the same acuteness in the different countries.

The desire to transpose social and economic relations built up over decades seem whimsical to us. But the experiences of our neighbours and the lessons they learn from their difficulties are really instructive. Thus, the possibility of choosing between work-based practical and school-based pathways for the same field tends to protect vocational education and training from the risks of economic downturn (Norway, Netherlands). Thus, grouping education institutions and programmes together appears to help giving equal status to theoretical and practical learning activities and, consequently, limit guidance "through failure" to vocational fields and numbers of early school leavers. Thus, guaranteeing a right to education extended to all ages and offering instruction time adapted to those holding a job seems also to help strike a balance between meritocratic standards and giving people a second chance. ■

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Statistical notions on vocational education and training

Combined school- and work-based *educational programmes:* education and training that include between 25% and 90% of the curriculum delivered at workplace. Include all dual-type programmes. Including at most 25% of the curriculum at workplace, an educational programme is **school-based**, like the vocational baccalaureate in France. Beyond 90% of a curriculum at workplace, a training programme is not considered as "education" and registered as "education statistic" **[4]**.

Combining (participation in) education and employment: people who hold a job during the last week (ILO standard: at least one hour of paid work during the last week) and have participated in formal or non-formal education (ISCED or CLA definitions), during the last four weeks.

Work-study programmes, in *Education at a Glance*, recover structured school- and work-based programmes measured from labour force type surveys. This information is provided by tables C4 in *Education at a Glance*; participating in a "work-study programme" there has predominant status on the ILO one. A specific variable called "type of instruction" was available in the European labour force surveys until 2002 and seems now to be only available in some national surveys.

Dual *system:* regulated German education and training system, typical of the kind, whose training programmes are provided in alternation at school and workplace.

Formal and non-formal: formal education or training is characterised by the existence of an *educational programme**, organised in a taught learning mode, face to face or at distance (CLA paragraph 4.3) leading to a recognised diploma or qualification positioned in the national qualifications framework (CLA paragraph 5.2.1) which includes the "national structure of degrees" in UOE terminology; ***non-formal*** courses and training are institutional learning arrangements, mainly organised in a taught learning mode, face to face or at distance (CLA paragraph 4.4), which do not lead to a diploma or qualification positioned in the national classifications framework (CLA paragraph 5.2.2), such as "ad hoc", "multilevel" courses for professional or personal purposes **[14]**.

Initial *education:* education taken by people in preparation for their initial entry into work, conversely to ***continued*** education or training, which takes place during working life. Imprecise in the case of complex transitions (box) and poorly adapted to life-long learning issues.

International Standard Classification of Education (ISCED): international agreement on education statistics, consisting in standard concepts, definitions and classifications, designed to compiling and presenting comparable statistics internationally.

Post-secondary level (ISCED 4): programmes accessible to young people who do not have the required qualifications to begin higher education (or the duration of which is too short to be considered as a higher education programme). In Europe, these are mainly second vocational qualifications, followed over at least 4 years in full-time equivalent (including the upper secondary education programme) and "small" (from a demographic point of view) programmes designed to provide knowledge and skills to be eligible for higher education.

Student jobs: describe jobs weakly related to the educational programmes.

Vocational *or technical education:* mainly designed to lead participants to acquire the practical skills, know-how and understanding necessary for employment in a particular occupation or trade or class of occupations or trades. Successful completion of such programmes lead to a labour-market relevant vocational qualification recognised by the competent authorities in the country in which it is obtained (e.g. Ministry of Education, employers' associations, etc.) **[5]**. ISCED also distinguishes ***pre-vocational*** education preparing pupils for vocational education and containing a minimum of 25 % technical subjects.

Educational programme: array or sequence of educational activities and courses organized to accomplish a pre-determined objective or a specified set of educational tasks (obtaining qualifications to attain a profession or higher study cycles, improving understanding and knowledge, ...) **[5]**.

Early school leavers: percentage, amongst young people between the ages of 18 and 24, of those who have not successfully achieved ISCED 3 and have not participated in education or training during the last four weeks (see article on).

Part-time *education:* education provided in a mode suited to holding a job; *educational programmes* representing less than 75% of the normal week of education or *students* with personal instruction time lighter than usual (with no lower limit) **[4]**. Dual-type programmes have been recorded as full-time since the 1997 revision of the ISCED.

Sources and the Lisbon process

EU agencies gather and disseminate a large number of qualitative and statistical data on education and employment. **Eurydice** transmits contextual information on education systems from education ministries and organisms, **Cedefop** information on vocational training also from ministries of labour and research centres, **Eurostat** data from statistical institutes and sometimes ministries. These data meet the needs of the Lisbon process, the Community method consisting in assessing together the practical progress made in shared initiatives, in order to identify effective practice **[1]**.

The study mainly uses two types of statistics: education statistics gathered by UNESCO, OECD and Eurostat (or "UOE") and data from Community surveys on labour force (Eurostat).

Education statistics (so-called "UOE"), are based on administrative registrations (pupil/student enrolment, staff numbers, etc). They are harmonised by the ***International Standard Classification of Education (ISCED)***, an international agreement under the aegis of UNESCO. The agreement is supplemented with guidelines for data collections under the three stamps (UNESCO-OECD-Eurostat) and with national mappings. The ***mappings*** detail one by one the national *educational programmes**, give the value of the numerous classification criteria and indicate whether the country takes into account the student enrolments in the education statistic data collection. Education statistics is the source of indicators on *combined school- work-based programmes**.

The ***European labour force surveys*** are sample surveys amongst households; they provide individual statistics on situations regarding employment and different harmonised notions on education and training **[6]**. The EU-LFS is the source of indicators on *combination of participation in education and employment**. The study is based mainly on data from Eurostat, sent to INSEE at the end of 2006, giving details about jobs held in 31 European countries.

Demographic estimates provide the denominators of the principal indicators (formally a third type of source).

Abbreviations

AT:Austria, BE:Belgium, BG:Bulgaria, CH:Switzerland, CY:Cyprus, CZ:Czech Republic, DE:Germany, DK:Denmark, EE:Estonia, ES:Spain, FI:Finland, FR:France, UK:United Kingdom, GR:Greece, HU:Hungary, IE:Ireland, IS:Iceland, IT:Italy, LT:Lithuania, LU: Luxembourg, LV:Latvia, MT:Malta, NL:Netherlands, NO:Norway, PL:Poland, PT:Portugal, RO:Romania, SI:Slovenia, SK:Slovak Republic, SE:Sweden.

Table 2 - Young people combining participation in education and employment according to their education level and time spent at work

% of young people aged 15 to 24

	Combine participation in education and employment					Enrolled in education	Combine participation in education and an employment during 1 to 9 hours per week	Employment
Learning mode and ISCED level	Total	Formal ISCED 2-4	Formal ISCED 5-6	Formal ISCED ?	Non-formal	All	All	All
Date	2005	2005	2005	2005	2005	2005	2005	03-04
Enquête	EU-LFS	EU-LFS	EU-LFS	EU-LFS	EU-LFS	EU-LFS	EU-LFS	UOE
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Germany	23	19	3	0	1	65	2	42
Austria	24	15	5	0	4	53	2	52
Belgium	5	2	1	0	2	68	1	28
Bulgaria	3	0	2	0	0	50	0	21
Cyprus	4	0	2	0	2	43	0	37
Denmark	44	29	9	1	5	66	17	62
Spain	9	2	4	0	3	57	1	34
Estonia	10	2	7	1	1	62	0	27
Finland	21	10	10	0	2	70	5	34
France	10	4	4	0	2	60	1	29
Greece	2	1	1	0	0	64	0	24
Hungary	3	0	2	0	0	61	0	22
Ireland	13	5	6	0	1	60	2	45
Iceland	44		42		3	67	9	60
Italy	3	1	2	0	1	55	0	25
Latvia	12	2	8	0	1	64	0	32
Lituania	4	0	4	0	0	68	0	20
Luxemburg	3	(m)	(m)	(m)	3	44	0	21
Malta	5	2	2	0	2	43	0	46
Norway	26		24		3	64	9	50
Netherlands	43	25	15	0	3	63	20	64
Poland	9	3	5	0	0	69	0	21
Portugal	4	2	1	0	0	54	0	34
Czech Republic	3		2		1	61	0	26
Romania	2	1	1	0	0	47	0	25
United Kingdom	26	11	6	1	8	57	5	55
Slovak Republic	2	0	1	0	1	53	0	23
Slovenia	17	5	9	1	1	66	3	32
Sweden	14	6	3	0	5	67	5	36
Switzerland	38	27	5	0	6	57	5	60
UE 27	**13,3**	**7**	**4**	**0**	**2**	**60**	**3**	**35**

Sources: European labour force surveys (EU-LFS) and education statistic (UOE) – Data dissemination: Eurostat.

Specifications: Indicators from the EU-LFS presented in this study are average of those at 15-19-year-olds and at 20-24-year-olds (aiming to reduce the effect of demographic choc). The age is taken at the end of the reference week, allowing to "catch" during the first quarter of the year young people comparable to those of the fourth quarter: we "turn" from a birth cohort to the next when we "turn" from a school-year (and a form/grade to the next).

Nota Bene: access to jobs lasting less than ten hours per week is exceptional amongst new members of the Community (except Slovenia) and amongst their young people (less than 1 % of all jobs recorded in 2005). The resulting high statistical heterogeneity raises questions: special feature of labour market, statistical artefact accentuating the effect of a difficult economic situation, etc.

Table3 - Performances of education systems (access to higher education degrees and low proportion of early school leavers)

% (see «denominator» below)

	Attained ISCED 5-6	Early school leavers	Performance of education system (composite)
Age	25-34	18-24	
Year	05 Q2	2005	
Denominator	population at 25-34	population at 18-24	
Survey	EU-LFS	EU-LFS	
	(16)	(17)	(18)
Austria	20	9	18
Belgium	40	13	35
Bulgaria	24	20	19
Cyprus	40	18	33
Denmark	39	9	35
Estonia	34	14	29
Spain	40	31	27
Finland	37	9	34
France	39	12	34
Germany	23	14	19
Greece	25	13	21
Hungary	20	12	17
Ireland	39	12	34
Iceland	34	26	25
Italy	15	22	12
Latvia	22	12	20
Lituania	38	9	34
Luxemburg	37	13	32
Malta	20	41	12
Netherlands	35	14	30
Norway	40	5	38
Poland	25	6	24
Portugal	18	39	11
Czech Republic	14	6	13
Romania	13	21	10
Sweden	37	12	32
Slovenia	25	4	24
Slovak Republic	16	6	15
United Kingdom	35	14	30
UE 27	**27,1**	**15,6**	**22,9**

Sources: European labour force surveys (EU-LFS) – Data dissemination: Eurostat (web-site).

Performance indicator: multiplication of the proportion of higher education graduates amongst people aged 25 to 34, by the complement to 100 of the percentage of early leavers (2005).

Nota Bene: in Estonia, Poland, Latvia, United Kingdom, Slovak Republic, Romania and Ireland, the proportion of ISCED 5-6 graduates at age 25-29 is higher than at 25-34, due to recent progress in the education system.

A tool for international comparisons: the International Standard Classification of Education (ISCED)

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Key words
Classification; nomenclature; Education; International comparison; Levels of education; Fields of education; ISCED; UNESCO; OECD; Eurostat.

I would like to dedicate this article to my friend Nicolas Dersjant, recently deceased and without whom nothing would have happened.

A tool for international comparisons: the International Standard Classification of Education (ISCED). This article deals with the importance of nomenclatures in the international comparisons by taking as an example the International Standard Classification of Education (ISCED). After a brief history of its recent revision, the various problems encountered in its design and implementation are presented as well as the principal changes that occurred. Several examples are given to illustrate the difficulty of not being deluded by comparability and the benefits of an efficient tool.

A glance at the (brief) history of the International Standard Classification of Education 78 (ISCED 78) and its transformation into ISCED 97 reveals that the revision of ISCED 78 was a rather long and difficult process. Its success is solely due to the extreme pressure exerted by the countries and organization that wanted to advance in the field of international comparisons. Many countries attach great importance to the possibility of comparing themselves with others and use the results of these comparisons to guide their educational policies. Without progress in the nomenclatures, international comparisons become less relevant, accurate and therefore interesting. Why is it difficult? Why is it so necessary? The following sections are an attempt to answer these two general questions. I will subsequently present the principal modifications made to this classification as a result of the revision.

First of all, it should be pointed out that the constraints affecting a nomenclature designed for statistical purposes are very different from the constraints encountered in the construction of a classification system created for specific comparative analysis. The "statistical" nomenclature must be understood by all the people (and countries) who provide statistics, regardless of their language and the organization of their education system. Errors or inaccuracies in the definitions contained in the nomenclature will only be corrected during a new data collection campaign.

Even if the nomenclature is of good quality, the way it is applied is crucial for the validity of the indicators and analyses derived from the data collected depending on the procedure. It is therefore important to observe the implementation of the new nomenclature. For the moment, we lack hindsight on the use of ISCED 97 but certain remarks can however be made.

Maintaining a nomenclature and ensuring it is used efficiently are permanent tasks. Thus, any conclusion made can only be temporary.

A brief look at History or the difficult revision of an international classification

Birth of ISCED 78

ISCED was created by UNESCO in the early 1970s to constitute a classification instrument in order to collate, compile and arrange education statistics, in different countries as well as at international level (UNESCO, 1976). It was approved by the International Conference on Education held in Geneva in 1975 then by UNESCO's General Conference when it adopted the *Revised recommendation concerning the international standardization of education statistics* in Paris in 1978. To facilitate its recognition, this initial ISCED version was subsequently referred to as "ISCED 78".

From a very early stage, the objective of ISCED 78 was to offer an integrated and coherent taxonomic framework for the collection and presentation of internationally comparable education statistics. More specifically, it intended to provide a global statistical description framework for the education systems and learning systems of the time, combined with a number of duly determined parameters of major interest to decision-makers for the purposes of international comparisons in terms of education. As with all taxonomies, ISCED 78 was based on two major components: 1) concepts and definitions jointly agreed upon at international level and 2) cross-sectional variables.

Initial difficulties emerge

In the early 1990s, the experience acquired over the years by national authorities and international organizations (including UNESCO but also the OECD and the Statistical Office for the European Communities – Eurostat *via* their work on comparison indicators of education systems) which used ISCED 78 showed that it had to be updated. This revision was necessary to facilitate the compilation and comparison of education statistics on an international scale and to adapt it to the evolution of education in the different regions of the world. This evolution included, for example, the increase in and growing popularity of various types of education and vocational training, the development of distance education and other educational systems associated with the new technologies as well as the increasing diversity of education providers.

Slow implementation of the revision process

In June 1992, a first group of experts was assembled by the Director-General of UNESCO to carry out a preliminary examination of ISCED and determine in which sectors a revision was necessary. The UNESCO Secretariat subsequently sent a questionnaire to the member States asking them for additional observations and suggestions. The responses, which confirmed the necessity of a revision, contained suggestions on the sectors to be improved and new concepts to take into consideration. In 1993, the General Conference therefore invited the Director-General to *"complete the ISCED revision by 1995 or 1997"*.

Between 1993 and 1995, two meetings of experts tried, and largely failed, to further this revision by defining priorities. In the absence of resources and sufficient competences, UNESCO struggled to launch this revision although it was very important that UNESCO take responsibility for this as the creator of ISCED 78. Only UNESCO could legitimately carry out comparisons affecting all countries throughout the world. A plan of action was presented at UNESCO's General Conference of 1995, covering the period up to the following session of the General Conference in October 1997. By subscribing to this plan, the General Conference requested that the Director-General *"invite the member States and international organizations concerned, in particular the Organization for Economic Cooperation and Development (OECD), to assemble a restricted team of education specialists in charge of refining the indicators relative to the various types of educational programmes; to provide this restricted team with all the necessary support so that it could present the executive Council with an interim report in the autumn of 1996 and proposals in the spring of 1997; and finally to see to it that the revised version of the ISCED manual is submitted in October-November 1997"*.

Therefore a clear strategy was finally defined.

The actual launch of the revision: restricted team and reference group

Members of delegations to the General Conference therefore met on the initiative of the Netherlands, supported by France. In order to implement the resolution of the General Confe-

rence, it was agreed that the restricted team would focus on revising ISCED's conceptual framework and the definitions it provides of education levels, and that this work would be regularly examined by a larger reference group made up of experts from the member States concerned in all regions of the world. Following a mail exchange with the Secretary General of the OECD, the Director-General of UNESCO therefore put together a restricted team in December 1995[1], Claude Sauvageot, upon the proposal of Nicolas Dersjant, was appointed chair of this restricted team[2]. Germany and Canada were supportive of the team's work from the beginning.

The restricted team met on a regular basis between December 1995 and June 1997 to revise ISCED's conceptual framework as well as the definitions it provided of education levels.

NOTES

1. This team was made up of an Ethiopian expert (Gabeyehu Kumsa), a French expert (Claude Sauvageot), a Dutch expert (Nicolas Dersjant) and experts from OECD (Andreas Schleicher, with Tom Smith in 1997), the Statistical Office for the European Communities (Bettina Knauth from Eurostat), the Division of Statistics (Karl Hochgesand) and Education sector of UNESCO's Secretariat (John Smyth). Suren Gajraj from UNESCO's Division of Statistics was the secretary general.

2. It took a lot of persuasion and a great friendship to convince me to take part in this adventure…

3. The original document containing both nomenclatures is a document presented to the Executive Council meeting prior to UNESCO's General Conference called: International Standard Classification of Education ISCED 1997. Reference 151 EX/8 Annex II. March 1997. It is available from the UNESCO Institute for Statistics.

4. In particular, education methods, providers, training locations, training procedures.

Its work initially benefited from the observations and suggestions made by experts from member States during the joint EEC-UN/UNESCO/OECD work session held in February 1996 on education statistics. Subsequently, the preliminary proposals of the restricted team were presented to the reference Group of experts (approximately thirty) assembled by the Director-General of UNESCO at the IBE/International conference centre in Geneva on 20 and 21 May 1996. A revision II version was then presented for examination and discussion at the meeting of experts that UNESCO had arranged on the occasion of the 45th session of the international Conference on education in September 1996 in Geneva again. Finally, a third version was finally discussed in a second meeting of the reference Group in Paris in February (25-27) 1997.

The version resulting from all these meetings was finally presented to UNESCO's executive Council in May 1997.

The restricted team had managed to comply with the deadlines by primarily focusing on the revision of the levels of education. It retained the idea of a level-based nomenclature to classify the programmes but, at the same time, introduced numerous modifications described hereafter. It also provided a proposal to transform the fields of education based on research carried out by Ronnie Anderson (from Sweden's Institute of Statistics)[3].

Adoption of ISCED 97

Two nomenclatures (levels of education and fields of education) were adopted, first of all by UNESCO's Executive Council in May 1997 and then by UNESCO's General Conference in November 1997. Thus ISCED 97 was born, with its two classifications, the more famous and most used being that relating to the levels of education.

Work continues

The restricted group subsequently continued to work because they thought at the time that many other classifications may be needed for international comparisons, and that the current *Revised recommendation concerning the international standardization of education statistics (1978)*, into which ISCED 78 was incorporated, may have to be replaced by a new, more up-to-date *Recommendation*.

After the General Conference of November 1997, Nicolas Dersjant was appointed chair of the group and broadened this team by including a Chinese colleague, Meng Hong Wei. The team undertook the creation of an operational manual concerning the classification of education levels. Other domains were explored[4] but works were never begun.

Thus, the attempt to define a nomenclature of education methods failed. Its purpose was notably to clarify the "non-formal", "informal", "life-long education", "continuing education" expressions. Roy Carr-Hill, who had been consulted on the subject, had deemed these clarifications "unrealistic" because the reality described by these terms varied too much from one country or continent to the next [Roy Carr-Hill, 1998, § 1]. For the other nomenclatures, in-depth work could not be carried out for lack of specific objectives. Thus, UNESCO did not ask, in its data collection, for detailed information on education providers[5] or locations[6].

The restricted team was progres-

sively dissolved, leaving the newly created UNESCO Institute for Statistics (UIS) to take over. For the moment, it does not appear that the UIS intends to add to the two nomenclatures adopted in 1997.

Implementation

The OECD wanted to use the new nomenclature of education levels immediately, which was the focal point of its entire research on indicators. It rapidly produced an operational manual for this new ISCED 97[7]. The UIS set out to put in place training seminars for the different countries grouped together by region and associated the discussions on ISCED with those on data collection.

Consequently, the restricted team which designed ISCED 97 was not associated with its implementation.

Statisticians then had to tackle the coherence problems in time series. As with any change in nomenclature, to guarantee the reliability of statistical series, they had to try and apply the new nomenclature to old data in order to retain a temporal analysis despite the change in nomenclature. This is a very real difficulty and one of the reasons why statisticians are so reluctant to change nomenclature.

Although the OECD asked its members to supply 1995 data in accordance with the new nomenclature, the temporal analysis that can currently be carried out remains limited. The other organizations must also find solutions to this delicate problem. It does not affect all sectors in the same way: it is particularly significant for higher education but hardly significant for primary education. However, it is worth it in light of the importance of temporal analysis.

Why is the construction of a nomenclature such as ISCED so difficult?

Generally speaking, a nomenclature must comply with imperatives that are often contradictory or difficult to reconcile:

- the definitions making up a nomenclature must be accurate but they must not be overly specific at the risk of being unable to adapt to the different contexts (especially in the case of an international nomenclature). During the meetings of the restricted group and other meetings of experts, the discussions on definitions were lively and passionate, with every member trying to use or validate the opinions or organization of their own country. This highlighted differences in the interpretation of basic education (different from primary education and compulsory education), university education (which is not necessarily provided in a university), vocational education (which is not necessarily provided in an education institution), completed level (always a delicate notion if there is no examination at the end of the programme concerned), guidance towards a determined curriculum (initial definition of the programme's objective which can largely differ from the actual career of the pupils who undertake this programme: thus, a programme designed to lead to vocational integration can in fact mostly produce pupils who continue studying), doctoral studies (importance of the notion of research but also the notion of publication), etc. Had there been no details or criteria on all these subjects, the countries represented in the groups of experts would have included very different programmes under these terms and comparisons would have been inaccurate;
- the nomenclature must be made up of a number of details sufficiently restricted to be used in analyses which can be understood by non-specialists and at the same time sufficiently broad to grasp the diversity and facilitate the allocation of the items examined – in short, simplistic but not overly so. It is impossible to use an excessive number of categories to describe a phenomenon but it is important to distinguish very different elements: for example, an initiation or literacy programme and an in-depth vocational training programme… This is why several coherent levels of detail should also be provided in the nomenclature, making it possible to properly classify at a detailed level and regroup at aggregate level;
- the nomenclature must understand similitude (in this case between programmes) without reducing it to identity, because if it requires identity, nothing can no longer compare… This is often a sizeable difficulty. If someone looks for two strictly identical programmes from one country to the next, they would be practically impossible to find. Therefore, one must accept differences that appear less important in relation to the item examined. For example, in relation to

NOTES

5. Example of providers: public education organization, private education organization, company etc.

6. Example of education locations: school, university, company etc.

7. See [OECD, 1999]. The latest edition dates back to 1999. It is available from the OECD and the team in charge of INES (Andreas Schleicher).

the analysis by level, the content of a programme will be more important than the organization and duration of the studies;
- the words making up the nomenclature must be equally understood by all users. However, how can this be guaranteed, especially when the nomenclature is officially translated into six languages and subsequently probably into over one hundred? This is a very significant difficulty. It is difficult to ensure that the content of the translation is truly accurate. In the case of ISCED, UNESCO guarantees publication in six languages, therefore the six translations must be guaranteed. It was observed during the meetings of experts that this was not always so. Another difficulty is that a lot of users read this nomenclature in a language other than their mother tongue (if their mother tongue is not one of the six UNESCO translation languages);
- the nomenclature must define limits as precisely as possible between the different details used by using once again universal definitions and language.

There are also other types of difficulty:
- how to take into account the diversity in the organization of education systems? For example, primary education can last between 4 and 8 years, not to mention even more extreme cases;
- terms such as: higher education, university or teachers' qualification cannot be used "as is" because they are not equally understood by all. Teachers' qualification can be associated with a vocational certificate (vocational diploma), with a given level of education or with an accreditation. Depending on the criterion selected, the number of qualified teachers may vary dramatically.

Why are nomenclatures in general and ISCED in particular so necessary?

One of the principal reasons that triggered the ISCED 78 revision process was the deadlock in which many countries found themselves (mostly OECD countries) when they tried to compare one another both in terms of pre-primary education and secondary education, let alone higher education.

The different categories offered by ISCED 78 for these different levels seemed no longer adapted to the new organizations of the education systems. They did not appear accurate enough. It should also be pointed out that they were very often misinterpreted and therefore misused but the comparison was then just as difficult.

Thus, usage had resulted in the elimination of statistics on work/study courses such as "apprenticeship" courses. The importance of these courses has been acknowledged for a long time in Germany, Switzerland and Austria. Their exclusion was a complete distortion of the vision of secondary education.

Similarly, the definitions used for pre-school education did not accurately distinguish between childcare and pre-school.

In higher education, programme classifications were moreso designed according to the schooling location (universities on the one side, other locations on the other) than to the actual programme content.

What major modifications were made during the revision?

I will focus on the nomenclature of education levels, as this was the subject of most discussions, modifications and usage types. These modifications related to many aspects of the nomenclature: scope of application, classification method, complementary dimensions and transformations in the definitions of the different levels (in particular 4-5). It is useful to refer to *table 1* in appendix, which presents a summary of several ISCED 97 aspects.

An important remark applicable to both ISCED 97 and ISCED 78 is that the backbone of the work on the nomenclature of education levels is the belief in the existence of a hierarchy of knowledge and skills. It is generally admitted that this hierarchy in specific domains can be determined from the individual's point of view. Its transposition in terms of education programmes or activities raises more of an issue. It is therefore a fact that the use of a level-based nomenclature relating to programmes or activities results in the loss of part of the information. It only accounts for part of the reality with regard to the education provided to the individuals.

Another difficulty is how to position knowledge and skills on the same scale. There are very often implicit hierarchies (in France, for example, knowledge is always held in higher regard than skills and therefore has a higher classification). ISCED 97 tried to explain the criteria used and eliminate implicit aspects. We can only hope that its application retains this principle even if it not easy.

Scope and field of application

A systematic effort to define the terminology was initially undertaken, as many terms had not been defined in ISCED 78 or this terminology needed updating. First of all, the notion of education had to be defined more accurately because, in order to develop this nomenclature, the scope and field of application of educational activities needed to be specified. The term "education" must be defined as *voluntary and systematic activities meeting learning requirements. Education includes organized and sustainable communication designed to give rise to sustainable learning*. The key words (communication, organized, learning and sustainable) were defined subsequently.

Later on, it was specified that ISCED applied to initial training as well as adult education, formal and informal education, vocational education and special needs education (in this case, types of education were listed without definition; a glossary was however provided).

Consequently, this also indicated what ISCED did not apply to: for example, a type of communication not designed to give rise to learning. This construction provided an integrated and coherent statistical framework for data collection and presentation, which was already the case with ISCED 78.

Another unchanged element is the basic unit adopted by ISCED: the

Diagram no. 1 - ISCED's field of application

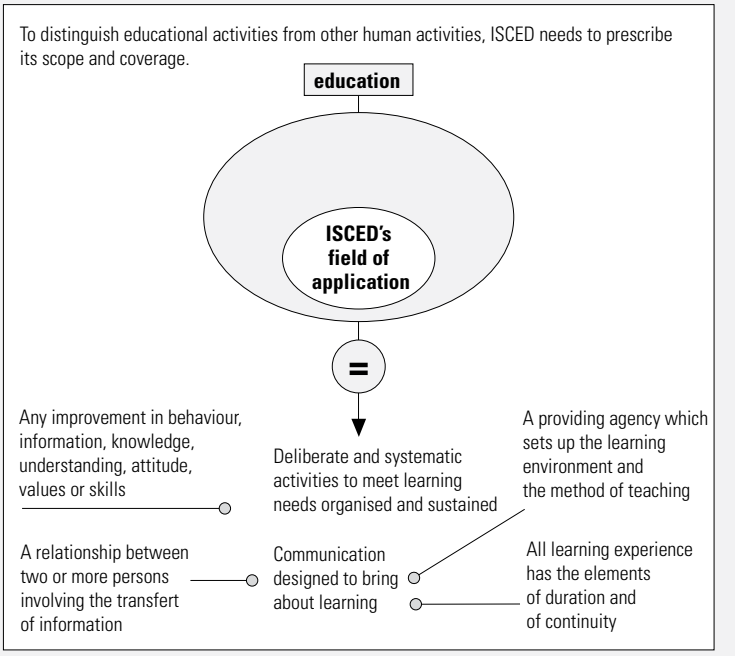
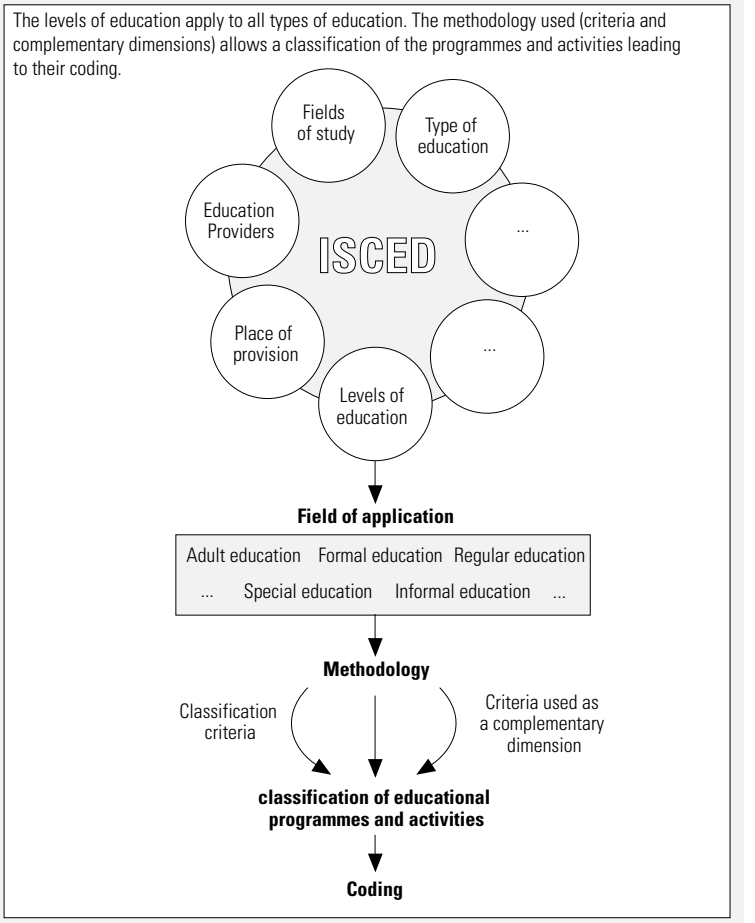


Diagram no. 2 - how do levels of education operate? [8]



NOTE

8. When this diagram was created, we thought other nomenclatures would accompany the levels.

Diagram no. 3 - the methodology in action (for level 0°)

An example of the use of criteria on two programmes for young children in Paraguay.
One (Preescolar) meets the required ISCED criteria and will be taken into account, the other (Jardin maternal) does not.

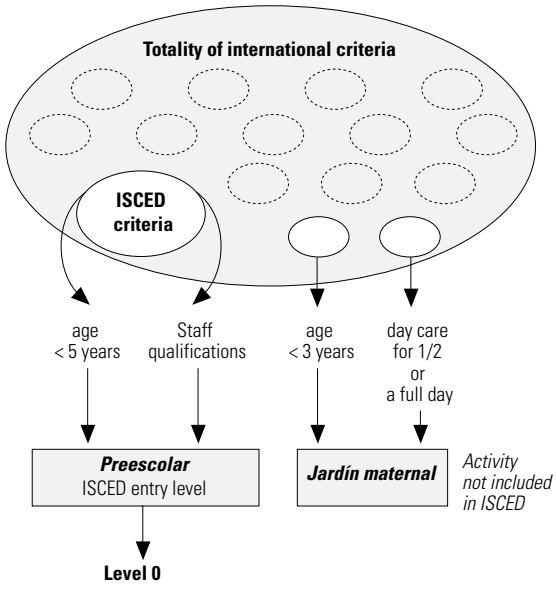
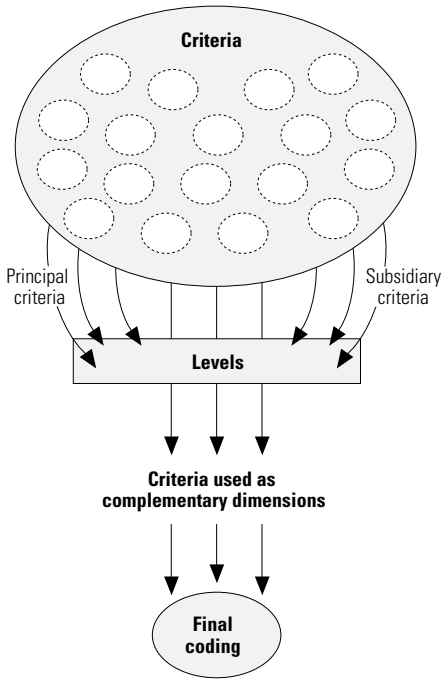


Diagram no. 4 - how to codify?

When classifying an activity or programme, different criteria (principal and subsidiary) are used to define its level. Complementary dimensions are then used to specify their contents before arriving at the final coding.



education programme. However, its definition was detailed and broadened: a close link was established between "programme" and "educational activities"; these "educational activities" must however be organized with regard to a pre-determined objective made up of educational tasks. This notion of educational activities is therefore broader than the courses or sets of courses which underlined the notion or programme in ISCED 78. For example, it takes better account of adult-oriented actions. Furthermore, for educational activities organized in a very different way than traditional education programmes, ISCED 97 stresses the importance of classifying educational activities by using the notion of the educational content analysis.

Complementary dimensions

Another innovation of ISCED 97 is the desire to provide complementary elements (referred to as dimensions) in order to specify the content while facilitating the allocation of programmes into levels. In addition to course duration (simple or cumulated since the beginning of a programme of a given level), two notions were used specifically: programme orientation and the type of subsequent education or programme.

- In programme orientation, three procedures are envisaged: general, pre-vocational – pre-technical and vocational – technical. The latter can be sub-divided into two sub-groups: programmes mostly theory-based and programmes mostly practice-based.
- The type of subsequent orientation for which the programme was designed: the idea of this dimension is

to indicate in which curriculum the programme undergoing classification has been placed. This dimension distinguishes between a programme organized in order to provide access to higher-level programmes and a programme for which the outcome is working life or another providing access to shorter studies. This notion is particularly useful for levels 3 and 5. It is important to know, for level 3, whether the programmes have been designed to provide access to short (3B) or long higher education courses (3A) or working life (3C). For level 5, it will be used to distinguish between those giving access to doctoral studies or highly qualified trades (5A) and those which do not offer these possibilities (5B). The difficulty lies in the distinction between the orientation meant by the programme designers and the actual orientation of the pupils, which can be very different from the initial purpose even though the content of the programmes remains coherent with the original desire.

Boundaries

For each level, we tried to determine a lower boundary (to mark the separation with the previous level) and an upper boundary (to mark the separation with the next level). This was both essential and difficult as the various structures of the education systems had to be considered (age, duration of the different stages, etc.) and classification indications had to be provided. To overcome this contradiction, we often used the technique of an accurate description combined with a non-binding formula. Let those who have a better idea cast the first stone…

In addition, a clear boundary between the programmes within the ISCED scope and the activities outside it had to be indicated: pre-primary education versus crèches and childcare centres.

Modifications on procedures: creation of level 4

A very notable difference between ISCED 78 and ISCED 97 is the emergence of a level 4. This creation was subject to many discussions and much controversy. The starting point was the observation of major discrepancies between countries with regard to the classification of programmes at the junction of secondary and higher levels. These generally fairly short vocational programmes were listed, depending on the country, with the second stage of secondary education or with higher education, which obviously distorted the comparisons between countries on these levels.

This is why countries such as Germany, Canada, Austria and the Netherlands were keen to create a level including the programmes which disrupted the comparisons.

Consequently, level 4 was born for post-secondary programmes not considered part of higher education (tertiary as per ISCED vocabulary).

The description of the content of these programmes was the object of lengthy debate. Eventually, an initially negative description was adopted (no level 5), completed by an indication on the extended knowledge provided by these programmes even if their level cannot be considered higher than that of level 3 programmes. In this respect, this is a breach in the hierarchy of levels.

This can also relate to programmes giving access to level 5 for pupils who have undertaken level 3 programmes which do not normally provide access to this level 5.

Classification criteria and complementary dimensions complete the implementation of this level, upon which many (too many?) expectations were based, as we will detail hereafter.

Transformations of higher education levels

The lengthiest and most passionate discussions were probably those on these levels.

A first debate initially related to the number of higher education levels. It seemed pertinent to use two (5 and 6), after which the scope of these levels needed defining. Some people were in favour of reserving level 6 for doctoral studies while others wanted to add master's degrees with a "research" aspect. In the end, the first option was selected but this, of course, did not solve all the problems because the highest level of a classification is always extremely attractive.

With regard to level 5, it seemed important not to establish a hierarchy between "academic" or "university" programmes and programmes with a more technical content. At the same time, it seemed necessary to distinguish between the programmes leading to doctoral studies or trades requiring a high level of qualification and other programmes, hence the significant difference between 5A and 5B.

Unsolved problems

- How to measure populations' levels in surveys carried out amongst individuals based on ISCED 97? It is necessary to set rules to switch from a nomenclature based on training programmes to a nomenclature measuring individual levels. In particular, the way to classify people who have failed to complete a programme in which they were enrolled must be specified. This has not been done by UNESCO and it is all the more disappointing as ISCED is used in both labour forces surveys and census surveys. The OECD and Eurostat gave collection indications in this respect. Furthermore, several articles demonstrated ISCED's usefulness (ISCED 78 at the time) in comparative analyses[6].

Other nomenclatures: education providers, procedures, institutions, etc. This topic has already been dealt with.

Implementation problems

Problems regarding the type of orientation

The notion of type of orientation is fairly difficult to apply in a number of cases. As indicated above, it is sometimes difficult to classify a programme according to its initial orientation when the actual orientation of the students has become very different from the one originally planned. A certain confusion has already been observed in this domain.

Problems with level 4

Level 4 is seldom used. It does not appear that its purpose has been achieved but this may be due to the use of nomenclatures by the different countries. Despite the instructions given by the OECD, several countries have continued to classify some of their programmes under level 3 or level 5 although several experts were expecting these programmes to be classified under level 4. Improvement is therefore needed in this domain.

Proposals have also been made to sub-divide the type of orientation into three categories instead of two. The objective is to distinguish, within the type of orientation towards level 5, between the programmes mostly oriented towards level 5A and those mostly oriented towards 5B. Eurostat and the OECD have already introduced this distinction in their surveys.

Problems with level 5

In the definitions, the terms corresponding with the institutions have been avoided: universities, polytechnic institutes etc. However, in several cases, the trend was to classify (as was previously the case) university programmes under 5A and the others under 5B, which does not correspond with the initial desire. The "position in the national degree or qualification structure" dimension also posed comprehension and therefore application problems. The idea was to take into account the organization and chronology of the programmes in a given country in order to indicate whether this organization or chronology existed. This was not always fully understood.

Problems with level 6

The main problem remains the boundary with level 5A. The plan was to classify the programmes including a "research" aspect under 5A by indicating their specific "research" characteristic in the "position in the national degree or qualification structure" dimension. Nevertheless, several countries consider that these programmes should be classified under level 6, which was not the initial orientation. The difficulty obviously lies in the assessment of the importance and quality of this "research" aspect. This classification is also very sensitive from a political point of view since it will assess the number of students reaching the highest training programmes. Once again, improvements are needed but I believe ISCED97 has determined the right framework.

Illusions and realities of the comparisons

In addition to the above-mentioned difficulties, we should analyze the pitfalls that have emerged in the use of ISCED 97.

It is specified that the duration of level 1 programmes is usually six years. However, in the course of the many discussions which resulted in this non-binding formulation, it clearly appeared that artificial boundaries should not be imposed. It is naïve to believe that determining a schooling duration for each level will improve

NOTE

9. Two articles can be consulted on this subject: [Hilary Steedman, Steven McIntosh, 2001] and [Asa Murray, Hilary Steedman, 2001].

comparability. I myself was guilty of this naivety when I starting working on ISCED's revision in 1994. I thought everything was simple. All we had to do was define a duration of studies for each level of education and the whole problem would be solved. Except that nobody is actually capable of comparing the content of a school year in a given country with that of another. Should we consider the total number of teaching hours, teachers' qualification, the educational equipment available to the pupils (books for example)? Many other elements such as Internet access can now be added to this list. In short, a school year is never identical within the same country, let alone from one country to the next.

Therefore the organization selected by the countries to meet the objectives associated with each level must be taken into account. Thus, the objective of primary education (level 1) in each country is to provide basic education in reading, writing and arithmetic. To reach this educational (and therefore content-related) objective, the countries have determined a duration of studies enabling them to reach these objectives within their own organization. The most interesting elements to compare are the different organization methods and duration is one of the descriptive elements of these methods. Therefore, it is not very relevant to determine a strict duration limitation for each level. Furthermore, the organization of level 1 is very specific: mostly one teacher for a given group of pupils. In order to "comply with" an overly rigid duration of studies for level 1 (for example six years), the seventh year can be allocated to level 2. However, combining the type of organization inherent in primary education with that used in level 2 does not make much sense and will result in confusion from which it will be difficult to collect pertinent information, both in terms of education and financial analysis, as the costs associated with primary and secondary education are very different.

Similarly, in secondary education, one may be tempted to use duration as a major criterion. However, programmes are often designed to enable young people experiencing difficulties to reach a certain level of knowledge or skills by allowing more time. It would be absurd to consider that the level of these longer programmes is higher than that of other programmes.

In higher education, the pitfall inherent in institution-based classifications has already been mentioned. Furthermore, the first "university" degree can be obtained after three, four or five years of studies. This is up to the countries. However, it is impossible to establish a duration-based hierarchy. In the many selective systems, this would be equivalent, as with the example of secondary education, to under-rating short courses in which the most brilliant pupils are enrolled or those who have passed the examinations or competitive examinations.

These examples reveal how easy it is to be deluded by comparability. Actual comparability can only be developed and maintained by all the countries who want to compare themselves. The existence of a nomenclature accepted by all is a necessary condition but it is not sufficient. The role of international organizations is to encourage discussions between countries based on their use of the nomenclature. This must result in greater transparency of each country's classification methods. Thus, the creation of country tables representing the classification of the different programmes is a very useful tool. These tables must be the object of discussions between experts, each country being allowed to question another's classification method. This is the only solution for the harmonization and upgrading of the countries' classification methods.

International organizations find it very difficult to modify the programme classifications used by the countries. This can only be done by a process or joint proceedings mobilizing these countries. This is what was achieved by the OECD's INES project (project for the creation of international indicators of education systems) initiated by UNESCO. This should be a permanent effort in order to prevent distortions and it should be maintained by "project"-driven dynamics such as that on international comparison indicators.

■■■

Without an international classification, no comparison is possible. A classification makes comparison possible. It is very easy to criticize a nomenclature; it is far more difficult to propose another, especially when it must take into account the diversity of all the education systems of all the countries in the world.

However, regardless of its quality, the use of a classification is a decisive element in the relevance of comparisons. We must constantly strive to ensure that the definitions and concepts are fully understood and used in the same way by all those who use these nomenclatures to analyze the education systems. We have mentioned the implementation problems encountered and the pitfalls which must be

avoided. The different international organizations are trying to improve the use of ISCED 97 and they can only be encouraged to continue their effort.

Therefore, ISCED 97 must constantly be maintained and the different users must be encouraged to discuss the problems they are confronted with and the way they resolve them. The description of the detailed classification of the programmes by level and country can be a useful tool when coordinating these discussions, provided it is regularly updated.

This is how this essential tool will make it possible to conduct comparative analyses in the right conditions, while keeping in mind the limitations inherent in all comparisons. ■

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Table 1 – Levels of education at a glance

How to determine the level of a programme				
Proxy criteria for contents		Name of the level	Code	Complementary dimensions
Main criteria	Subsidiary criteria			
Educational properties	Staff qualification	Pre-primary education	**0**	None
School or centre-based				
Minimum age				
Upper age limit				
Beginning of systematic apprenticeship of reading, writing and mathematics	Entry into the nationally designated primary institutions or programmes	Primary education	**1**	None
		Second stage of basic education		
	Start of compulsory education			
Subject presentation	Entry after some 6 years of primary education	Lower secondary education	**2**	Type of subsequent education or destination
Full implementation of basic skills and foundation for lifelong learning		Second stage of basic education		
	End of the cycle after 9 years since the beginning of primary education			Programme orientation
	End of compulsory education			
	Several teachers conduct classes in their field of specialization			
Typical entrance qualification		(Upper) secondary education	**3**	Type of subsequent education or destination
Minimum entrance requirement				Programme orientation
				Type of subsequent education or destination
				Cumulative duration since the beginning of ISCED level 3
				Programme orientation
Entrance requirement		Post-secondary non tertiary education	**4**	Type of subsequent education or destination
Content				
Age				
Duration				Cumulative duration since the beginning of ISCED level 3
				Programme orientation
Typical entrance qualification, type of certification obtained		First stage of tertiary education (not leading directly to an advanced research qualification)	**5**	Type of programmes
				Cumulative theoretical duration at tertiary
				National degree and qualification structure
Research oriented content, submission of thesis or dissertation	Prepare graduates for faculty and research posts	Second stage of tertiary education (leading to an advanced research qualification)	**6**	None

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