First Report of

PISA ASSESSMENT 2003

RESULTS IN BASQUE COUNTRY

Programme for International Assessment
of 15-year-old Students in Mathematics, Reading,
Sciences and Problem Solving

EUSKO JAURLARITZA GOBIERNO VASCO

HEZKUNTZA, UNIBERTSITATE ETA IKERKETA SAILA

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Prologue

The reports now being presented to the Basque education community and to society as a whole are solid proof of our commitment to serious assessment.

It has been three years of hard work and I am extremely grateful to the workers of ISEI-IVEI, an Institute that has grown both professionally and technically thanks to the best assessments in the world.

The participation of the Basque Educational System in the most important international assessments constitutes a historic landmark, the coming of age of Basque education and the best possible source of comparable data with which to improve our system.

The ultimate goal of assessment is improvement and this is only possible if we are aware of our strengths and weaknesses with respect to the rest of the world, the OECD or the European Union.

The data obtained about our system reveal important bright points, such as a high level of equity and performance levels which place us on equal footing with many European and Western countries. It also reveals some shadows which we must work together to improve.

This is just the beginning of a information-based reflection designed to bring about improvements in our schools and provide firm support for many specific lines of action of our education community. International assessment continues, putting us in a context of co-operation and learning with other nations and states in Europe and the world. This will produce many fruits if we are able to conserve the positive aspects we have and at the same time attain new goals by seeing ourselves in other countries and other experiences. In a way, it is the "globalisation" of education.

I have always said we must look towards Europe and other advanced countries. This project is a big step in that direction. We are aware that changes in education take place in the long term, that we are working with 2010 or 2020 in mind, thinking of the students who now begin and will finish their Compulsory Education at the age of 16. Day-to-day operations often make us forget that our purpose is to educate citizens, to give them skills that will last a lifetime, allowing them to continue learning throughout their careers, to find the best job possible and to grow as individuals in order to live life fully.

Let us hope that this assessment helps us all in contributing to such a task.

Anjeles Iztueta Azkue

Minister of Education, Universities and Research of the Basque Government

1. Introduction

Objectives and background of the study

The primary objective of the assessment is to obtain information about how prepared 15-year-old students are for life. The idea is to look into the education and preparation of young people as well as their ability to use their knowledge and successfully meet the challenges of "adult life".

Another objective of the PISA project is to attain relevant and reliable data for decision-making by the governments of participating countries in the area of educational policy.

The results of PISA 2003 will reflect the educational reality of approximately half of the world's population of 15-year-olds.

The countries that have taken part in PISA 2003 are the ones listed below:

OECD COUNTRIES		NON-OECD COUNTRIES	OTHERS
Germany	Japan	Brazil	Belgium (Flanders)
Australia	Luxembourg	Russian Federation	Belgium (Wallonia)
Austria	Mexico	Hong-Kong – China	Belgium (German-speaking)
Belgium	Norway	Indonesia	Castilla y León (Spain)
Canada	New Zealand	Latvia	Catalonia
Korea	Poland	Liechtenstein	Scotland
Denmark	Portugal	Macao – China	Basque Country
Spain	Czech Republic	Serbia and Montenegro	Finland (Swedish)
United States	Slovak Republic	Thailand	Wales
Finland	Sweden	Tunisia	England
France	Switzerland	Uruguay	Northern Ireland
Greece	Turkey		Italy-Bolzano
Holland			Italy-Lombardy
Hungary			Italy-Piedmont
Ireland			Italy-Tuscany
Iceland			Italy-Trento
Italy			Italy-Veneto

In PISA 2003 Basque Country has participated in an official capacity, through an agreement with the organisation and the consortium of companies in charge of its implementation. The process of drawing up materials, translation, publication, application, correction and initial data processing has been carried out by ISEI-IVEI (Basque Institute for Research and Evaluation in Education) of the Department of Education of the Basque Government, in co-ordination with the consortium of companies in charge of implementation and with INECSE (National Institute for Evaluation and Quality of the Education System of the Spanish Ministry of Education and Science), the state co-ordinator of all the applications.

Assessment characteristics

Although it focuses on three curricular areas (reading, mathematics and sciences) because they are subjects common to all educational systems, one of the most novel characteristics of this assessment lies in the fact that it is not basically curricular. The items have been created in such a way that their solutions are not directly linked to specific curricular contents, but have more of a transversal nature, making it possible to assess the functionality of what has been learned in responding to real situations that arise in daily life and will be found in adult life.

Just as PISA 2000 centred on the evaluation of Reading, the PISA 2003 assessment gives a detailed report on the performance of 15-year-old students in Mathematics, as it explores different math contents and, in addition to the results produced, conceptually establishes different levels of mathematical literacy for each one of the four subscales: quantity, space and shape, change and relationships and, lastly, uncertainty.

Another innovation of the PISA assessment is that it takes into consideration aspects such as motivation, self-concept and the learning strategies used by students. Also, in the 2003 test, transversal curricular contents are assessed, through what has been generically called "Problem Solving".

In PISA 2003 the content was distributed in such a way that 54% of the total time was spent on mathematics and 15% was spent on each of the remaining areas.

The instruments used were the following:

Students:

- **Test:** organised in 13 different notebooks that were distributed in each group.
- **Questionnaire:** completed by the students who took the text, it gathered information regarding, among other things, the student, his/her family, educational evolution and expectations, the school, learning and study practices, math classes and motivation.

School Administration:

- The administration of each school completed a questionnaire about matters related to the organisation and functioning of the school, human and material resources, methods for supervising the actions of the math teachers, etc.

Types of items used in the test

The test was comprised of items to be solved in different ways, sometimes asking the students to construct their own responses and sometimes presenting multiple choice items:

Response construction

- writing a short answer from among a wide selection
- writing a longer answer with broad possibilities
- writing their own answer but with a limited series of possibilities

Multiple choice

- choosing an answer from four or five possibilities
- circling "yes" or "no" or "true" or "false"

Performance levels

PISA 2003 establishes six levels of performance in Mathematics and five in Reading, in accordance with the score of the student that places him or her in a certain performance level. For example, if a student shows sufficient skill in most of the tasks of Level 4, for example, he or she is assumed to be able to carry out the tasks of that level and all the lower ones, but not those corresponding to Levels 5 and 6.

In Mathematics there is also a description of the tasks corresponding to each level in the four subscales: quantity, space and shape, change and relationships, and uncertainty.

Design of the sample in the Basque Country

The size of the sample and the selection of the schools in the Basque Country was decided by the PISA 2003 Consortium itself, following the technical requirements of the organisation and the sample conditions set by ISEI-IVEI:

- Representation of the strata that make up the interaction of the linguistic models A, B and D (classes taught only in Spanish, in both Spanish and Euskera or only in Euskera) and the type/network of school.
- The consideration that each linguistic model is a school in itself: that is, if a school in the ESO system (Compulsory Secondary Education) has a Model B group and another Model D group, one or both can be selected to do the test.
- Matching as much as possible the selection carried out for the application of the IEA assessment known as TIMSS, since they coincide in time.

Sample data (overall and by strata)

Parting from the general data on schools and on 15-year-old students in Basque country during the 2002-2003 academic year, the number of schools and students that were actually evaluated is that appearing in the following tables. It must be kept in mind that each school provides a maximum of 35 students chosen at random.

Of the initial selection, the data on the students who did not participate in the test, for family reasons or because they were absent, was not computed.

Schools and students who actually took the test

SCHOOLS	MODELS			TOTAL
	A	B	D	
Public	11	16*	31	58
Private, with public funding	35*	24	25*	84
Total	46	40	56	142

*: In these groups one of the schools was substituted by its alternate.

STUDENTS	MODELS			TOTAL
	A	B	D	
Public	256	365	881	1.502
Private, with public funding	1.019	636	752	2.407
Total	1.275	1.001	1.633	3.909

Students who took the test in each of the areas

Area	N
Mathematics	3.909
Reading	2.101
Sciences	2.103
Problem Solving	2.099

Looking at each one of the areas of assessment, the number of students is different because, although all the students answered the Mathematics section, not all students answered the Reading, Sciences and Problem Solving sections.

Of the 3909 students who took the test, 3901 also completed the questionnaire.

Language used in the test

The PISA test was given in Euskera and Spanish, in accordance with the following criteria:

In Spanish:

- All students in Models A and B.
- Students in Model D whose mother or father does not speak Euskera or whose family language (main language of communication at home) is not Euskera.

In Euskera:

- The students of Model D when both parents or guardians speak Euskera habitually and their family language is therefore Euskera.

Before the test was given, all Model D students filled out a form asking for information regarding the language of the father, the mother and the language spoken most at home. Keeping in mind these conditions, the distribution of the students was as follows:

Spanish		Euskera (Basque)		Total	
N	%	N	%	N	%
3339	85,42	570	14,58	3909	100

The distribution of students in Model D according to the language used in the test was as follows:

Spanish		Euskera (Basque)		Total	
N*	%	N	%	N	%
1068	66,42	540	33,58	1608	100

With respect to the type of school, the percentage and number of participating students by language of the test was as follows:

Type	Spanish		Euskera (Basque)		Total	
	N	%	N	%	N	%
Public	661	73,20	242	26,80	903	100
Private, with public funding	407	57,73	298	42,27	705	100
Total	1068	66,42	540	33,58	1608	100

* The number does not correspond with the number of students who took the test because it is weighted.

2. Mathematics

I.- HOW MATHEMATICS ARE DEFINED IN PISA

The PISA project bases the assessment of Mathematics on the concept of "mathematical literacy"*. This concept refers to the capacity of the students to analyse, reason and communicate as efficiently as possible the interpretation and solution of mathematical problems that are likely to arise in a variety of day-to-day contexts and situations.

Mathematical literacy is defined, therefore, as follows:

> An individual's capacity to identify and understand the role that mathematics plays in the world, to make well-founded judgements and to engage with mathematics in his or her personal, professional and social life, present and future, as a constructive, concerned and reflective citizen. (OCDE 2003)

This definition expresses the most general and broad uses that can be made of mathematics in people's lives, and is not limited to merely doing mechanical operations.

The term "mathematical literacy" is used mainly to indicate the capacity to make real-world use of mathematical knowledge and skills, and not just to learn them as a subject applicable in the educational context of a curriculum. The term highlights that the main focus is not mathematical knowledge and skills as defined in traditional curricula, but rather their applied use in different contexts, utilizing various strategies based on reflection and personal intuition.

Mathematical literacy implies not only having the capacity to recognise and solve mathematical problems that arise in various situations but also having the inclination to do so, which depends on personal qualities such as self-confidence, curiosity and motivation. In order to make real-world use of mathematical knowledge it is necessary to have basic knowledge and a range of skills that are normally taught and learned in the school context.

II. RESULTS IN MATHEMATICS

The analysis of the results in Mathematics of 15-year-old students in the Basque Country focuses, on the one hand, on the overall results obtained in this area and, on the other hand, on the data pertaining to the scores in the four subscales formed according to the type of content: quantity, space and shape, change and relationships and, lastly, uncertainty.

Overall performance in Mathematics

The average score of 15-year-old students in the Basque Country in Mathematics is 501.63 points.

Comparing these results with those obtained in Mathematics by 15-year-olds in the group of OECD countries, it can be seen that students in the Basque Country have a higher than average score.

Mathematics	N	Average	Typical error	Standard Dev. (T.E.)
Basque Country	3885	**501,63**	2,839	82,42 (1,15)
OECD	224094	**500**	0,6	100 (0,4)

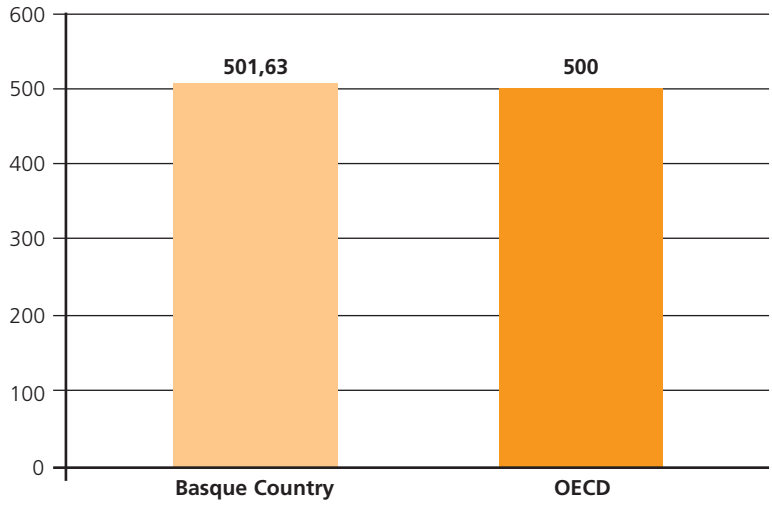
As shown in the graph below, mathematical literacy in the Basque Country does not show significant differences with respect to the average of OECD countries.

* This term, far from indicating a basic or very elementary level of skills, refers to the accumulated education that provides the person with sufficient knowledge in mathematics to be able to deal with real life.

Significance of the difference:

	Basque Country	OECD
Basque Country	=	=
OECD	=	=

Results in Mathematics PISA 2003



The following table shows the results obtained in Mathematics in all the participating countries and the relative position that each holds in accordance with the score obtained. It is ordered according to the scores obtained in Mathematics in descending order, starting with the country with the highest score, Hong Kong-China with 550 points, and ending with Brazil, with 356 points.

Average results in Mathematics by country

Country	Mathematics		
	Average	T.E.	Significance with OECD
Hong-Kong – China	550	(4.5)	↑
Finland	544	(1.9)	↑
Korea	542	(3.2)	↑
Holland	538	(3.1)	↑
Liechtenstein	536	(4.1)	↑
Japan	534	(4.0)	↑
Canada	532	(1.8)	↑
Belgium	529	(2.3)	↑
Macao – China	527	(2.9)	↑
Switzerland	527	(3.4)	↑
Australia	524	(2.1)	↑
New Zealand	523	(2.3)	↑
Czech Republic	516	(3.5)	↑
Iceland	515	(1.4)	↑
Denmark	514	(2.7)	↑
France	511	(2.5)	↑
Sweden	509	(2.6)	↑
Austria	506	(3.3)	
Germany	503	(3.3)	
Ireland	503	(2.4)	
Basque Country	502	(2.8)	
OECD average	500	(0.6)	
Slovak Republic	498	(3.3)	
Norway	495	(2.4)	↓
Luxembourg	493	(1.0)	↓
Poland	490	(2.5)	↓
Hungary	490	(2.8)	↓
Spain	485	(2.4)	↓
Latvia	483	(3.7)	↓
United States	483	(2.9)	↓
Russian Federation	468	(4.2)	↓
Portugal	466	(3.4)	↓
Italy	466	(3.1)	↓
Greece	445	(3.9)	↓
Serbia and Montenegro	437	(3.8)	↓
Turkey	423	(6.7)	↓
Uruguay	422	(3.3)	↓
Thailand	417	(3.0)	↓
Mexico	385	(3.6)	↓
Indonesia	360	(3.9)	↓
Tunisia	359	(2.5)	↓
Brazil	356	(4.8)	↓
United Kingdom*	508	(2.4)	

Differences significant at 95%:
↑: score significantly higher than the OECD average
↓: score significantly lower than the OECD average
A yellow background indicates significant difference with respect to Basque Country's average score

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

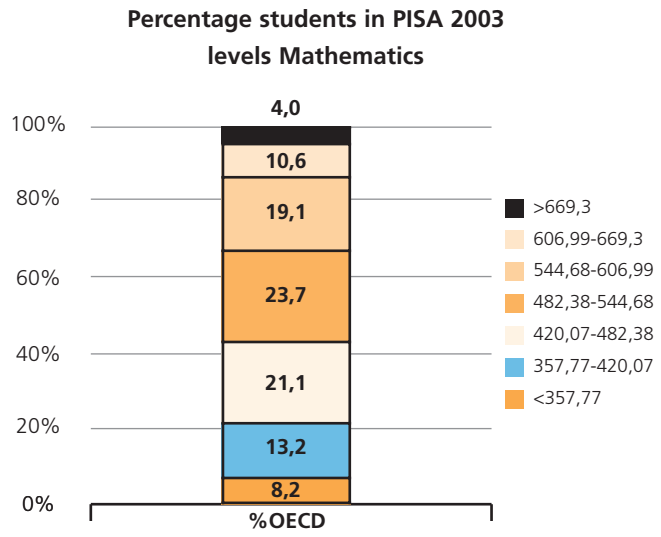
In this table, a white background shows countries that have the same average score as Basque country, there being no statistically significant differences among them. Yellow represents countries that have results significantly higher or lower than those of Basque country. The last column uses arrows to indicate whether the score of each country is significantly higher or lower than the OECD average.

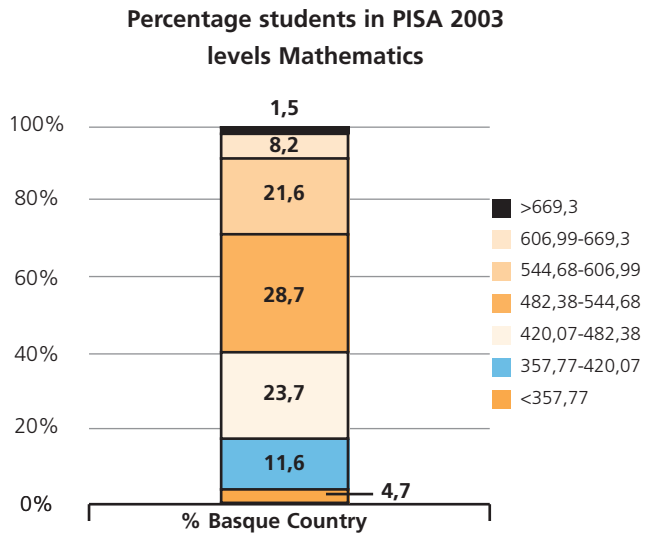
It can be observed that the 15-year-old students in the Basque Country reach the average of the OECD countries, and have a Mathematics score equal or similar to, for example, France, Sweden, Germany or Ireland. Thirteen of the participating countries (appearing over a yellow background) obtained scores that are significantly higher than those of the Basque Country, while 16 countries obtained scores significantly lower.

Results by performance level

The results have been grouped into different levels according to the scores obtained. The levels have been established in such a way that between one level and another there is a difference of 62 points. When a student is at a certain level it means that the student has a command of at least 62% of the items in that level as well as the vast majority of the items in the lower levels, and a command of a much lower percentage of items in higher levels. As for the OECD average and the average of the Basque Country, the distribution is as follows:

%	OECD accum. %	LEVEL	Scores	LEVEL	%	Basque Country accum. %
8,2	8,2	Lower than 1	**<357,77**	Lower than 1	4,7	4,7
13,2	21,4	1	**357,77-420,07**	1	11,6	16,3
21,1	42,5	2	**420,07-482,38**	2	23.7	40,1
23,7	66,2	3	**482,38-544,68**	3	28,7	68,7
19,1	85,3	4	**544,68-606,99**	4	21,6	90,3
10,6	96,0	5	**606,99-669,3**	5	8,2	98,5
4,0	100	6	**> 669,3**	6	1,5	100





A look at the data allows us to state that in the Basque Country most students are situated in the intermediate performance levels and very few students are situated at the extremes, with either a very low or a very high performance.

9.7% of the students of the Basque Country are situated in Levels 5 and 6 of Mathematics, the highest ones, while in the average of OECD countries, 14.6% of the students reach these levels.

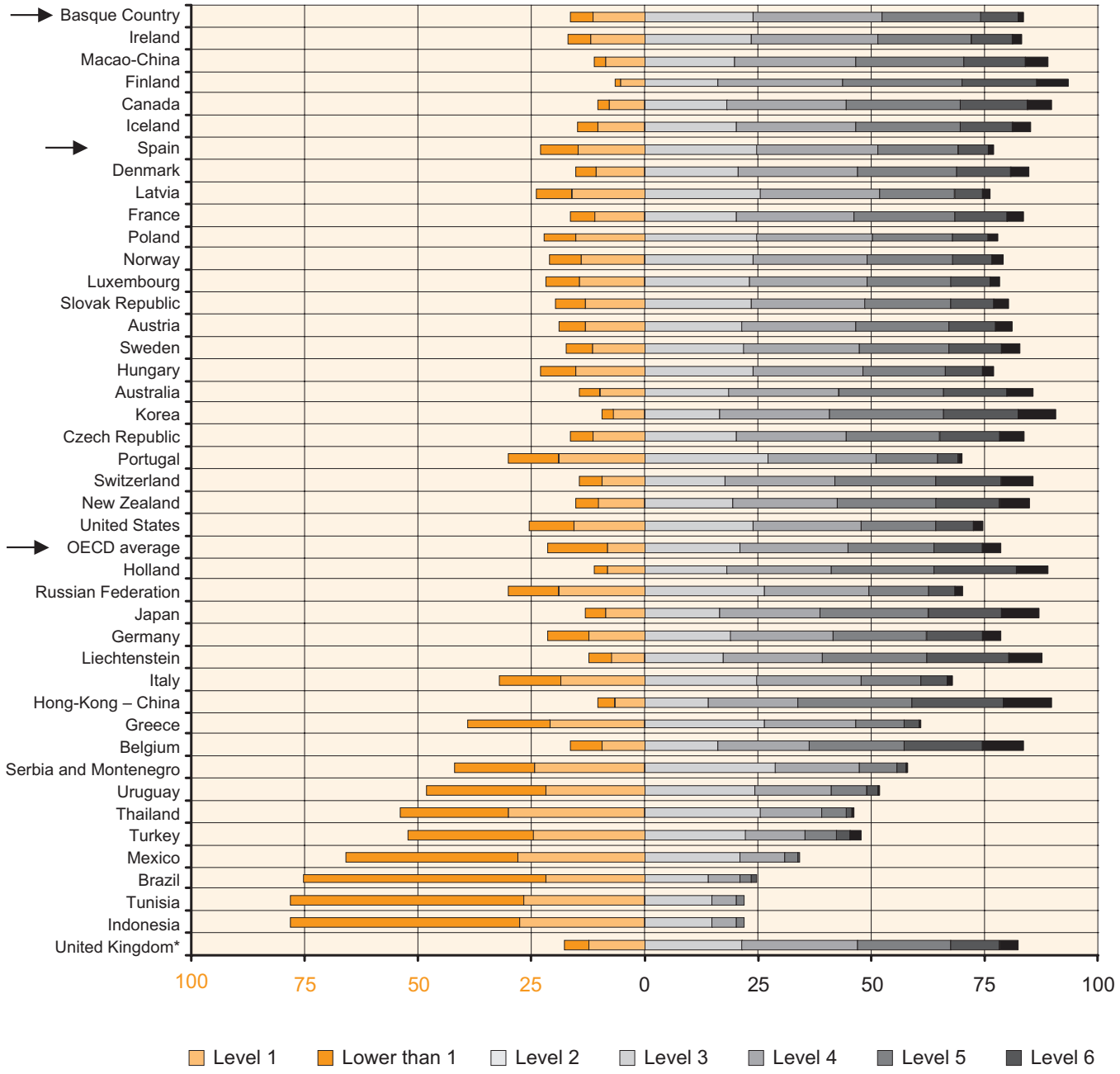
16.3% of the students of the Basque Country are situated in the lowest levels of Mathematics, Level 1 and Lower than 1. This percentage is clearly lower than that of the OECD average, where 21.4% of the students reach only the minimum levels of mathematical literacy.

The following graph shows how the students of the participating countries are distributed in the 6 levels of mathematical literacy. They have been grouped according to the percentage of students in the intermediate levels, combining Levels 2, 3 and 4, and putting them in order from highest to lowest. To the left of 0 are the lowest levels of each country, Level 1 and Lower than 1; to the right of 0 are the intermediate levels, 2, 3 and 4, and the highest levels, 5 and 6.

As shown, of all the countries it is the Basque Country that concentrates the highest percentage of students in the intermediate Levels 2, 3 and 4. Spain is the country with the seventh highest percentage of students in these intermediate levels.

Distribution of students by level: Mathematics

Ordered by percentage of students in Levels 2, 3 and 4



The following table shows all the participating countries listed in order according to the percentage of students assigned in each country to the intermediate level. Three levels have been created according to the percentage of boys and girls in each level: low levels (Lower than 1 and 1), middle levels (2, 3 and 4) and high levels (5 and 6).

As pointed out above, the Basque Country is the country with the most students concentrated in the middle levels. Next appears Ireland, which practically coincides with the Basque Country in the percentage of students in the low levels, while there is a difference of two points in the high levels, in favour of Ireland.

74% of 15-year-old Basque boys and girls are situated in the middle levels in Mathematics, a percentage which is clearly higher than the OECD average, where only 63.9% of the students reach the intermediate level. Spain has 69.1% of the students in that level.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

LEVELS	Levels 0 and 1	Levels 2, 3 and 4	Levels 5 and 6
Basque Country	16,3	74.0	9.7
Ireland	16.8	71.8	11.4
Macao-China	11.2	70.2	18.7
Finland	6.8	69.9	23.4
Canada	10.1	69.6	20.3
Iceland	15.0	69.5	15.5
Spain	23.0	69.1	7.9
Denmark	15.4	68.7	15.9
Latvia	23.7	68.3	8.0
France	16.6	68.3	15.1
Poland	22.0	67.9	10.1
Norway	20.8	67.8	11.4
Luxembourg	21.7	67.5	10.8
Slovak Republic	19.9	67.4	12.7
Austria	18.8	66.9	14.3
Sweden	17.3	66.9	15.8
Hungary	23.0	66.3	10.7
Australia	14.3	65.9	19.8
Korea	9.5	65.7	24.8
Czech Republic	16.6	65.2	18.3
Portugal	30.1	64.6	5.4
Switzerland	14.5	64.3	21.2
New Zealand	15.1	64.3	20.7
United States	25.7	64.2	10.1
OECD average	21.4	63.9	14.7
Holland	10.9	63.6	25.5
Russian Federation	30.2	62.7	7.0
Japan	13.3	62.4	24.3
Germany	21.6	62.2	16.2
Liechtenstein	12.3	62.1	25.6
Italy	31.9	61.0	7.0
Hong-Kong – China	10.4	58.9	30.7
Greece	38.9	57.1	4.0
Belgium	16.5	57.1	26.4
Serbia and Montenegro	42.1	55.6	2.3
Uruguay	48.1	49.1	2.8
Thailand	54.0	44.4	1.6
Turkey	52.2	42.3	5.5
Mexico	65.9	33.7	0.4
Brazil	75.2	23.6	1.2
Tunisia	78.0	21.8	0.2
Indonesia	78.1	21.6	0.2
United Kingdom*	17.8	67.4	14.9

Looking at the data regarding the Basque Country, it can be seen that a smaller percentage of students are grouped in the extremes, in comparison with the average of OECD countries.

Indeed, the low percentage of students in Levels 5 and 6 (only 9.7%) reveals an absence of excellence, which is more acute in Level 6, the level which requires the greatest mathematical capacities and corresponds to outstanding students or the academic elite. Only 1.5% of the students in the Basque Country reach this level, while in the OECD it is 4% of the students who achieve the highest level.

In the other extreme are the students with the lowest levels, Level 1 and Lower than 1. In the Basque Country, 16.3% of the students are in these levels, as opposed to 21.4% of the OECD average. Although this data is good overall if we compare it to the average of OECD countries, it is worrying that 4.7% of Basque students do not reach the lowest level and that 11.6% reach only Level 1.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

In light of these data, the educational system in the Basque Country can be said to be an equitable system in which a vast majority of students reach intermediate levels of mathematical literacy. This is no doubt one of the strengths of our system. However, it is also clear that the group of exceptional students, the ones that reach the highest levels, is small. In the bracket corresponding to the most successful students, the percentage is considerably lower in our case.

The fact that the Basque Country concentrates a high percentage of students in the intermediate levels characterises in a way the results in Mathematics and is an indicator that defines the Basque educational system.

Results by sex

The results in Mathematics by sex in the various countries are shown in the following table, in order from the greatest to smallest difference in results in favour of girls:

COUNTRY	Mathematics					
	Girls		Boys		Difference (b – g)[1]	
	Avg	T.E.	Avg	T.E.	Diff.	T.E.
Iceland	523	(2,2)	508	(2,3)	**-15**	(3,5)
Thailand	419	(3,4)	415	(4,0)	-4	(4,2)
Serbia and Montenegro	436	(4,5)	437	(4,2)	1	(4,4)
Basque Country	501	(3,1)	502	(3,9)	1	(4,1)
Latvia	482	(3,6)	485	(4,8)	3	(4,0)
Indonesia	358	(4,6)	362	(3,9)	3	(3,4)
Hong-Kong – China	548	(4,6)	552	(6,5)	4	(6,6)
Holland	535	(3,5)	540	(4,1)	5	(4,3)
Australia	522	(2,7)	527	(3,0)	5	(3,8)
Poland	487	(2,9)	493	(3,0)	6	(3,1)
Norway	492	(2,9)	498	(2,8)	6	(3,2)
United States	480	(3,2)	486	(3,3)	**6**	(2,9)
Sweden	506	(3,1)	512	(3,0)	**7**	(3,3)
Finland	541	(2,1)	548	(2,5)	**7**	(2,7)
Belgium	525	(3,2)	533	(3,4)	8	(4,8)
Austria	502	(4,0)	509	(4,0)	8	(4,4)
Hungary	486	(3,3)	494	(3,3)	**8**	(3,5)
Japan	530	(4,0)	539	(5,8)	8	(5,9)
France	507	(2,9)	515	(3,6)	**9**	(4,2)
Spain	481	(2,2)	490	(3,4)	**9**	(3,0)
Germany	499	(3,9)	508	(4,0)	**9**	(4,4)
Russian Federation	463	(4,2)	473	(5,3)	**10**	(4,4)
Mexico	380	(4,1)	391	(4,3)	**11**	(3,9)
OECD average	494	(0,8)	506	(0,8)	**11**	(0,8)
Canada	530	(1,9)	541	(2,1)	**11**	(2,1)
Uruguay	416	(3,8)	428	(4,0)	**12**	(4,2)
Tunisia	353	(2,9)	365	(2,7)	**12**	(2,5)
Portugal	460	(3,4)	472	(4,2)	**12**	(3,3)
New Zealand	516	(3,2)	531	(2,8)	**14**	(3,9)
Ireland	495	(3,4)	510	(3,0)	**15**	(4,2)
Czech Republic	509	(4,4)	524	(4,3)	**15**	(5,1)
Turkey	415	(6,7)	430	(7,9)	**15**	(6,2)
Brazil	348	(4,4)	365	(6,1)	**16**	(4,1)
Denmark	506	(3,0)	523	(3,4)	**17**	(3,2)
Switzerland	518	(3,6)	535	(4,7)	**17**	(4,9)
Luxembourg	485	(1,5)	502	(1,9)	**17**	(2,8)
Italy	457	(3,8)	475	(4,6)	**18**	(5,9)
Slovak Republic	489	(3,6)	507	(3,9)	**19**	(3,7)
Greece	436	(3,8)	455	(4,8)	**19**	(3,6)
Macao – China	517	(3,3)	538	(4,8)	**21**	(5,8)
Korea	528	(5,3)	552	(4,4)	**23**	(6,8)
Liechtenstein	521	(6,3)	550	(7,2)	**29**	(10,9)
United Kingdom*	505	(3,9)	512	(2,9)	7	(4,9)

1. Positive differences mean that the results of boys are better than those of girls. Negative differences indicate that girls show better results than boys. Statistically significant differences appear in bold.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

As shown, the Basque Country is one of the countries in which the difference between boys and girls in Mathematics is the smallest, there being only one point of difference, the same as in Serbia and Montenegro.

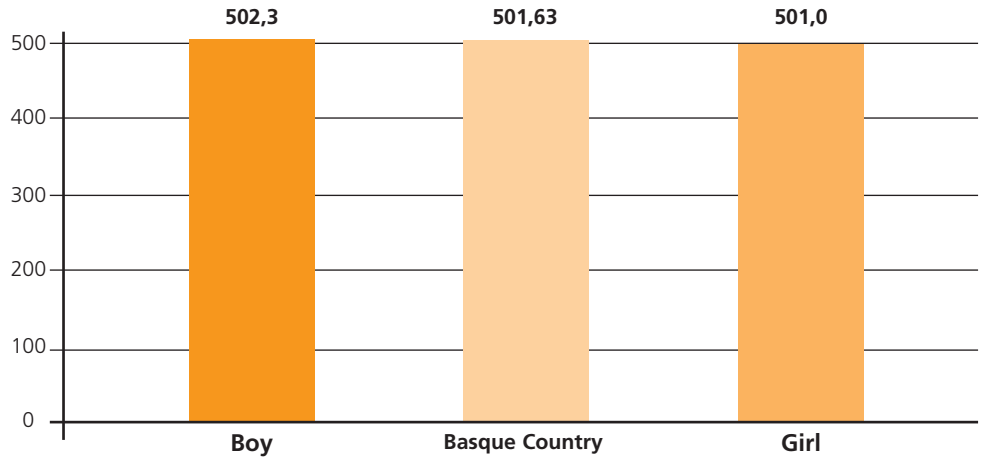
The data in Mathematics make it clear that in relation to the OECD countries, the differences between boys and girls are considerably smaller: in the average of OECD countries, boys surpass girls by 11 points, while in the Basque Country boys surpass girls by only one point.

The Basque Country occupies the fourth place in the countries with fewer differences between boys and girls in Mathematics results (in Iceland girls surpass boys by 15 points; in Thailand by 4 points and in Serbia and Montenegro, the same as in the Basque Country, boys surpass girls by 1 point).

The results obtained by girls and those obtained by boys in Basque Country have no significant differences compared to those of the average of OECD countries in these two groups.

With regard to the sex of the student, in the Basque Country there are no significant differences in Mathematics results, as both boys and girls have practically the same score (502-501 points).

Results Mathematics PISA 2003 by sex



Significance of the difference:

	Girl	Boy
Girl	=	=
Boy	=	=

Difference significant at 95%

In addition, it is interesting to analyse how the group of boys and girls is distributed according to the higher and lower scores obtained. To do so, based on the average overall score, three groups are created according to the score obtained:

- Less than 400 points: this would correspond to students with the lowest results in Mathematics, approximately Level 1 and Lower than 1.
- Between 400 and 600 points: this corresponds to students with medium results, approximately Levels 2, 3 and 4.
- More than 600 points: this corresponds to students with the best scores in Mathematics and coincides with the highest levels, 5 and 6.

The percentage of boys and girls in the Basque Country with these scores can be seen in the table below. The table shows that:

- If the results are compared with those of the OECD, the percentage of students in the lowest levels (lower than 400 points) is lower, for both girls and boys.
- In the bracket corresponding to the lowest scores in Mathematics, in the Basque Country the percentage of girls is lower than that of boys. That is, among the students with the worst results, there is a higher percentage of boys.
- The percentage of students in the Basque Country with scores higher than 600 is lower than the average of OECD countries, both for students in general and for both groups: boys and girls.
- In the level corresponding to the highest scores, the percentage of boys in the Basque Country is 4.6% higher than that of girls.

Percentage of students with a score of less than 400 points

	All	Girls	Boys
Basque Country	11,2%	9,4%	13,2%
OECD	16,2%	16,7%	15,8%

Percentage of students with a score of more than 600 points

All	Girls	Boys
11,6%	9,3%	13,9%
16,4%	14,1%	18,8%

The differences between the scores obtained by girls and boys are also quite marked in the other areas assessed by PISA –Reading, Sciences and Problem Solving. These differences are described in greater detail in the corresponding chapters.

This data suggests that research must be done to investigate the possible causes of the imbalance existing in the results obtained by boys and girls in the Basque Country in all the areas. Some possible lines of research into this matter would be the following:

Research: Possible causes explaining the differences in results between boys and girls

- Importance of the linguistic component of the items in the various areas of the PISA test and the influence that the large difference between boys and girls in reading skills may have on results.
- Effect of the different percentage of boys and girls who must repeat school years.

‹The ISEI-IVEI will carry out supplementary research aimed at explaining these results.

Results by educational level

The 15-year-old students in the Basque Country tend to be in the 4th year of ESO (Compulsory Secondary Education); however, those who have repeated a year or who started school late may be in the 2nd or 3rd year of ESO. Specifically, in the PISA Mathematics test the distribution of the sample was as follows:

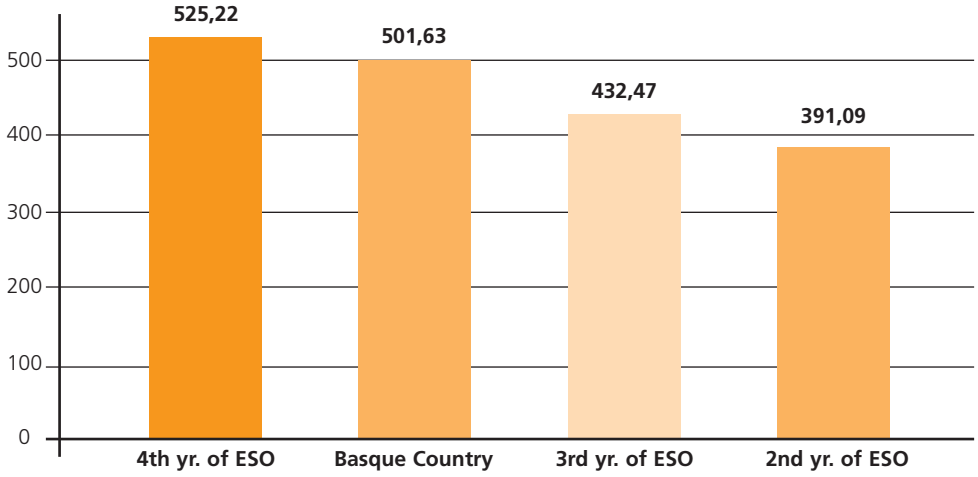
LEVEL	N	%	accum. %
1st yr. of ESO	2	0,1	0,1
2nd yr. of ESO	73	1,6	1,7
3rd yr. of ESO	882	22,0	23,7
4th yr. of ESO	2928	76,3	100,0

Most of the students who took the test are in the group corresponding with their age. 76.3% is in the 4th year of ESO, 22% is in the 3rd year of ESO and has repeated one school year, while 1.6% of the students are in the 2nd year of ESO, having repeated two school years. Finally, 0.1% (two 15-year-old students) are in the 1st year of ESO. This distribution is concordant with the data regarding repetition of years held by the Technical Inspection of Education Service.

The table appearing below shows the results in Mathematics obtained by the students in the 2nd, 3rd and 4th years of ESO.

	N	Average	Typical error	Standard Dev. (T.E.)
2nd yr. of ESO	73	391,09	11,35	75,50 (8,61)
3rd yr. of ESO	882	432,47	3,04	67,77 (1,91)
4th yr. of ESO	2928	525,22	2,65	72,00 (1,12)

Results Mathematics PISA 2003 by level



The data shows that the students in 4th year of ESO are those that obtain the best scores in Mathematics, surpassing the Basque Country average by 24 points. Next are those in the 3rd year of ESO, the group of students that has repeated one school year and those in the 2nd year of ESO, who have repeated two years and obtain the lowest results. These differences are significant in all cases: the students who are studying with their age group obtain significantly higher Mathematics scores than those who have repeated one or more years.

Significance of the difference:

	2nd yr. of ESO	3rd yr. of ESO	4th yr. of ESO
2nd yr. of ESO	=	↓	↓
3rd yr. of ESO	↑	=	↓
4th yr. of ESO	↑	↑	=

Difference significant at 95%

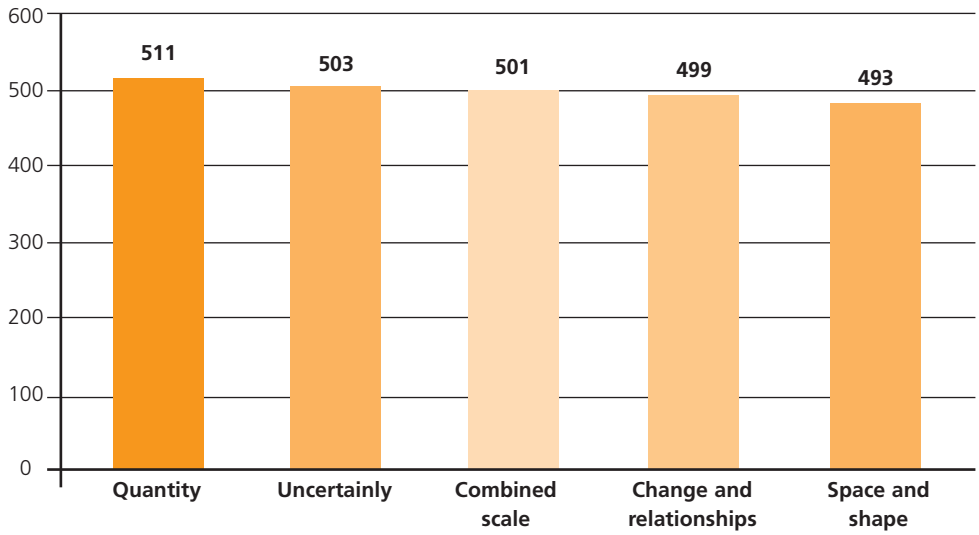
Results in each of the Mathematics subscales

In addition to analysing the general results in Mathematics, there is an analysis of the results obtained in the four subscales that comprise the test: quantity, space and shape, change and relationships and, lastly, uncertainty.

The best results are obtained in the subscale of Quantity with an average performance of 511.45 points. The results of the different subscales are shown below:

MATHEMATICS	Basque Country		
	Average	Typical error	Standard Dev. (T.E.)
Subscale of space and shape	493,02	2,46	82,00 (1,45)
Subscale of quantity	511,45	2,92	93,17 (1,27)
Subscale of changes and relationships	498,68	2,91	90,19 (1,26)
Subscale of uncertainty	502,55	2,94	84,26 (1,38)

Mathematics results by type of content PISA 2003



Comparing these results with the overall average obtained in Mathematics, the subscales of Quantity and Uncertainty obtained results higher than the average score (501.63 points), while the subscales of Change and Relationships and Space and Shape obtained scores slightly lower than the average.

Basque students obtain a score significantly higher in Quantity than they do in Change and Relationships and Space and Shape.

The following table shows the average results obtained in each subscale in the Basque Country and in the OECD countries.

MATHEMATICS	Basque Country		OECD	
	Average	Typical error	**Average**	Typical error
Subscale of space and shape	**493,02**	2,46	**496**	0,6
Subscale of quantity	**511,45**	2,92	**501**	0,6
Subscale of changes and relationships	**498,68**	2,91	**499**	0,7
Subscale of uncertainty	**502,55**	2,94	**502**	0,6

A comparison of these results reveals that:

- The highest results are obtained in the subscale Quantity, these being, in addition, significantly higher than those obtained in the same subscale in the average of OECD countries.

Significance of the difference:

Subscale of Quantity

	Basque Country	OECD
Basque Country	=	↑
OECD	↓	=

- In the subscale Space and Shape, which produced the lowest results, there are no significant differences with the average score of the OECD, even though such results are slightly lower.

Significance of the difference:

Subscale of Space and Shape

	Basque Country	OECD
Basque Country	=	=
OECD	=	=

- The scores that the Basque Country obtains in the subscale Changes and Relationships are the same as the average scores of the OECD, there being no significant differences.
- The same occurs in the subscale Uncertainty in which the results are the same as in the OECD.

Significance of the difference:

Subscale of Changes and Relationships

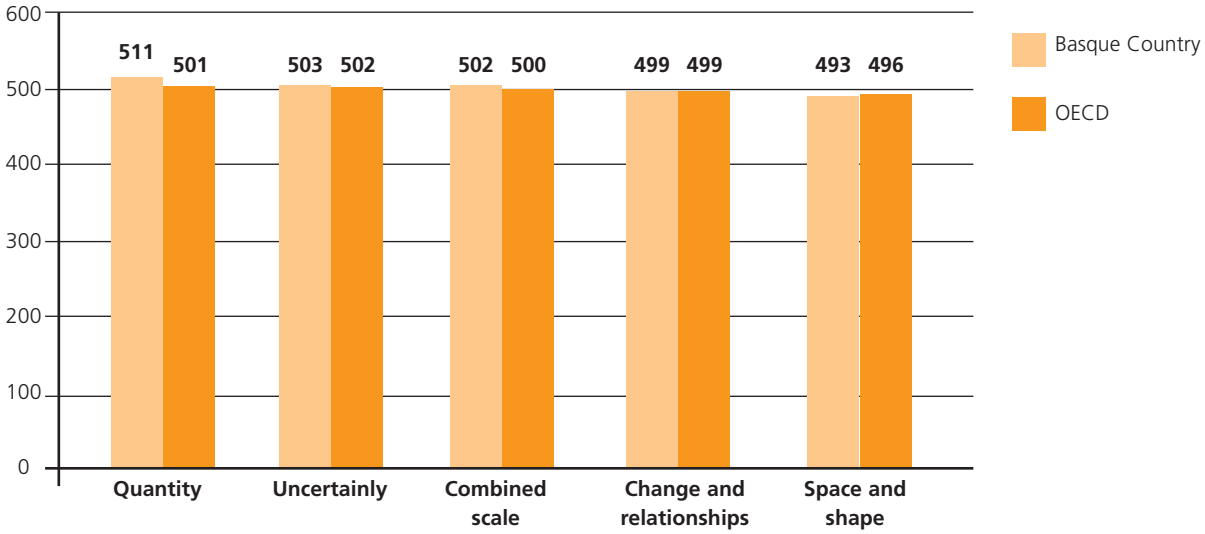
	Basque Country	OECD
Basque Country	=	=
OECD	=	=

Subscale of Uncertainty

	Basque Country	OECD
Basque Country	=	=
OECD	=	=

Difference significant at 95%

Results in Mathematics by type of content PISA 2003



Upon analysing the situation of the students of the Basque Country in these four subscales in relation to the rest of the participating countries, it can be seen that in all the subscales the results obtained do not offer significant differences with regard to the average of OECD countries.

The best results are those corresponding to the subscale Quantity in which only 10 countries obtain results significantly higher than those of the Basque Country.

The lowest score is in the subscale Space and Shape, related to the contents of Geometry, in which the Basque Country occupies a central position and 17 countries have significantly higher results.

Below the average score of each country is shown in the four subscales, along with the relative position occupied by each one of them. The countries appearing in white obtain the same average score as Basque country, there being no statistically significant differences between them. Yellow corresponds to the countries with scores that are significantly higher or lower than those of the Basque Country.

Performance in Space and Shape

Country	Mathematics	
	Space and Shape	
	Average	T.E.
Hong-Kong – China	558	(4,8)
Japan	553	(4,3)
Korea	552	(3,8)
Switzerland	540	(3,5)
Finland	539	(2,0)
Liechtenstein	538	(4,6)
Belgium	530	(2,3)
Macao – China	528	(3,3)
Czech Republic	527	(4,1)
Holland	526	(2,9)
New Zealand	525	(2,3)
Australia	521	(2,3)
Canada	518	(1,8)
Austria	515	(3,5)
Denmark	512	(2,8)
France	508	(3,0)
Slovak Republic	505	(4,0)
Iceland	504	(1,5)
Germany	500	(3,3)
Sweden	498	(2,6)
OECD average	496	-(0,6)
Basque Country	493	(2,5)
Poland	490	(2,7)
Luxembourg	488	(1,4)
Latvia	486	(4,0)
Norway	483	(2,5)
Hungary	479	(3,3)
Spain	476	(2,6)
Ireland	476	(2,4)
Russian Federation	474	(4,7)
United States	472	(2,8)
Italy	470	(3,1)
Portugal	450	(3,4)
Greece	437	(3,8)
Serbia and Montenegro	432	(3,9)
Thailand	424	(3,3)
Turkey	417	(6,3)
Uruguay	412	(3,0)
Mexico	382	(3,2)
Indonesia	361	(3,7)
Tunisia	359	(2,6)
Brazil	350	(4,1)
United Kingdom*	496	(2,5)

Performance in Change and Relationships

Country	Mathematics	
	Change and Relationships	
	Average	T.E.
Holland	551	(3,1)
Korea	548	(3,5)
Finland	543	(2,2)
Hong-Kong – China	540	(4,7)
Liechtenstein	540	(3,7)
Canada	537	(1,9)
Japan	536	(4,3)
Belgium	535	(2,4)
New Zealand	526	(2,4)
Australia	525	(2,3)
Switzerland	523	(3,7)
France	520	(2,6)
Macao – China	519	(3,5)
Czech Republic	515	(3,5)
Iceland	509	(1,4)
Denmark	509	(3,0)
Germany	507	(3,7)
Ireland	506	(2,4)
Sweden	505	(2,9)
Austria	500	(3,6)
OECD average	499	(0,7)
Basque Country	499	(2,9)
Hungary	495	(3,1)
Czech Republic	494	(3,5)
Norway	488	(2,6
Latvia	487	(4,4)
Luxembourg	487	(1,2)
United States	486	(3,0)
Poland	484	(2,7)
Spain	481	(2,8)
Russian Federation	477	(4,6)
Portugal	468	(4,0)
Italy	452	(3,2)
Greece	436	(4,3)
Turkey	423	(7,6)
Serbia and Montenegro	419	(4,0)
Uruguay	417	(3,6)
Thailand	405	(3,4)
Mexico	364	(4,1)
Tunisia	337	(2,8)
Indonesia	334	(4,6)
Brazil	333	(6,0)
United Kingdom*	513	(2,5)

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

Performance in Quantity

Country	Mathematics Quantity	
	Average	T.E.
Finland	549	(1,8)
Hong-Kong - China	545	(4,2)
Korea	537	(3,0)
Liechtenstein	534	(4,1)
Macao - China	533	(3,0)
Switzerland	533	(3,1)
Belgium	530	(2,3)
Holland	528	(3,1)
Canada	528	(1,8)
Czech Republic	528	(3,5)
Japan	527	(3,8)
Australia	517	(2,1)
Denmark	516	(2,6)
Germany	514	(3,4)
Switzerland	514	(2,5)
Iceland	513	(1,5)
Austria	513	(3,0)
Slovak Republic	513	(3,4)
Basque Country	511	(2,9)
New Zealand	511	(2,2)
France	507	(2,5)
Ireland	502	(2,5)
Luxembourg	501	(1,1)
OECD average	501	-(0,6)
Hungary	496	(2,7)
Norway	494	(2,2)
Spain	492	(2,5)
Poland	492	(2,5)
Latvia	482	(3,6)
EUnited States	476	(3,2)
Italy	475	(3,4)
Russian Federation	472	(4,0)
Portugal	465	(3,5)
Serbia and Montenegro	456	(3,8)
Greece	446	(4,0)
Uruguay	430	(3,2)
Thailand	415	(3,1)
Turkey	413	(6,8)
Mexico	394	(3,9)
Tunisia	364	(2,8)
Brazil	360	(5,0)
Indonesia	357	(4,3)
United Kingdom*	499	(2,5)

Performance in Uncertainty

Country	Mathematics Uncertainty	
	Average	T.E.
Hong-Kong – China	558	(4,6)
Holland	549	(3,0)
Finland	545	(2,1)
Canada	542	(1,8)
Korea	538	(3,0)
New Zealand	532	(2,3)
Macao – China	532	(3,2)
Australia	531	(2,2)
Japan	528	(3,9)
Iceland	528	(1,5)
Belgium	526	(2,2)
Liechtenstein	523	(3,7)
Ireland	517	(2,6)
Switzerland	517	(3,3)
Denmark	516	(2,8)
Norway	513	(2,6)
Sweden	511	(2,7)
France	506	(2,4)
Basque Country	502	(2,9)
OECD average	502	(0,6)
Czech Republic	500	(3,1)
Austria	494	(3,1)
Poland	494	(2,3)
Germany	493	(3,3)
Luxembourg	492	(1,1)
United States	491	(3,0)
Hungary	489	(2,6)
Spain	489	(2,4)
Slovak Republic	476	(3,2)
Latvia	474	(3,3)
Portugal	471	(3,4
Italy	463	(3,0)
Greece	458	(3,5)
Turkey	443	(6,2)
Russian Federation	436	(4,0)
Serbia and Montenegro	428	(3,5)
Thailand	423	(2,5)
Uruguay	419	(3,1)
Mexico	390	(3,3)
Indonesia	385	(2,9)
Brazil	377	(3,9)
Tunisia	363	(2,3)
United Kingdom*	520	(2,4)

Significance: 95%

White: no statistically significant differences with the score of the Basque Country

Yellow: scores significantly higher or lower than those of the Basque Country

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

The result obtained by boys and girls in the Basque Country in these four subscales, along with those of the OECD, are shown in the tables appearing below, in which the typical errors are shown in parentheses.

Score in Space and Shape

	Basque Country	OECD
Girls	490 (2,6)	488 (0,8
Boys	496 (3,5)	505 (0,8)
Difference	7 (3,8)	17

Score in Change and Relationships

	Basque Country	OECD
Girls	499 (3,3)	493 (1,4)
Boys	498 (4,1)	504 (0,8)
Difference	-1 (4,7)	11 (0,9)

Scores in Quantity

	Basque Country	OECD
Girls	512 (3,2)	498 (1,3)
Boys	511 (4)	504 (0,8)
Difference	-1 (4,3)	6 (0,8)

Scores in Uncertainty

	Basque Country	OECD
Girls	500 (3)	496 (0,8)
Boys	505 (4,1)	508 (0,7)
Difference	5 (4,1)	13 (0,8)

In all the subscales, the differences in the scores between boys and girls in the Basque Country are smaller than those existing in the OECD. That is, in all the subscales all Basque students obtain similar scores, with no differences as large as those found between boys and girls in the countries of the OECD.

Also, in the subscales Quantity and Change and Relationships, the scores obtained by girls in the Basque Country are slightly higher than those obtained by boys. The differences between them, however, are not significant.

CONCLUSIONS IN THE AREA OF MATHEMATICS

1. Overall performance in Mathematics of students in the Basque Country

a) The average performance in Mathematics of 15-year-old students in the Basque Country surpasses by one point the scores obtained in the group of OECD countries, although this difference is not significant.

b) The Basque Country, of all the participating countries, has the highest percentage of students with an intermediate level of performance in Mathematics.

- The Basque educational system concentrates the largest percentage of students in the intermediate levels, while in the extremes (the highest and lowest levels) it has smaller percentages of students than the average of OECD countries.
- If compared with the most successful countries in Mathematics, there is a very high percentage of students with medium results: however, there is a clearly lower percentage of high-level, excellent students, while the percentage of students with lower scores in Mathematics is greater than that of the countries in the academic elite.

c) The difference between boys and girls in performance in Mathematics is not significant.

- The difference in scores obtained in Mathematics by boys and girls is one of the smallest if compared with the other participating countries, as it is the country with the third smallest differences in results in this aspect.
- Boys in the Basque Country obtain a slightly higher score than girls, although this difference is considerably smaller than that found in most participating countries.
- The lowest and highest performance levels in Mathematics (Levels 1 and Lower than 1 and Levels 5 and 6) contain a greater percentage of boys than girls, while the largest percentage of girls is concentrated in the middle groups. In other words, among the highest and lowest results there is a greater percentage of boys than girls, while in the intermediate levels the number of girls surpasses that of boys.

d) The 15-year-old students who are in 4th year of ESO and therefore who have not repeated any school year obtain the best results, with scores significantly higher than those of 15-year-olds who are in other years of ESO.

2. Performance in each of the Mathematics subscales

a) The 15-year-old students in the Basque Country obtain the same or better results than those of the OECD countries in the four subscales.

b) The highest results are obtained in the subscale Quantity and they are significantly better than the OECD average.

c) The lowest results correspond to the subscale Space and Shape, but here there are no significant differences with respect to the OECD average.

d) In all the subscales, the differences in scores between boys and girls are smaller than those found in the OECD.

3. Reading

I. HOW READING IS DEFINED

Reading is the foundation of the learning that takes place inside and outside the classroom in most cultures. More precisely, generating the development of comprehensive reading skills in students is one of the pillars of the educational system. On top of this ability are built other types of knowledge that are more and more complex and abstract. Reading is thus the most important basic instrument which makes future learning possible.

In the PISA project, Reading is understood to be the following:

> The capacity to understand and interpret a wide variety of types of texts, relating them to the context of daily life (personal, public and occupational) in which they appear.

From this perspective, it is believed that the assessment should encompass all types of texts, based on an eclectic theoretical approach that attempts to cover the variability of texts appearing in school, social, public and occupational life.

II. RESULTS IN READING

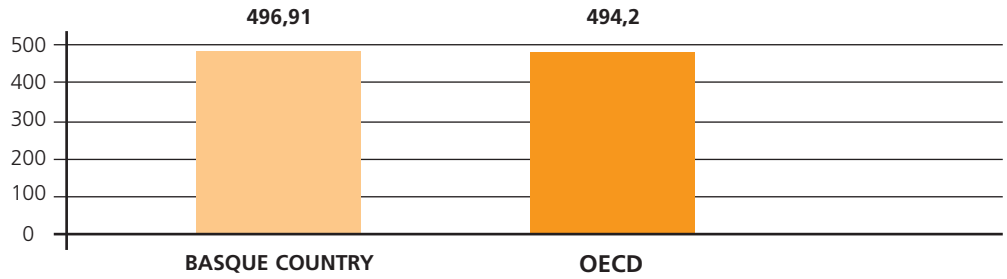
In the PISA 2000 assessment priority was given to analysis of the area of Reading. On this occasion, as indicated previously, Mathematics occupy the central area and 85 items deal with this subject area, while only 29 items of the test are devoted to Reading.

Overall results in Reading

The results of Basque students in comparison with those of the OECD are as follows:

Reading	N	Average	T.E.	Standard Dev. (T.E.)
BASQUE COUNTRY	3885	496,91	2,839	92,93 (1,40)
OECD	224094	494,20	0,6	99 (0,4)

Results in Reading PISA 2003



As seen in the table and graph, the Basque Country average is higher than that of the OECD countries considered as a whole. However, these differences are not significant.

	Basque Country	OECD
Basque Country	=	=
OECD	=	=

The chart is read from left to right

↑: Positive significant difference at 95%

↓: Negative significant difference at 95%

=: No significant difference at 95%

The following table illustrates the situation of the Basque Country in accordance with the results obtained, with respect to all the countries participating in this assessment.

Average results in Reading by country

Country	Average	Typical error	Significance with OECD
Finland	543	(1.6)	↑
Korea	534	(3.1)	↑
Canada	528	(1.7)	↑
Liechtenstein	525	(3.6)	↑
Australia	525	(2.1)	↑
New Zealand	522	(2.5)	↑
Ireland	515	(2.6)	↑
Sweden	514	(2.4)	↑
Holland	513	(2.9)	↑
Hong-Kong - China	510	(3.7)	↑
Belgium	507	(2.6)	↑
Norway	500	(2.8)	
Switzerland	499	(3.3)	
Japan	498	(3.9)	
Macao - China	498	(2.2)	
Basque Country	497	(2.9)	
Poland	497	(2.9)	
France	496	(2.7)	
United States	495	(3.2)	
OECD average	494	(0.6)	
Denmark	492	(2.8)	
Iceland	492	(1.6)	
Germany	491	(3.4)	
Austria	491	(3.8)	
Latvia	491	(3.7)	
Czech Republic	489	(3.5)	
Hungary	482	(2.5)	↓
Spain	481	(2.6)	↓
Luxembourg	479	(1.5)	↓
Portugal	478	(3.7)	↓
Italy	476	(3.0)	↓
Greece	472	(4.1)	↓
Slovak Republic	469	(3.1)	↓
Russian Federation	442	(3.9)	↓
Turkey	441	(5.8)	↓
Uruguay	434	(3.4)	↓
Thailand	420	(2.8)	↓
Serbia and Montenegro	412	(3.6)	↓
Brazil	403	(4.6)	↓
Mexico	400	(4.1)	↓
Indonesia	382	(3.4)	↓
Tunisia	375	(2.8)	↓
United Kingdom*	507	(2,5)	

Significance 95%
↑: score significantly higher than the OECD average
↓: score significantly lower than the OECD average
The colour yellow indicates significant difference with respect to the average score of Basque country.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

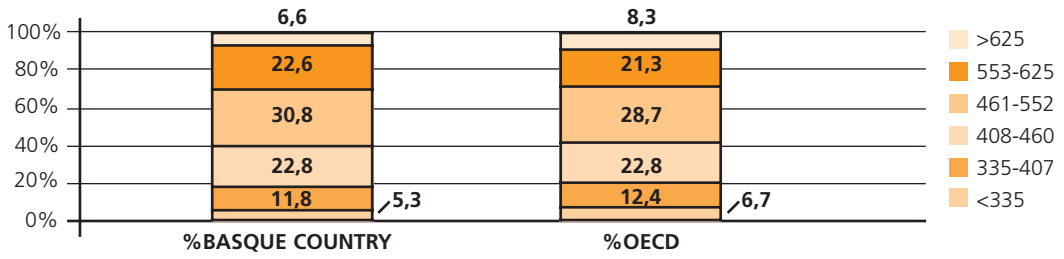
The information in this table is in order from highest to lowest score, but there are significant differences with Basque country only in the cases appearing on a yellow background. The last column shows the significance of the results in each country with respect to the OECD average.

Results by performance level

According to the scores obtained by level, the comparative data concerning the Basque Country and the average of OECD countries is as follows:

OECD		LEVEL	Scores	LEVEL	BASQUE COUNTRY	
%	accum. %				%	accum. %
6,7	6,7	Lower than 1	<334,8	Lower than 1	5,3	5,3
12,4	19,1	1	334,8-407,5	1	11,8	17,1
22,8	41,8	2	407,51-480,2	2	22,8	39,9
28,7	70,5	3	480,21-552,9	3	30,8	70,7
21,3	91,8	4	552,91-625,6	4	22,6	93,3
8,3	100	5	>625,6	5	6,6	100

Percentage students in levels PISA 2003



There are few students with very high or very low performances and the majority are situated in the intermediate performance levels.

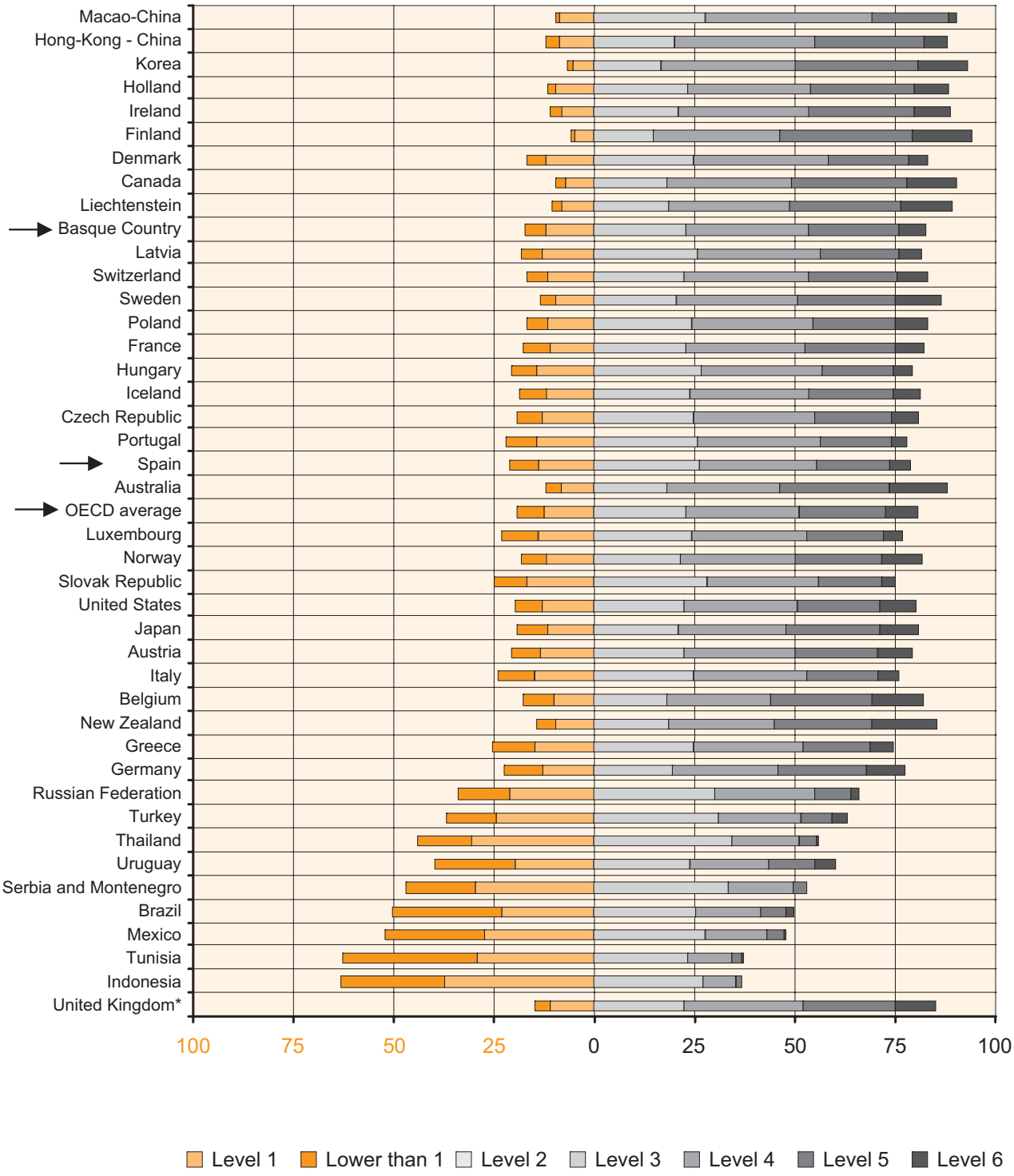
In Level 6 of Reading ability, the highest level, are 5.3% of the students of the Basque Country, compared to 8.3% of students of all the countries participating in the assessment.

In Levels 1 and Lower than 1, the lowest levels of reading performance, are 17.1% of the students, compared to 19.1% of the students of the OECD countries.

The following graph shows the distribution by level of the countries participating in PISA 2003, in order according to the percentage of students in the intermediate levels (2, 3 and 4), from greater to smaller. To the left of 0 are Levels 0 and 1 of each country.

Distribution of students by level: Reading

Ordered by percentage of students in Levels 2, 3 and 4



When the levels are grouped two by two and ordered according to the percentage concentrated in the intermediate levels, the situation of the different countries is that appearing in the following table.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

Percentage of students in order by reading levels grouped two by two

LEVELS	Levels 1 and lower than 1	Levels 2 and 3	Levels 4 and 5
Macao - China	9.7	69.2	21.1
Denmark	16.5	58.3	25.1
Hungary	20.5	57.0	22.5
Latvia	18.0	56.4	25.5
Portugal	21.9	56.4	21.7
Slovak Republic	24.9	56.1	19.0
Spain	21.1	55.7	23.2
Hong-Kong - China	12.0	55.1	32.8
Czech Republic	19.3	55.0	25.7
Russian Federation	34.0	54.9	11.1
Poland	16.8	54.5	28.7
Holland	11.5	54.1	34.4
Basque Country	17.1	53.6	29.3
Iceland	18.5	53.6	27.9
Ireland	11.0	53.5	35.4
Switzerland	16.7	53.5	29.8
Italy	23.9	53.2	23.0
Luxembourg	22.7	52.9	24.4
France	17.5	52.5	29.9
Greece	25.3	52.2	22.5
Turkey	36.8	51.8	11.5
OECD average	19.0	51.4	29.5
Thailand	44.0	51.4	4.6
Sweden	13.3	50.6	36.2
United States	19.4	50.5	30.1
Norway	18.1	50.4	31.5
Korea	6.8	50.3	42.9
Austria	20.7	50.0	29.3
Serbia and Montenegro (Ser.)	46.7	49.6	3.7
Canada	9.5	49.3	41.2
Liechtenstein	10.4	49.0	40.6
Japan	19.0	48.1	32.9
Australia	11.8	46.6	41.5
Finland	5.7	46.2	48.1
Germany	22.3	46.1	31.5
New Zealand	14.5	44.8	40.7
Belgium	17.9	44.2	38.0
Uruguay	39.8	43.7	16.5
Mexico	52.0	43.2	4.8
Brazil	50.0	41.8	8.2
Indonesia	63.3	35.5	1.2
Tunisia	62.7	34.6	2.7
United Kingdom*	14,9	52,3	32,8

As seen in the previous table, a comparison of the Basque Country and the OECD reveals that the percentage of students in the high levels is the same; in the middle levels the percentage is two points higher in our case, and in the lower levels the percentage of students is two points lower in the Basque Country. Spain has a greater percentage of students in the low levels and a lower percentage than the Basque Country in the high levels.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

Results by sex

The results in Reading by sex in the different participating countries, in order from greater to smaller difference in favour of girls, are as follows:

COUNTRY	Reading					
	Girls		Boys		Difference[1]	
	Average	T.E.	Average	T.E.	Diff.	Average
Iceland	522	(2,2)	464	(2,3)	**-58**	(3,5)
Norway	525	(3,4)	475	(3,4)	**-49**	(3,7)
Austria	514	(4,2)	467	(4,5)	**-47**	(5,2)
Basque Country	519	(2,9)	474	(4,2)	**-45**	(4,4)
Finland	565	(2,0)	521	(2,2)	**-44**	(2,7)
Serbia and Montenegro (Ser.)	433	(3,9)	390	(3,7)	**-43**	(3,9)
Thailand	439	(3,0)	396	(3,7)	**-43**	(4,1)
Germany	513	(3,9)	471	(4,2)	**-42**	(4,6)
Poland	516	(3,2)	477	(3,6)	**-40**	(3,7)
Italy	495	(3,4)	455	(5,1)	**-39**	(6,0)
Australia	545	(2,6)	506	(2,8)	**-39**	(3,6)
Uruguay	453	(3,7)	414	(4,5)	**-39**	(4,7)
Spain	500	(2,5)	461	(3,8)	**-39**	(3,9)
Latvia	509	(3,7)	470	(4,5)	**-39**	(4,2)
France	514	(3,2)	476	(3,8)	**-38**	(4,5)
Greece	490	(4,0)	453	(5,1)	**-37**	(4,1)
Belgium	526	(3,3)	489	(3,8)	**-37**	(5,1)
Sweden	533	(2,9)	496	(2,8)	**-37**	(3,2)
Portugal	495	(3,7)	459	(4,3)	**-36**	(3,3)
Switzerland	517	(3,1)	482	(4,4)	**-35**	(4,7)
Brazil	419	(4,1)	384	(5,8)	**-35**	(3,9)
OECD average	511	(0,7)	477	(0,7)	**-34**	(0,8)
Turkey	459	(6,1)	426	(6,8)	**-33**	(5,8)
Luxembourg	496	(1,8)	463	(2,6)	**-33**	(3,4)
Slovak Republic	486	(3,3)	453	(3,8)	**-33**	(3,5)
United States	511	(3,5)	479	(3,7)	**-32**	(3,3)
Hong-Kong - China	525	(3,5)	494	(5,3)	**-32**	(5,5)
Canada	546	(1,8)	514	(2,0)	**-32**	(2,0)
Czech Republic	504	(4,4)	473	(4,1)	**-31**	(4,9)
Hungary	498	(3,0)	467	(3,2)	**-31**	(3,8)
Ireland	530	(3,7)	501	(3,3)	**-29**	(4,6)
Russian Federation	456	(3,7)	428	(4,7)	**-29**	(3,9)
New Zealand	535	(3,3)	508	(3,1)	**-28**	(4,4)
Denmark	505	(3,0)	479	(3,3)	**-25**	(2,9)
Tunisia	387	(3,3)	362	(3,3)	**-25**	(3,6)
Indonesia	394	(3,9)	369	(3,4)	**-24**	(2,8)
Japan	509	(4,1)	487	(5,5)	**-22**	(5,4)
Mexico	410	(4,6)	389	(4,6)	**-21**	(4,4)
Korea	547	(4,3)	525	(3,7)	**-21**	(5,6)
Holland	524	(3,2)	503	(3,7)	**-21**	(3,9)
Liechtenstein	534	(6,5)	517	(7,2)	**-17**	(11,9)
Macao - China	504	(2,8)	491	(3,6)	**-13**	(4,8)
United Kingdom*	520	(3,6)	492	(3,1)	**-29**	(4,8)

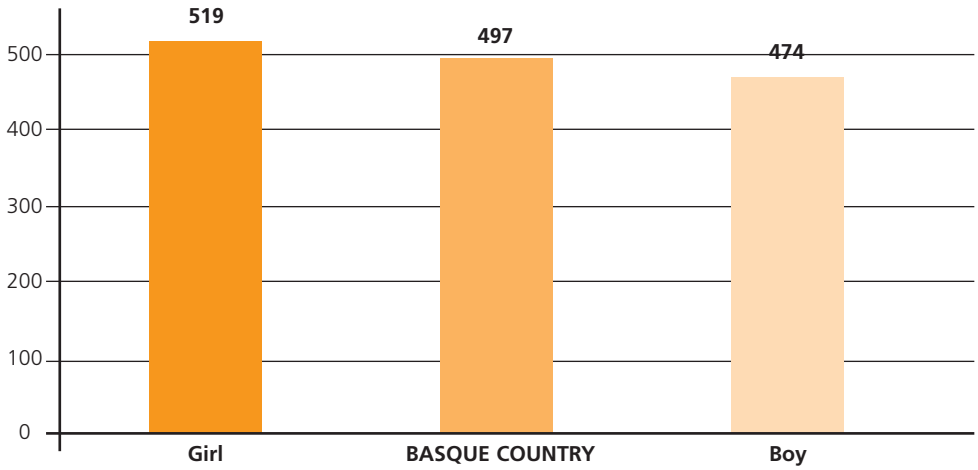
Positive differences mean that the results of boys are better than those of girls. Negative differences indicate that girls show better results than boys. Statistically significant differences appear in bold.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

In the Basque Country, girls show better performance in Reading than boys. This is true in all counties in the PISA 2003 assessment. Girls in the Basque Country reach, on average, a score 45 points higher than boys, this being the fourth largest difference in favour of girls in the entire PISA 2003 assessment. The difference in averages between boys and girls of the OECD is 34 points and Basque country is situated 11 points above this score.

When this comparison is made by sex, the differences are smaller. Girls in Basque country are situated 8 points above the OECD average, this difference being significant, whereas boys are 3 points below those of the OECD, but this difference is not significant.

Results in Reading PISA 2003 by sex



The differences in results between boys and girls in Basque country are significant.

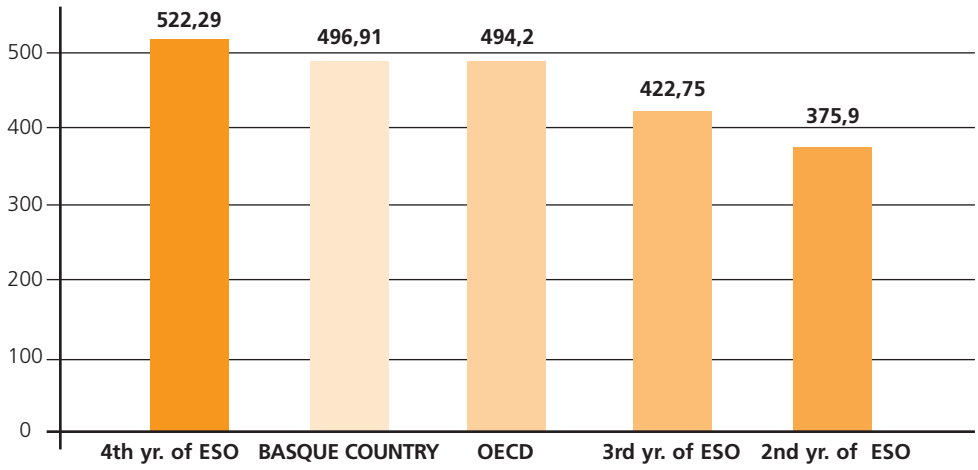
	Girl	Boy
Girl	=	↑
Boy	↓	=

Results by educational level

Although most 15-year-old students are in the 4th year of ESO (Compulsory Secondary Education), some students are in other years. The results of each level of ESO appear below (students in the first year of ESO have not been taken into consideration):

Level	N	Average	E.T.	Standard Dev. (T.E.)
2nd yr. of ESO	73	**375,90**	13,51	98,23 (9,59)
3rd yr. of ESO	882	**422,75**	3,83	84,48 (3,27)
4th yr. of ESO	2928	**522,29**	2,62	79,96 (1,33)

Results in Reading PISA 2003 by level



Only students in the 4th year of ESO are above the average of the Basque Country and the OECD. This result might reflect the influence of the curriculum followed in the 4th year to which students in lower levels have not yet had access. As shown in the table below, these differences are significant in the case of 4th year compared to 3rd and 2nd years, and in the case of 3rd year compared to 2nd year of ESO.

	2nd yr. of ESO	3rd yr. of ESO	4th yr. of ESO
2nd yr. of ESO	=	↓	↓
3rd yr. of ESO	↑	=	↓
4th yr. of ESO	↑	↑	=

CONCLUSIONS IN THE AREA OF READING

- The average obtained in Reading by students in the Basque Country is higher than those of Spain and the OECD. However, the difference is significant only with regard to Spain.
- The average obtained by students in the Basque Country places it in the 16th position among all participating countries. The difference, however, is only significantly lower than nine of them.
- In the Basque Country, the percentage of students in the low and high levels (Lower than 1 and 5) is very low. The greatest percentage is found in the intermediate levels (2 and 3).
- Compared to the OECD, the percentage of Basque students in the lowest levels (Lower than 1 and 1) is 2% lower. The percentage in the intermediate levels (2 and 3) is two points above the OECD. In the highest levels (4 and 5) there is no difference in the percentages of the Basque Country and the OECD population.
- In all the OECD countries, the results attained by girls in Reading are higher than those attained by boys. In the Basque Country the difference between the sexes is the fourth highest among the participating countries. Further research is necessary to analyse the causes of such difference.
- The year of ESO the student is in has a significant effect in the results. Only students in 4th year are above the overall average of the Basque Country and the OECD. In addition to the circumstances contributing to the repetition of a school year, the curriculum not yet studied might also have an effect.

4. Sciences

I. - HOW SCIENCES ARE DEFINED

The PISA project considers scientific literacy to be a key objective in the education of 15-year-old students, regardless of whether they continue scientific learning in the future. Basic knowledge in sciences is related to the ability to think scientifically in a world in which science and technology play an important role in our lives.

The essential part of scientific learning by students, in the PISA framework, is to know about science and acquire the ability to focus on and think scientifically about facts and evidence found in everyday life.

PISA defines an aptitude for Sciences as follows:

> The capacity to use scientific knowledge, to identify questions and to draw evidence-based conclusions, in order to understand and help make decisions about the natural world and the changes made to it through human activity.

Behind this definition is the belief that scientific knowledge is necessary for all citizens, not just for those persons who work in the world of science. Just as in the past it was commonly accepted that skills in reading and mathematics were the ones needed by adults in the different contexts of life, nowadays a basic knowledge of science is also considered to be a general competency necessary in life. This fact reflects the growing importance of scientific and technological concepts in our time and the very significant role they will play in life in the 21st century.

II. RESULTS IN SCIENCES

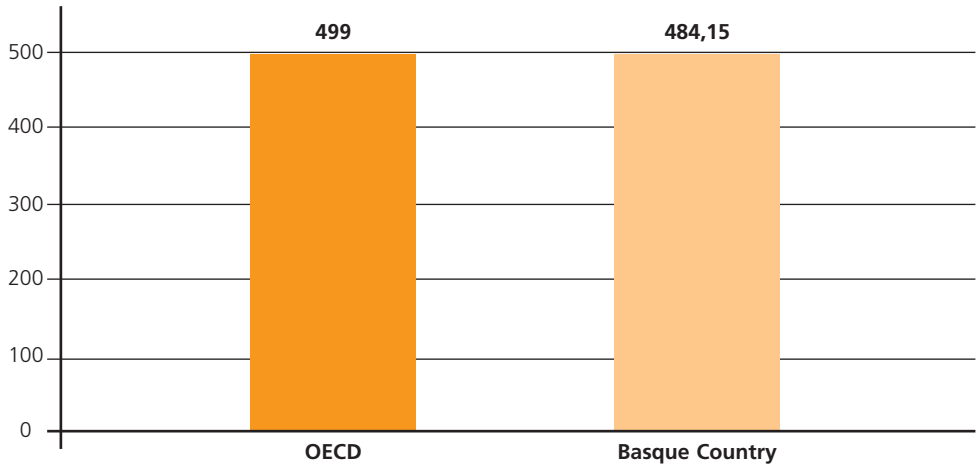
As previously mentioned, compared to the 85 items in Mathematics, the primary area in this assessment, knowledge in Sciences was assessed through 35 specific items.

Overall results in Sciences

The data concerning Basque students in comparison with those of the OECD are as follows:

SCIENCES	N	Average	Typical error	Standard Dev. (T.E.)
Basque Country	3885	**484,15**	2,92	94,72 (1,32)
OECD	224094	**499,61**	0,60	105,46 (0,4)

Results in Sciences PISA 2003



As illustrated by the graph, the average score in Sciences in the Basque Country is lower than that of the OECD and the differences are statistically significant.

Significance of the difference:

	Basque Country	OECD
Basque Country	=	↓
OECD	↑	=

Significant difference at 95%:
↑ Positive significant statistical difference
↓ Negative significant statistical difference
= No significant statistical differences

The table below shows the position of the Basque Country in relation to the countries that took part in this assessment, according to the results obtained in Sciences. The countries are in order according to their score, from highest to lowest, starting with Finland, with 548 points, the country with the highest score in Sciences.

In this table, a white background indicates countries with an average score similar to or equal to that of Basque country, with no statistically significant differences among them. Yellow represents countries that have results significantly higher or lower than those of Basque country.

The last column in the table uses arrows to indicate whether the score of each country in relation to the average of the participating countries is significantly higher or lower than the OECD average.

The Basque Country is in the 29th position. Eighteen countries obtain significantly higher results, while nine of them obtain scores significantly lower (appearing on a yellow background). The students of the Basque Country obtain a score equal or similar to 13 other countries, among them the U.S., Spain, Denmark or Italy.

Average results in Sciences by country

Country	Average	T.E.	Significance with OECD
Finland	548	(1.9)	↑
Japan	548	(4.1)	↑
Hong-Kong - China	539	(4.3)	↑
Korea	538	(3.5)	↑
Liechtenstein	525	(4.3)	↑
Australia	525	(2.1)	↑
Macao - China	525	(3.0)	↑
Holland	524	(3.1)	↑
Czech Republic	523	(3.4)	↑
New Zealand	521	(2.4)	↑
Canada	519	(2.0)	↑
Switzerland	513	(3.7)	↑
France	511	(3.0)	↑
Belgium	509	(2.5)	↑
Sweden	506	(2.7)	↑
Ireland	505	(2.7)	↑
Hungary	503	(2.8)	
Germany	502	(3.6)	
OECD average	500	(0.6)	
Poland	498	(2.9)	
Slovak Republic	495	-3,7	
Iceland	495	-1,5	↓
United States	491	(3.1)	↓
Austria	491	(3.4)	↓
Latvia	489	(3.9)	↓
Russian Federation	489	(4.1)	↓
Spain	487	(2.6)	↓
Italy	486	(3.1)	↓
Norway	484	(2.9)	↓
Basque Country	484	(3.1)	↓
Luxembourg	483	(1.5)	↓
Greece	481	(3.8)	ê
Denmark	475	(3.0)	↓
Portugal	468	(3.5)	↓
Uruguay	438	(2.9)	↓
Serbia and Montenegro	436	(3.5)	↓
Turkey	434	(5.9)	↓
Thailand	429	(2.7)	↓
Mexico	405	(3.5)	↓
Indonesia	395	(3.2)	↓
Brazil	390	(4.3)	↓
Tunisia	385	(2.6)	↓
United Kingdom*	518	(2.5)	

Differences significant at 95%:
↑ score significantly higher than the OECD average
↓ score significantly lower than the OECD average
The colour yellow indicates a significant difference with respect to Basque country's average score.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

Results by sex

The results obtained by boys and girls in Sciences in the various countries participating in the PISA 2003 assessment are shown in the following table. They are ordered according to the difference in scores, from greater to smaller difference of the girls as compared to boys.

COUNTRY	Sciences					
	Girls		Boys		Difference (b - g)[1]	
	Average	T.E.	Average	T.E.	Diff.	T.E.
Iceland	500	(2,4)	490	(2,4)	**-10**	(3,8)
Tunisia	390	(3,0)	380	(2,7)	**-10**	(2,6)
Thailand	433	(3,1)	425	(3,7)	-8	(4,2)
Basque Country	487	(3,2)	481	(4,4)	-6	(4,6)
Finland	551	(2,2)	545	(2,6)	-6	(2,8)
Serbia and Montenegro	439	(4,2)	434	(3,7)	-5	(3,8)
Latvia	491	(3,9)	487	(5,1)	-4	(4,7)
Hong-Kong - China	541	(4,2)	538	(6,1)	-3	(6,0)
Austria	492	(4,2)	490	(4,3)	-3	(5,0)
Hungary	504	(3,3)	503	(3,3)	-1	(3,7)
Australia	525	(2,8)	525	(2,9)	0	(3,8)
France	511	(3,5)	511	(4,1)	0	(4,8)
Belgium	509	(3,5)	509	(3,6)	0	(5,0)
Turkey	434	(6,4)	434	(6,7)	0	(5,8)
Indonesia	394	(3,8)	396	(3,1)	1	(2,7)
Norway	483	(3,3)	485	(3,5)	2	(3,6)
Ireland	504	(3,9)	506	(3,1)	2	(4,5)
Spain	485	(2,6)	489	(3,9)	4	(3,9)
Uruguay	436	(3,6)	441	(3,7)	4	(4,4)
Japan	546	(4,1)	550	(6,0)	4	(6,0)
Sweden	504	(3,5)	509	(3,1)	5	(3,6)
United States	489	(3,5)	494	(3,5)	5	(3,3)
Holland	522	(3,6)	527	(4,2)	5	(4,7)
Czech Republic	520	(4,1)	526	(4,3)	6	(4,9)
Germany	500	(4,2)	506	(4,5)	6	(4,8)
OECD average	497	(0,8)	503	(0,7)	6	(0,9)
Brazil	387	(4,3)	393	(5,3)	6	(3,9)
Italy	484	(3,6)	490	(5,2)	6	(6,3)
Portugal	465	(3,6)	471	(4,0)	6	(3,2)
Poland	494	(3,4)	501	(3,2)	**7**	(3,3)
Macao - China	521	(4,0)	529	(5,0)	**8**	(6,8)
Russian Federation	485	(4,0)	494	(5,3)	**9**	(4,3)
Mexico	400	(4,2)	410	(3,9)	**9**	(4,1)
Switzerland	508	(3,9)	518	(5,0)	**10**	(5,0)
Canada	516	(2,2)	527	(2,3)	**11**	(2,6)
Greece	475	(3,9)	487	(4,8)	**12**	(4,2)
Luxembourg	477	(1,9)	489	(2,5)	**13**	(3,3)
Slovak Republic	487	(3,9)	502	(4,3)	**15**	(3,7)
New Zealand	513	(3,4)	529	(3,0)	**16**	(4,2)
Denmark	467	(3,2)	484	(3,6)	**17**	(3,2)
Korea	527	(5,5)	546	(4,7)	**18**	(7,0)
Liechtenstein	512	(7,3)	538	(7,7)	**26**	(12,5)
United Kingdom*	517	(4,0)	520	(3,1)	**3**	(5,2)

1. Positive differences mean that the results of boys are better than those of girls. Negative differences indicate that girls show better results than boys. Statistically significant differences appear in bold.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

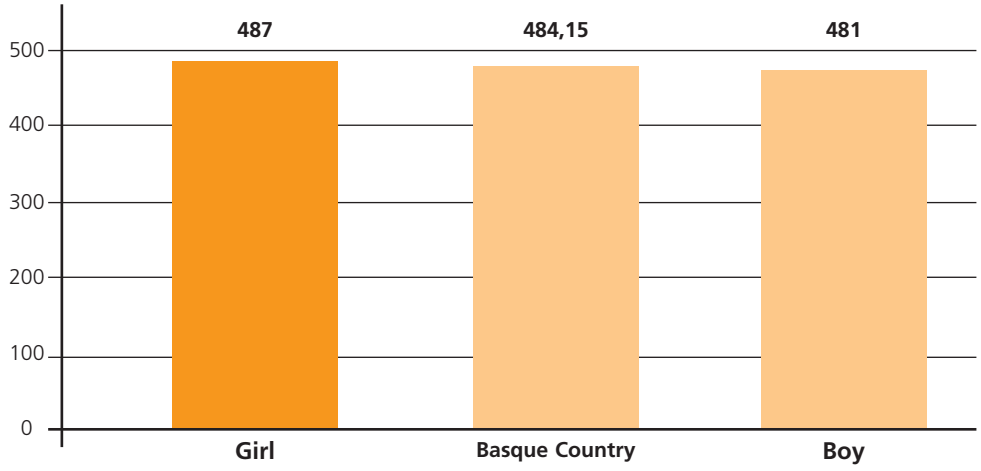
In the Basque Country, girls show better performance in Sciences than boys do. This is true in 10 of the forty-two countries that participated in the PISA 2003 assessment. Basque girls attain, on average, a score 6 points higher than that of boys. This represents the fourth largest difference in favour of girls.

The difference between the scores of girls and boys in OECD countries is also 6 points but here it is the other way around; the boys' score is higher. In Spain, there is a difference of 4 points in favour of boys.

When we compare the results of the Basque Country to those of the OECD according to the sex of the student, girls in Basque country are 10 points below the girls in the OECD. Boys in Basque country are 22 points below boys in the OECD. In both cases the differences are significant.

Comparing the results obtained in Sciences by boys and girls in the Basque Country, we see that the differences between them are not significant.

Results in Sciences PISA 2003



Significance of the difference:

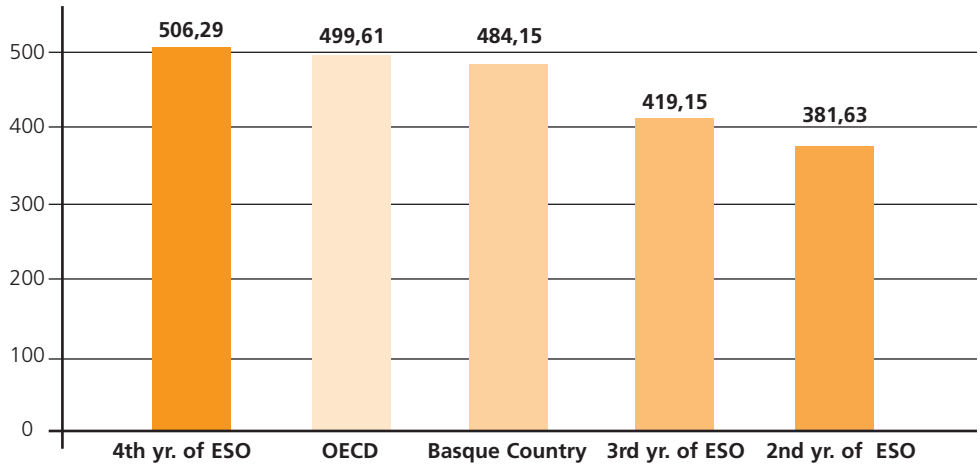
	Girl	Boy
Girl	=	=
Boy	=	=

Results by educational level

Although most 15-year-old students are in the 4th year of ESO (Compulsory Secondary Education), there are students of this age in other educational levels. The results of each level of ESO appear below (students in the first year of ESO have not been taken into consideration):

	N	Average	Typical error	Standard Dev. (T.E.)
2nd yr. of ESO	73	381,63	15,66	93,91 (8,82)
3rd yr. of ESO	882	419,15	3,65	82,52 (2,39)
4th yr. of ESO	2928	506,29	3,02	87,18 (1,70)

Results in Sciences PISA 2003



Only students in the 4th year of ESO are above the average of the Basque Country and the OECD. This result might reflect the influence of the curriculum followed in the 4th year to which students in lower levels have not yet had access.

These differences are significant, as can be seen in the table: students in the 4th year of ESO obtain significantly higher scores in Sciences than students in the 2nd and 3rd years of ESO, and the students in the 3rd year of ESO obtain higher results than students in the 2nd year of ESO.

	2nd yr. of ESO	3rd yr. of ESO	4th yr. of ESO
2nd yr. of ESO	=	↓	↓
3rd yr. of ESO	↑	=	↓
4th yr. of ESO	↑	↑	=

CONCLUSIONS IN THE AREA OF SCIENCES

- The average score obtained in Sciences by students in the Basque Country is lower than the average of the OECD and that of Spain. The difference is significant in the case of the OECD but not in the case of Spain.
- The average score obtained by students in the Basque Country places it in the 29th position with respect to the countries participating in PISA 2003. The score is significantly lower than those of eighteen participating countries. Nine countries have results significantly lower than those of the Basque Country.
- In 10 of the forty-two participating countries, the results attained by girls are higher than those attained by boys. In the Basque Country, the girls' results in Sciences are 6 points higher than the boys' results, although this difference is not significant.
- The scores obtained in Sciences by boys and girls in the Basque Country are significantly lower than those obtained by boys and girls in the OECD, but the difference is much greater in the case of the boys than in the case of the girls.
- The year of ESO the student is in has a significant effect on the results. Only the students in the 4th year are above the overall average of the Basque Country and the OECD average. In addition to the circumstances contributing to the repetition of a school year, the curriculum not yet studied might also have an effect.

Because of the low scores obtained in Sciences, it would be interesting to analyse the situation in greater detail, in order to discover the factors that may be affecting the low performance in scientific knowledge and to identify possible causes and viable corrective measures that could be established in the future.

On this matter, the analysis of the data available at this time suggests certain lines of research, such as the ones set forth below.

Research: Identification of factors that may affect results in Sciences

- Check the real number of hours that schools devote to the teaching of sciences in the Basque Country, both at Primary and at Secondary levels, and examine the influence that this variable may have on the results
- Check that the methodology used and other variables related to the teaching of sciences, both at Primary and at Secondary levels, are suitable and respond to the types of conceptual contents and procedures that PISA 2003 tries to evaluate.

*The ISEI-IVEI will carry out supplementary research aimed at explaining these results.

5. Problem Solving

I. HOW PROBLEM SOLVING IS DEFINED

Problem Solving constitutes one of the main objectives of schooling programmes in all countries.

Teachers are especially interested in seeing that students develop the competencies necessary to solve problems in day-to-day situations. This involves: understanding a certain situation, identifying the main aspects and their interrelations, building or applying an external representation, solving and evaluating the problem, and, finally, justifying and communicating the solutions.

Problem Solving processes, when conceived in this manner, are cross-curricular, in that they are found in Mathematics, Natural Sciences, Social Sciences, Art, and other subject areas. Problem Solving creates a base for future learning, for active participation in society and for success in one's personal activities.

Although problem solving is a human activity that is continually present, developing a framework that takes into account its principal components and the implementations of measures to achieve optimal student performance is not easy. Some authors point out the absence of an appropriate, broadly-accepted definition of what Problem Solving means.

The definition proposed by PISA is the following:

> Problem Solving is an individual's capacity to use cognitive processes to confront and resolve cross-disciplinary situations where the solution path is not immediately obvious and where the knowledge that might be applicable is not found within a single domain of Mathematics, Sciences or Reading.

II. RESULTS IN PROBLEM SOLVING

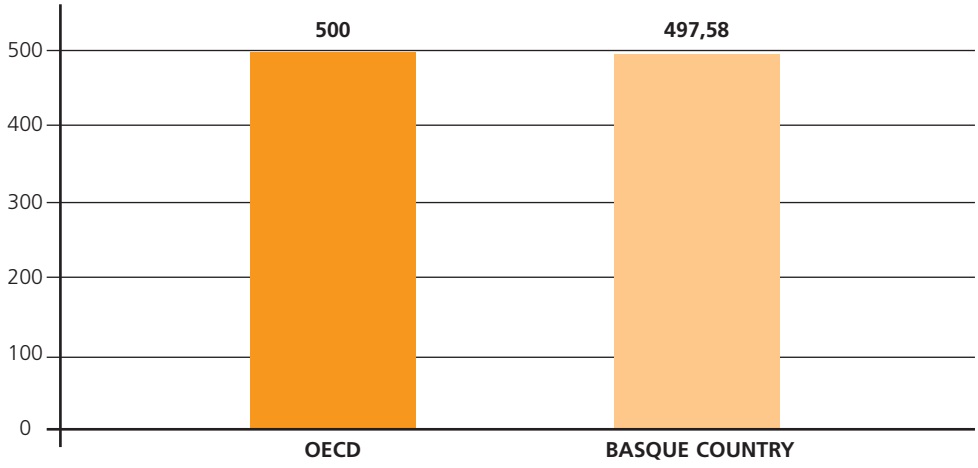
In PISA 2003, compared to 85 Mathematics items (priority area), Problem Solving is assessed through 19 specific items.

Overall results in Problem Solving

The results of Basque students in comparison with those of the OECD are as follows:

Problem Solving	N	Average	T.E.	Standard Dev. (T.E.)
BASQUE COUNTRY	3885	497,58	2,80	89,29 (1,38)
OECD	224094	500	0,65	100 (0,4)

Results in Problem Solving PISA 2003



As seen in the table and graph, the Basque Country average is somewhat lower than that of OECD countries, but the difference is not significant.

	Basque Country	OECD
Basque Country	=	=
OECD	=	=

The chart is read from left to right
↑: Positive significant difference at 95%
↓: Negative significant difference at 95%
=: No significant difference at 95%

Average results in Problem Solving by country

Country	Problem Solving		
	Average	T.E.	Significance with OECD
Korea	550	(3.1)	↑
Hong-Kong - China	548	(4.2)	↑
Finland	548	(1.9	↑
Japan	547	(4.1)	↑
New Zealand	533	(2.2)	↑
Macao - China	532	(2.5)	↑
Australia	530	(2.0)	↑
Liechtenstein	529	(3.9)	↑
Canada	529	(1.7)	↑
Belgium	525	(2.2)	↑
Switzerland	521	(3.0)	↑
Holland	520	(3.0)	↑
France	519	(2.7)	↑
Denmark	517	(2.5)	↑
Czech Republic	516	(3.4)	↑
Germany	513	(3.2)	↑
Sweden	509	(2.4)	↑
Austria	506	(3.2)	
Iceland	505	(1.4)	↑
Hungary	501	(2.9)	
OECD average	500	(0.6)	
Ireland	498	(2.3)	
Basque Country	498	(2.8)	
Luxembourg	494	(1.4)	↓
Slovak Republic	492	(3.4)	↓
Norway	490	(2.6)	↓
Poland	487	(2.8)	↓
Latvia	483	(3.9)	↓
Spain	482	(2.7)	↓
Russian Federation	479	(4.6)	↓
United States	477	(3.1)	↓
Portugal	470	(3.9)	↓
Italy	470	(3.1)	↓
Greece	449	(4.0)	↓
Thailand	425	(2.7)	↓
Serbia and Montenegro	420	(3.3)	↓
Uruguay	411	(3.7)	↓
Turkey	408	(6.0)	↓
Mexico	384	(4.3)	↓
Brazil	371	(4.8)	↓
Indonesia	361	(3.3	↓
Tunisia	345	(2.1)	↓
United Kingdom*	510	(2,4)	

Significance 95%

↑: score significantly higher than the OECD average
↓: score significantly lower than the OECD average
Yellow indicates significant difference with respect to the average score of Basque Country.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

In this table, ordered according to the average result obtained by each country in Problem Solving, the differences with respect to the average score in Basque country are only significant if they appear over the yellow background. The last column shows the significance of the results of each country with respect to the OECD average.

Results by sex

The results in Problem Solving by sex, appearing in order according to the difference between boys and girls in the various countries participating in the PISA 2003 assessment, are as follows:

COUNTRY	Girls		Boys		Difference	
	Average	T.E.	Average	T.E.	Diff.	T.E.
Iceland	520	(2,5)	490	(2,2)	**-30**	(3,9)
Thailand	431	(3,1)	418	(3,9)	**-12**	(4,3)
Basque Country	503	(3,0)	492	(4,0)	**-12**	(4,2)
Finland	553	(2,2)	543	(2,5)	**-10**	(3,0)
Sweden	514	(2,8)	504	(3,0)	**-10**	(3,1)
Norway	494	(3,2)	486	(3,1)	**-8**	(3,6)
Serbia and Montenegro	424	(3,9)	416	(3,8)	**-7**	(4,1)
Indonesia	365	(4,0)	358	(3,1)	**-7**	(3,0)
Australia	533	(2,5)	527	(2,7)	-6	(3,3)
Spain	485	(2,6)	479	(3,6)	-6	(3,1)
Germany	517	(3,7)	511	(3,9)	-6	(3,9)
Hong-Kong - China	550	(4,0)	545	(6,2)	-5	(6,3)
Italy	471	(3,5)	467	(5,0)	-4	(6,0)
Hungary	503	(3,4)	499	(3,4)	-4	(3,7)
Belgium	527	(3,2)	524	(3,1)	-3	(4,5)
New Zealand	534	(3,1)	531	(2,6)	-3	(3,8)
Austria	508	(3,8)	505	(3,9)	-3	(4,3)
Latvia	484	(4,0)	481	(5,1)	-3	(4,6)
Switzerland	523	(3,3)	520	(4,0)	-2	(4,1)
Japan	548	(4,1)	546	(5,7)	-2	(5,7)
OECD average	501	(0,8)	499	(0,8)	-2	(0,8)
Poland	487	(3,0)	486	(3,4)	-1	(3,1)
United States	478	(3,5)	477	(3,4)	-1	(3,0)
France	520	(2,9)	519	(3,8)	-1	(4,1)
Portugal	470	(3,9)	470	(4,6)	0	(3,5)
Canada	532	(1,8)	533	(2,0)	0	(2,1)
Ireland	498	(3,5)	499	(2,8)	1	(4,2)
Greece	448	(4,1)	449	(4,9)	2	(4,4)
Turkey	406	(5,8)	408	(7,3)	2	(5,8)
Russian Federation	477	(4,4)	480	(5,9)	2	(4,9)
Luxembourg	492	(1,9)	495	(2,4)	2	(3,3)
Tunisia	343	(2,5)	346	(2,5)	3	(2,6)
Uruguay	409	(4,2)	412	(4,6)	3	(4,8)
Holland	518	(3,6)	522	(3,6)	4	(4,1)
Denmark	514	(2,9)	519	(3,1)	5	(3,2)
Mexico	382	(4,7)	387	(5,0)	5	(4,5)
Brazil	368	(4,3)	374	(6,0)	5	(3,7)
Czech Republi	513	(4,3)	520	(4,1)	7	(5,0)
Slovak Republic	488	(3,6)	495	(4,1)	7	(3,7)
Korea	546	(4,8)	554	(4,0)	8	(6,1)
Macao - China	527	(3,2)	538	(4,3)	**11**	(5,5)
Liechtenstein	524	(5,9)	535	(6,6)	12	(9,8)
United Kingdom*	514	(3,5)	506	(3,0)	-8	(4,5)

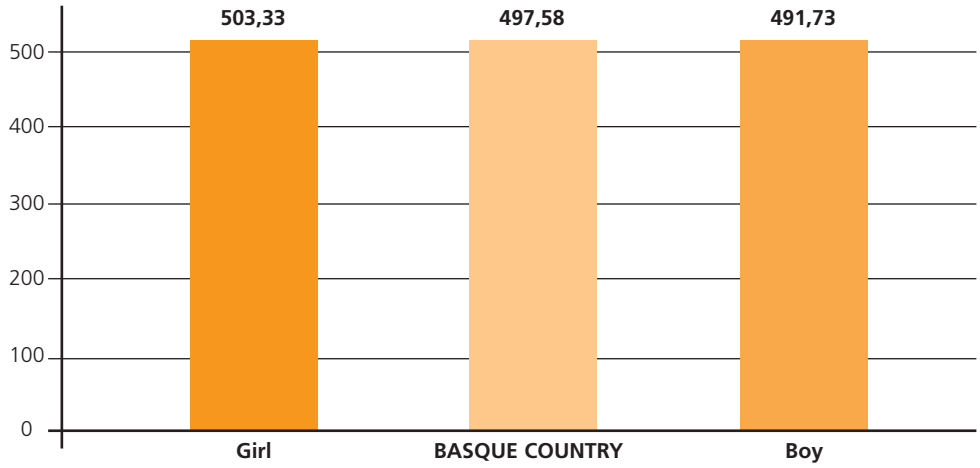
1. Positive differences mean that the results of boys are better than those of girls. Negative differences indicate that girls show better results than boys. Statistically significant differences appear in bold.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

In the Basque Country, girls show better performance in Problem Solving than boys do. This is true in 25 of the forty-two countries that participated in the PISA 2003 assessment. Basque girls attain, on average, a score 12 points higher than that of boys. This represents the third largest difference in favour of girls. The difference in average scores obtained by boys and girls in OECD countries is 2 points. The Basque Country is therefore 10 points above this score.

When we compare students of the same sex the differences are smaller, since girls in the Basque Country are 2 points above the girls of the OECD, while boys are 7 points below those of the OECD. In neither case is the difference significant.

Results in Problem Solving PISA 2003



The results of the Basque Country in Problem Solving are significantly higher for girls.

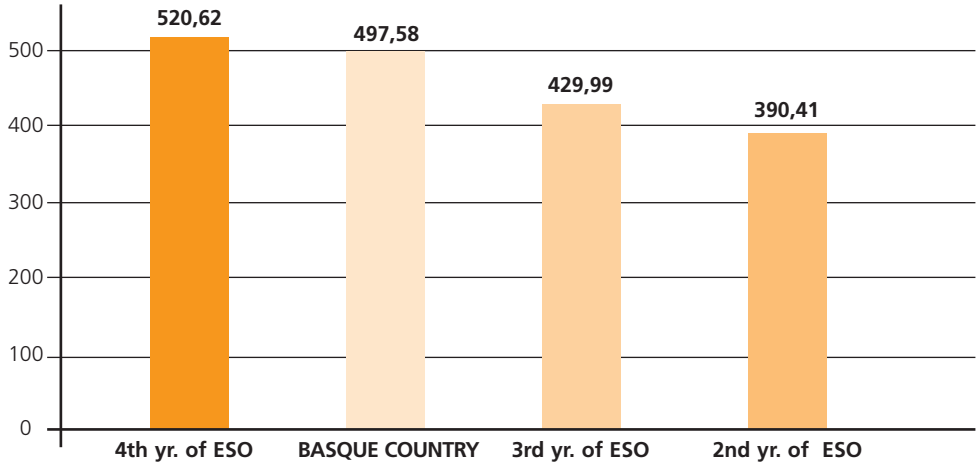
	Girl	Boy
Girl	=	↑
Boy	↓	=

Results by educational level

Although most 15-year-old students are in the 4th year of ESO (Compulsory Secondary Education), some students are in other years. The results of each level of ESO appear below (students in the first year of ESO have not been taken into consideration):

Level	N	Average	Typical error	Standard Dev. (T.E.)
2nd yr. of ESO	73	**390,41**	12,55	88,83 (9,63)
3rd yr. of ESO	882	**429,99**	4,12	77,86 (3,29)
4th yr. of ESO	2928	**520,62**	2,51	79,74 (1,49)

Results in Problem Solving PISA 2003



Only students in the 4th year of ESO are above the average of the Basque Country and the OECD (500). This result might reflect the influence of the curriculum followed in the 4th year to which students in lower levels have not yet had access. As shown in the table below, these differences are significant in the case of 4th year compared to 3rd and 2nd years, and in the case of 3rd year compared to 2nd year of ESO.

	2nd yr. of ESO	3rd yr. of ESO	4th yr. of ESO
2nd yr. of ESO	=	↓	↓
3rd yr. of ESO	↑	=	↓
4th yr. of ESO	↑	↑	=

CONCLUSIONS IN THE AREA OF PROBLEM SOLVING

- The average obtained in Problem Solving by students in the Basque Country is somewhat lower than that of the OECD and higher than that of Spain. The difference with regard to the OECD is not significant.
- The average obtained by the students in the Basque Country puts it in the 22nd position of the all the participating countries, just below the average of OECD countries.
- In twenty-four of the forty-two participating countries, the results attained by girls are higher than those attained by boys. In the Basque Country, the score attained by girls is 12 points higher than that attained by boys in the area of Problem Solving. This is one of the highest differences in the PISA 2003 assessment.
- If we compare the results of the Basque Country and the OECD separately, in each of the sexes there are no significant differences.
- The year of ESO the student is in has a significant effect on the results. Only students in 4th year are above the overall average of the Basque Country. In addition to the influence that the repetition of a school year may have, the curriculum not yet studied might also have an effect.

6. The Basque Educational System: Equity and Excellence

One measurement of the global performance of the students of a country is the arithmetic mean of the scores attained. This allows for comparisons with other countries, making it possible to establish their level with respect to that of other countries.

An educational system, apart from producing good results, must be equitable; that is, all boys and girls must have access to equivalent quality schooling, capable of compensating or at least not increasing the inequality of the students' origins. To do so, it uses different pedagogical strategies according to the various cognitive styles, learning needs, etc. of the students. Measuring the dispersion of the students is important to be able to estimate the equity of an educational system.

In Basque country, in the two areas in which it is possible to analyse the percentage of students by performance levels, Reading and Mathematics, a high percentage is grouped in the intermediate levels and results are not very disperse. This indicates that ours is an equitable educational system with intermediate results. The following pages illustrate this fact in the area of Mathematics.

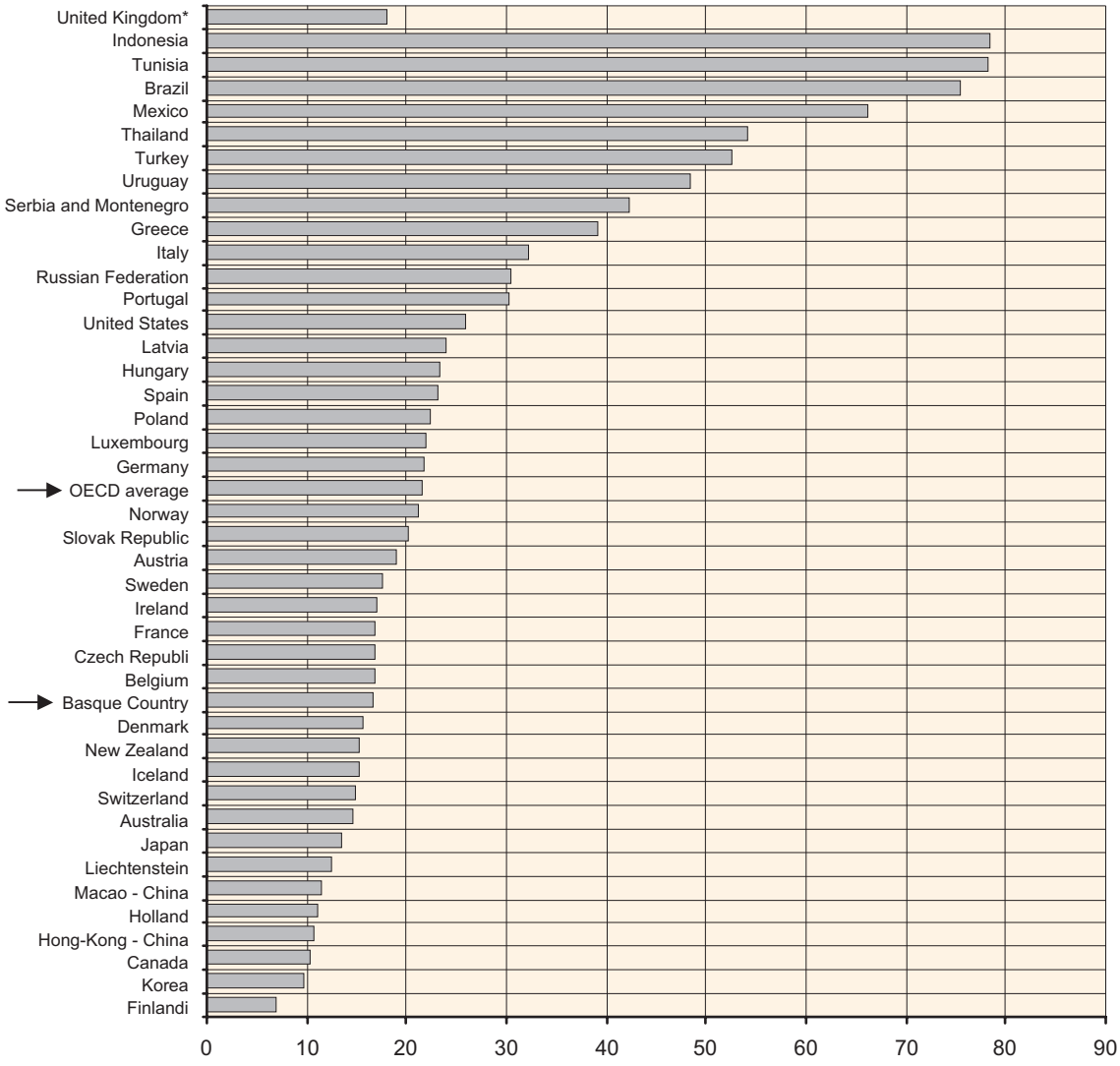
As for excellence, both in Mathematics and in Reading, our percentages of students in the highest levels are smaller than those of the OECD.

In its report "Reading for change" (OECD 2002), the OECD compared the scores of the students having the best results with those having the worst results (90th and 10th percentile, respectively). Subsequently, UNICEF defined this difference as Relative Equity in its "Innocenti Report Card No. 4. November 2002" and suggested that it be complemented with the Absolute Equity figure, or the percentage of students in or under Level 1 as established by PISA.

ABSOLUTE EQUITY IN MATHEMATICS

Percentage of students in Levels 1 and Lower than 1

(in order fom lesser to greater equity)



The graph corresponding to the relative equity of the various countries (next page), expressed as the difference in score between the 10% of the students obtaining the best results and the 10% obtaining the worst results (90th and 10th percentile, respectively) shows that Finland is the country with the best relationship between the results obtained and the dispersion of its students.

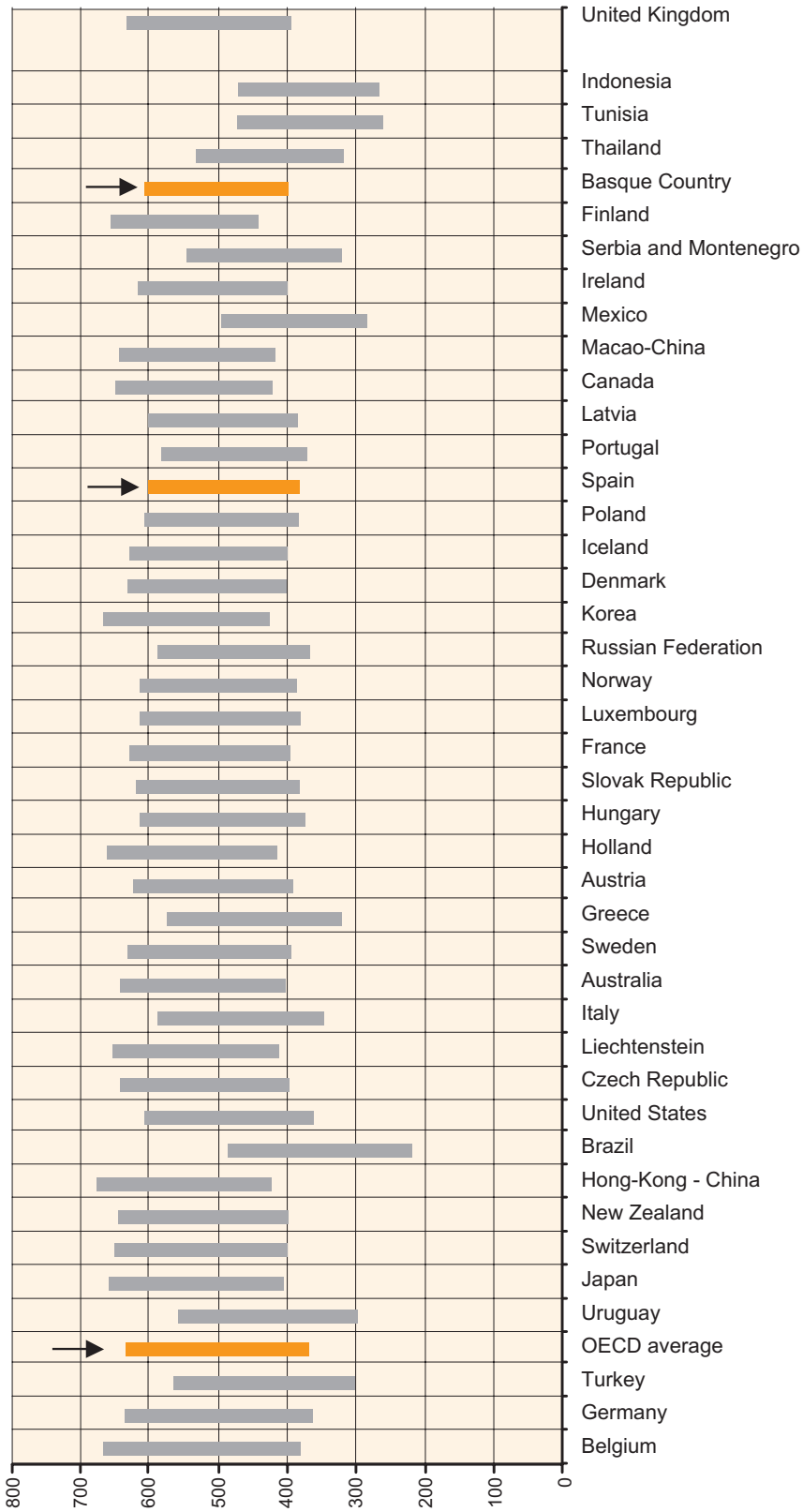
Indonesia is the country with the least dispersion, that is, with the most equity; however, its results are poor.

Lastly, Belgium is in the other extreme. It obtains good results but they are very disperse. This leads to the conclusion that its educational system is not very equitable.

*The rate of response of the United Kingdom is too low to assure comparison with the rest of the countries.

RELATIVE EQUITY IN MATHEMATICS

Inequalities between participating countries



*Difference between the 10% of students with the best results and the 10% with lowest results. In order from greater to lesser dispersion.

In terms of relative equity, the Basque Country is in fourth place with respect to all the countries participating in the PISA 2003 assessment and is first among the countries belonging to the OECD. The following tables show the differences and similarities of the Basque Country with Finland, the country which obtains the best results within an equitable system, Spain and the OECD average.

The variances can be seen in the following table. A smaller variance indicates less dispersion of the results with respect to the average score.

	10th Percentile Score	90th Percentile Score	Dispersion between scores
Basque Country	395	606	211
Finland	438	652	214
OECD	369	628	259
Spain	369	597	228
Belgium	381	664	283
Indonesia	260	466	206

	Total variance in student	Variance as percentage of average variation in OECD	Total variance due to differences between schools	Total variance due to differences within each school
Basque Country	6.822	79,4	11,8	67,6
Finland	6.974	81,2	3,9	77,3
OECD	8.593	100	33,6	67
Spain	7.803	98,8	17,2	70,2
Belgium	10.463	121,8	56,9	66,7
Indonesia	6.480	75,4	31,6	39,5

These figures indicate that the Basque Country is among the countries with the smallest percentage of variance or variability due to the schools, among the seven that show a small difference in the contribution of the schools to the teaching-learning process of students. It can be stated that the schools of the Basque Country work similarly, that all generate in their students a similar increase in learning, as the results obtained depend mainly on the variables related to the students themselves: personal characteristics, socio-economic-cultural context, attitude towards learning and other variables.

The most desirable result in the scores obtained by the students would be a high overall average and low dispersion values. This would indicate a high degree of both excellence and equity.

Analysing our results within this theoretical framework, we can conclude that the educational system in the Basque Country is equitable but should work towards a higher degree of excellence, since the results are situated in the intermediate levels.

7. Language used in the test

As already mentioned in the corresponding chapter, Reading is one of the areas evaluated by PISA through a series of items and tests that measure key competencies for understanding and dealing with written texts. It is therefore really a "language test" in that it transcends mere reading competencies and examines linguistic abilities.

In addition to the area of Reading, there is no doubt that the very conception of the PISA test has a transversal linguistic component that impregnates all the other areas: Mathematics, Sciences and Problem Solving, since many of the open questions require a command of language that should be taken into account in order to ensure that the possible effect of taking the test in a language other than that student's dominant language is neutralised, allowing for a fair international comparison.

In this matter it is necessary to differentiate between an external assessment of the educational system as a whole and an assessment of a given school. The pedagogical value of the assessment in the second case, for those students who are learning in a second or third language (Euskera, Spanish, English...), lies in the use of this language, that is, the language used for learning, for the assessments made in the classroom or the school.

However, measuring the optimal performance of students participating in an international evaluation makes it advisable to use the student's dominant language which, of course, does not necessarily coincide with the language used for learning. As an example, we can look at the case of students with various school subjects that are taught in English - a situation which is more and more common in a system that aspires to be trilingual. Here, it is not a good idea to make an external assessment of subject-matter performance using English, because the objective of the assessment is not to determine the level of English but rather the level of competency the student has in mathematical, scientific or linguistic knowledge.

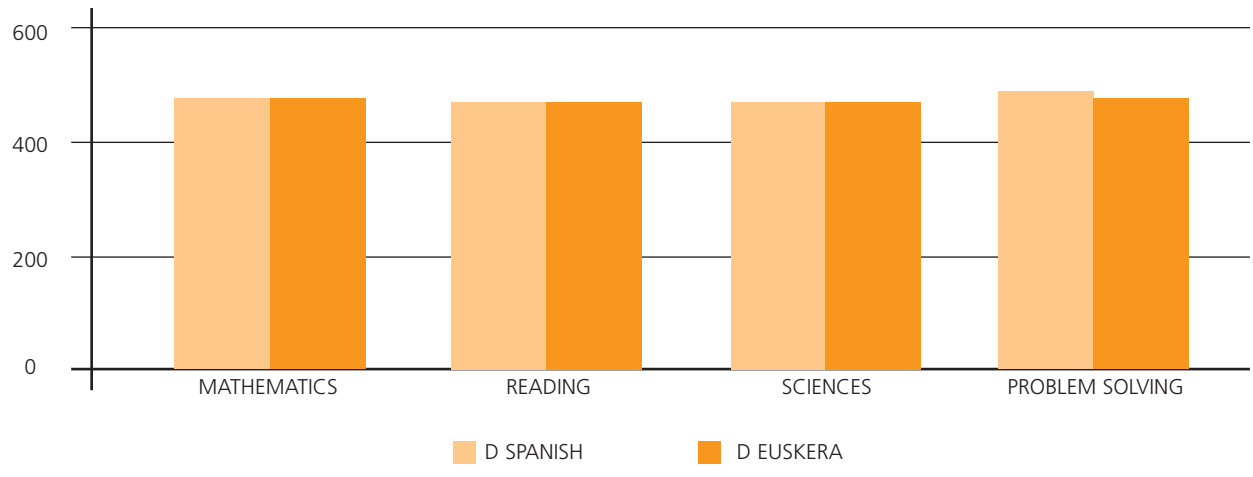
The most transcendent consequence of the international research in question, and of that undertaken by the ISEI-IVEI itself, has been the decision to give the PISA tests in Basque country using the student's dominant language, that is, the primary language used at home, since taking tests with a heavy linguistic component in a language the students are still learning could interfere with their giving their best performance.

This question is particularly important in Model D, where along with native Basque speakers there is a majority of native Spanish speakers who are learning Basque in a situation of language immersion.

RESULTS

- The scores obtained in Model D show no statistically significant differences between Basque speakers and Spanish speakers.
- Therefore, the students who are learning in a second language and did the test in their dominant language have not suffered detrimental effects, their performance being at the same level as that of the native speakers of the other language.
- There is a correct transfer of the learning acquired in the second language to the first language.
- The Spanish-speaking students who are learning in Euskera express their knowledge adequately in their dominant language.

PISA 2003 MODEL D ACCORDING TO LANGUAGE OF TEST



8. General Conclusions

Considering the aspects examined thus far, what diagnosis does PISA 2003 offer regarding the Basque Educational System in this First Report?

A synthesis of the most relevant points of the analysis performed up to now is offered below.

- STRENGTHS
  - Basque country is situated within the OECD average in Mathematics, Reading and Problem Solving. In the subscale of Quantity (Arithmetic) the performance is above the OECD average.
  - The low degree of dispersion in mathematical knowledge makes the Basque Educational System one of the systems with most relative equity in the world.
  - Our percentage of students with low levels is smaller than that of the OECD, which means we have greater absolute equity. Our students are mainly concentrated in the intermediate competency levels.
- WEAKNESSES
  - The result obtained in Scientific Knowledge is below the OECD average. The result of the subscale "Space and Shape" (Geometry) is somewhat below that of the other subscales.
  - The percentage of excellent students in Mathematical Knowledge is very low and in Reading it is low.
  - The differences in performance between boys and girls are among the highest, compared to those of the other participating countries. 15-year-old boys are, in general, less productive than girls in almost all the areas.

The PISA project provides a large amount of data, in addition to the data discussed herein, that will be carefully analysed in the coming months. During this period we hope to be able to offer key elements which will help improve our knowledge about the educational system and offer ideas for its improvement, the final goal of all assessments.

The future applications of PISA (2006, 2009...) will make it possible to evaluate trends and obtain a longitudinal vision of the Basque Educational System in terms of equity and quality.

The ISEI-IVEI will continue with the analysis of the data and plans to offer, throughout this academic year, new reports related to this international assessment.

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