First PISA 2006 Assessment Report

Project for the International Assessment of 15-Year-Old Students in Science, Mathematics, and Reading Results in the Basque Country · December 2007













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INTRODUCTION

1. INTRODUCTION

PISA project

PISA (Program for International Student Assessment) is an assessment proposal promoted by the Organization for Economic Cooperation and Development (OECD), an intergovernmental organization of industrialized countries acting as a promoting forum for the member countries' economic and social development. The countries belonging to OECD have taken part in the PISA 2006 assessment as well as other countries that do not belong to this organization, as shown in the participating countries table.

It responds to the need for regularly establishing an international average and comparable measurement of student performance in the key competences, proposing a dialogue and cooperation framework to define and make operative the educational objectives related to knowledge and abilities relevant for adult life.

It is a prospective and comparative evaluation study that started in 2000 in the areas of Mathematics, Science, and Reading. This study is performed every 3 years, and each time it intensely assesses one of the fields while maintaining the other two as supplementary. Thus, in 2000, PISA focused on the Reading Assessment, and in 2003 on Mathematics. This report refers to 2006, when it focused on Science, keeping Mathematics and Reading as supplementary areas.

One of PISA's newest contributions is the *"literacy"* concept. This term exceeds the traditional use of the ability to read and write, and it refers to the accumulated training or preparation that sufficiently equips a person to efficiently face real life challenges. This concept is defined in each area in terms of necessary knowledge and abilities for full social participation, and not as much in curricula knowledge.

The age cluster of students participating in PISA is 15 years old, with an 8 to 10 year period of permanence in the education system. Specifically, the students participating in 2006 belong to an age band from 15 years and 4 months to 16 years and 4 months, regardless of their schooling level. In the Basque Country, a high percentage of these students, 76%, attend the 4th year of ESO [Compulsory Secondary Education], and therefore they are about to finish their compulsory schooling. About 20% of these students attend the 3rd year, and 4% attend the 2nd year of ESO.

Study objectives and background

The assessment's main objective is to have information available about the level of preparation for life of the 15-yearold students. It is about finding out about the training, preparation, and instruction reached by the students to use their knowledge and to effectively face the "adult life" challenges. PISA evaluates 15-year-old students, since in most countries they finish compulsory education at that age. It is considered that at this age basic abilities are developed to face the challenges of today's society. These skills also reflect the students' ability to continue learning throughout their lives, applying what they have learned in other contexts and making their own decisions responsibly.

Another objective of the PISA project is to provide relevant and trustworthy data to the participating countries to be used in making decisions in the area of educational policies.

The PISA assessment project is aimed at providing data on the global operation of the education system more than to guide the teaching-learning processes taking place in the classroom, or the organizational operation of the school.

Taking into account PISA's scope according to the number of countries participating in this project, the 2006 PISA results reflect the educational reality of approximately more than half of the worldwide population of the above mentioned age.

OECD Countries	No OECD Countries	Other
Australia	Argentina	Andalusia
Austria	Azerbeidjan	Aragon
Belgium	Brazil	Asturias
Canada	Bulgaria	Basque Country
Czech Republic	Chile	Belgium (Flanders)
Denmark	Chinese Taipei	Cantabria
Finland	Colombia	Castille and Leon
France	Croatia	Catalonia
Germany	Estonia	Galicia
Greece	Hong Kong-China	Italia (Veneto Province)
Hungary	Indonesia	Italy (Autonomous Province of Bolzano)
Iceland	Israel	Italy (Basilicata Province)
Ireland	Jordan	Italy (Campania Province)
Italy	Kirgyzstan	Italy (Emilia Romagna Province)
Japan	Latvia	Italy (Friuli Venezia Giulia Province)
Korea	Liechtenstein	Italy (Liguria Province)
Luxembourg	Lithuania	Italy (Lombardy Province)
Mexico	Macao-China	Italy (Piemonte Province)
Netherlands	Montenegro	Italy (Puglia Province)
New Zealand	Qatar	Italy (Sardegna Province)
Norway	Romania	Italy (Sicily Province)
Poland	Russian Federation	Italy (Trento Province)
Portugal	Serbia	La Rioja
Slovak Republic	Slovenia	Navarre
Spain	Thailand	Scotland
Sweden	Tunisia	
Switzerland	Uruguay	Belgium (Germanophone)*
Turkey		Belgium (Wallonia)*
United Kingdom		England*
United States		Finland (Finnish)*
		Finland (Swedish)*
		Northern Ireland*
		Welsh*

PISA 2006 PARTICIPANTS

* The data from these countries have not been verified, that is, the sample has not been large enough as to be able to guarantee their reliability.

In PISA 2006, Basque Country has officially participated through the Instituto de Evaluación (Institute of Evaluation, IE, Spanish Ministry of Education and Science) through an agreement with the organization and the association of the companies in charge of its development, as it did in PISA 2003. The preparation process of materials, translation, edition, application, correction, and initial data handling has been done by ISEI-IVEI (Instituto Vasco de Evaluación e Investigación Educativa) [Basque Educational Assessment and Research Institute] from the Basque Government's Education Department, Universities and Research, together with the association of managing companies and the IE, state coordinator of all the applications.

Assessment characteristics

One of the characteristics of this assessment is that it is not basically curricular, although it is centred in three curricular areas (Science, Reading, and Mathematics) for being common subjects to all education systems. The items are created in such a way so their resolution is not directly related to the specific curricular contents of each area; they have a more transversal character that permits the assessment of the functionality of what has been learned to answer to real situations posed by everyday life.

In the same way that PISA 2000 was centred on Reading assessment, and PISA 2003 on Mathematics, PISA 2006 assessment establishes the performance in Science of the 15-year-old students. It explores different scientific contents, and apart from the results, it establishes different ability and content scales, plus two scales of attitudes towards Science.

Likewise, as in previous cycles, aspects such as motivation, self-concept, and the strategies the students use to learn Science are taken into account.

It also gathers information about the schools through two questionnaires. One analyses the school's management, which explores the school organization and the teaching-learning processes, and the other is aimed towards the evaluated students themselves, which gathers information about their training and educational interests. A third questionnaire was prepared and applied in the Basque Country aimed for the Science Seminars teaching staff.

For the first time, in the case of the Basque Country, it is possible to establish comparative measures in time for being the second consecutive participation in the project with its own sample. A continued participation permits a longitudinal view of the students' preparation in each area, and an evolution tendency every three years.

Measuring instruments

The measurement instruments used in the PISA 2006 assessment were a test and two questionnaires, three in the case of the Basque Country, as mentioned before. They were applied in only one day, in a two-hour session divided in two parts by a short break; first it was the test, and then the questionnaire. The students from the Basque Country watched a prior video whose objective was for them to understand the importance of the work they were about to perform, and thus achieve a greater level of commitment with the test.

Also, the school management filled out a specific questionnaire, and a third one was filled out by the Science Seminars teaching staff from the schools that participated in the assessment.

Types of test items

The test had diverse items to be solved which sometimes required the students to elaborate their own answers, and some other times there were multiple choice items where they should select their option.

- Constructed response:
 - Write a short answer.
 - Write a longer answer.
 - Write their own answer, following some established criteria.
- Multiple choice:
 - Select an answer between four or five possible answers.
 - Circle "yes"/"no" or "true/"false".

In this application the cognitive test included a series of items whose objective was measuring the students' attitudes towards Science.

Performance levels

PISA 2006 establishes six performance levels in Science, another six in Mathematics, and five in Reading. According to the score obtained by the students, they are assigned to certain performance level. Thus, for example, if they show enough ability in most of the 4-level tasks, they are considered capable of performing tasks related with this level and all the lower ones, but not those corresponding to levels 5 and 6.

In Science the tasks corresponding to each level are described as follows.

Three abilities:

- Identify scientific matters,
- Explain phenomena scientifically, and
- Use scientific proof.

Two types of contents:

- Knowledge about Science:
 - Scientific research and
 - Scientific explanations
- Science knowledge:
 - Physical systems.
 - Live systems.
 - Technological systems.
 - Sun and space system.

Sample design in the Basque Country

The sample dimension and the selection of the schools in the Basque Country were prepared by the PISA 2006 Association itself, complying with the organization's technical requirements and the sampling conditions defined by ISEI-IVEI.

- Representativeness of the strata that constitute the interaction of the linguistic models and the school ownership or network.
- The consideration that each linguistic model configures a school itself; that is, if a school has a B model and another D model cluster group in a compulsory high school, one or both may be selected for the test.

Sample data (global and by strata)

The initial school and students' sample was configured from the general data from the schools and the 15-year-old students at school in the Basque Country during 2004-2005. At each one of the schools selected as sample, there was a second random selection (through an information program designed by the test organization) of a maximum of 35 15-year-old students from the school, regardless of their school level and cluster.

From the initial selection, the data from the students that did not take the test was not taken into account since they were excluded for having Special Educational Needs, for not knowing the language of the test (less than a school year in the education system), or for not being present on the day of the test.

SCHOOLS AT WHICH THE TEST WAS TAKEN

		Models		
Schools	Α	В	D	Total
Public	12	14	39	65
Subsidized Priv.	30	27	29	86
Total	42	41	68	151

STUDENTS THAT TOOK THE TEST

_	Models				
Students*	Α	В	D	Total	
Public	226	215	1,141	1,582	
Subsidized Priv.	849	636	862	2,347	
Total	1,075	851	2,003	3,929	

* Direct students that took the test (not weighted).

Given the students' different strata distribution there is a larger proportion of schools in the strata with fewer students, which is compensated with the data weighing.

REPRESENTATIVENESS OF THE STUDENTS THAT TOOK THE TEST

_		Models		
Students**	Α	В	D	Total
Public	915	975	4,157	6,048
Subsidized Priv.	3,079	2,392	3,187	8,659
Total	3,995	3,367	7,345	14,707

** Students weighted according to the sample representativeness in the population.

Of the 3,929 students that took the test, 3,915 also answered the questionnaire.

Language of the test

In order to ensure that the PISA language of the test would not affect its results, it was done in Basque and in Spanish complying with the following criteria:

In Spanish:

- All the A and B model students.
- The D model students whose mother or father does not speak Basque, or whose familiar language (main communication language at home) is not Basque.

In Basque:

• The D linguistic model students, when both parents or guardians usually speak in Basque, therefore being their familiar language..

Before the test, all the D model schools filled out a form that gathered information from each student about the parents' language, and the language usually used at home. Taking into account these conditions, the students' distribution was the following:

TOTAL OF STUDENTS BY LANGUAGE OF THE TEST

Spanish		Bas	que	Total	
Ν	%	Ν	%	Ν	%
3,394	86.4	535	13.6	3,929	100

The distribution of the **D model students** according to the language of the test was the following:

D MODEL STUDENTS AND LANGUAGE OF THE TEST

Spanish		Bas	que	Total	
Ν	%	Ν	%	Ν	%
1,468	73.3	535	26.7	2,003	100

As regards the school ownership, the percentage and number of students that have participated according to the language of the test was the following:

SCHOOL OWNERSHIP AND LANGUAGE OF THE TEST

	Spai	nish	Basque		Total	
Ownership	Ν	%	Ν	%	Ν	% Pub-Subs
Public	858	75.2	283	24.8	1,141	57.0
Subsidized Priv.	610	70.8	252	29.2	862	43.0
Total	1,468	73.3	535	26.7	2,003	



I. RESULTS IN SCIENCE

Global Science performance

As previously mentioned, not all the evaluated aspects generate a result since in some cases no specific data are obtained due to their low representativeness (see for example in the section Science knowledge the category for Technological systems). Also, the results referring to scientific knowledge provide partial data for the categories related to Science knowledge, but not for the areas related to Knowledge about Science, where the result is global.

Additionally, the attitudes towards Science PISA 2006 are evaluated for the first time. Results were obtained from 2 of the 3 evaluated attitudes: Interest for Science, and support for scientific research.

The following graph shows the interrelation that the different Science components have among them, as well as the global and partial results obtained in each one of them by the 15-year-old students in the Basque Country.



SCIENCE RESULTS IN THE BASQUE COUNTRY

The average score in Science for the 15-year-old students from the Basque Country is **495 points**. Comparing these results with those obtained by the 15-year-old students from the OECD set of countries, 500 points, **said difference is not statistically significant;** therefore, the Basque students are at the OECD average.

Science	Ν	Average	Standard Error	SD (SE)
Basque Country	3,929	495	3,5	84 (1.9)
OECD	251,278	500	0,5	95 (0.3)



Graph 1. PISA 2006 Science results

The following table shows the results obtained in Science in the OECD countries. It is sorted according to the obtained scores, in decreasing order, starting with the country with the best score, Finland with 563 points, and finishing with Kirguistan, with 322 points.

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SCIENCE RESULTS AVERAGE BY COUNTRIES

Country	Score	SE	Significance with OECD	Country	Score	SE	Significance with OECD
Finland	563	(2.0)	ſ	United States	489	(4.2)	\downarrow
Hong Kong-China	542	(2.5)	1	Slovak Republic	488	(2.6)	\downarrow
Canada	534	(2.0)	1	Spain	488	(2.6)	\downarrow
Chinese Taipei	532	(3.6)	1	Lithuania	488	(2.8)	\downarrow
Estonia	531	(2.5)	1	Norway	487	(3.1)	\downarrow
Japan	531	(3.4)	1	Luxembourg	486	(1.1)	\downarrow
New Zealand	530	(2.7)	1	Russian Federation	479	(3.7)	\downarrow
Australia	527	(2.3)	1	Italy	475	(2.0)	\downarrow
Netherlands	525	(2.7)	1	Portugal	474	(3.0)	\downarrow
Liechtenstein	522	(4.1)	↑	Greece	473	(3.2)	\downarrow
Korea	522	(3.4)	↑	Israel	454	(3.7)	\downarrow
Slovenia	519	(1.1)	↑	Chile	438	(4.3)	\downarrow
Germany	516	(3.8)	1	Serbia	436	(3.0)	\downarrow
United Kingdom	515	(2.3)	1	Bulgaria	434	(6.1)	\downarrow
Czech Republic	513	(3.5)	↑	Uruguay	428	(2.7)	\downarrow
Switzerland	512	(3.2)	↑	Turkey	424	(3.8)	\downarrow
Macao-China	511	(1.1)	↑	Jordan	422	(2.8)	\downarrow
Austria	511	(3.9)	↑	Thailand	421	(2.1)	\downarrow
Belgium	510	(2.5)	1	Romania	418	(4.2)	\downarrow
Ireland	508	(3.2)	↑	Montenegro	412	(1.1)	\downarrow
Hungary	504	(2.7)		Mexico	410	(2.7)	\downarrow
Sweden	503	(2.4)		Indonesia	393	(5.7)	\downarrow
OECD	500	(0.5)		Argentina	391	(6.1)	\downarrow
Poland	498	(2.3)		Brazil	390	(2.8)	\downarrow
Denmark	496	(3.1)		Colombia	388	(3.4)	\downarrow
France	495	(3.4)		Tunisia	386	(3.0)	\downarrow
Basque Country	495	(3.5)		Azerbeidjan	382	(2.8)	\downarrow
Croatia	493	(2.4)	V	Qatar	349	(0.9)	\downarrow
Iceland	491	(1.6)	¥	Kirgyzstan	322	(2.9)	\downarrow
Latvia	490	(3.0)	Ļ				

Significant differences at 95%:

 \uparrow : score significantly higher than OECD average.

↓ : score significantly lower than OECD average.

score significantly different (higher or lower) than the Basque Country average.

The highlighted rows indicate the countries with significant differences as regards Basque Country's average. The ones in white represent the countries with similar results, where the differences in the scores are not significant. Twenty two participating countries (highlighted above Basque Country) have significantly higher scores than the Basque Country, while 24 countries obtained significantly lower scores.

The last column shows that the 15-year-old students from the Basque Country have the same average as the OECD countries, they have the same or similar scores in Science as France, Denmark, and Poland, among others.

Results by performance levels in Science

The results are clustered in different levels according to the obtained scores. The performance levels have been established so as to have a 74.6-point gap between one level and the next. When a student is at a specific level, this means that said student exceeds at least 50% of the items of said level, as well as most of the items from lower levels, and a much lesser percentage of the items in higher levels.

The students' distribution by levels in the OECD countries and in the Basque Country is the following:

LEVEL	Score	OECD (%)	Basque Country (%)
<1	<334.94	5.2	3.2
1	334.94-409.54	14.1	12.5
2	409.54-484.14	24	27.9
3	484.14-558.73	27.4	33.5
4	558.73-633.33	20.3	18.5
5	633.33-707.93	7.7	4
6	>707.93	1.3	0.3

The data show that in the Basque Country most of the students are in intermediate performance levels, and there are very few students at the edges, either with very high or very low performance.



Graph 2. Students' percentage at performance levels. PISA 2006 Science

4.3% of the Basque Country students are situated at Science levels 5 and 6, those with the highest performance, while in OECD countries' an average of 9% of the students reach these levels.

15.7% of the students from the Basque Country are situated at the lowest Science levels, Level 1 and less than 1, which is clearly lower than OECD average, where 19.3% of the students only reach these minimum scientific competence levels.

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Graph 3. Students' distribution by levels: Science Sorted by the total of the students' percentage at levels 2, 3, and 4

The previous graph shows how the students from the participating countries are distributed in the 6 levels of scientific competence. They have been grouped according to the percentage of students that are at the intermediate levels, joining levels 2, 3, and 4, and sorting from higher to lower percentages. To the left of 0 are the lowest levels of each country, less than 1 and 1; to the right of 0 are levels 2, 3, and 4, as well as those corresponding to higher levels 5 and 6.

The Basque Country is the 3rd country, after Macao-China and Estonia, which groups the largest percentage at levels 2, 3, and 4. Spain is the 9th country with the largest percentage of students in these intermediate levels.

79.9% of Basque 15-year-old students are at intermediate levels in Science, a percentage clearly higher than OECD average (71.8%), and slightly higher than the average of Spain (76%).

The Basque Country data show that there is a smaller percentage of students at the extremes than the OECD average.

The low percentage of students that reach levels 5 and 6 (4.3%) shows a lack of excellence that gets worse especially at level 6, which demands the highest scientific training and which corresponds to the students with excellent results or to the academic elite. Only 0.3% of the Basque students reach this performance level, while the OECD average reaches 1.3%.

At the other end are the students with lower levels. In the Basque Country 15.7% of the students are at these levels, versus 19.3% of OECD average. This data in general are good, but we should be aware that 3.2% of the Basque students do not reach the elementary level, and that 12.5% reach level 1 only.

As regards this data, it could be stated that the Basque Country education system is a fair system, where the large majority reach average levels of scientific training. However, it also shows the lack of students that reach higher levels in scientific performance.

Results by gender

The following table shows the results in Science of the students from the different countries. They are sorted from higher to lower according to the difference in results in favour of the girls.

	SCIENCE					
	Во	ys	Gi	rls	Differenc	ces (B–G)
COUNTRIES	Score	SE	Score	SE	Differ.	SE
Qatar	334	(1.2)	365	(1.3)	-32	(1.9)
Jordan	408	(4.5)	436	(3.3)	-29	(5.3)
Bulgaria	426	(6.6)	443	(6.9)	-17	(5.8)
Thailand	411	(3.4)	428	(2.5)	-17	(3.9)
Argentina	384	(6.5)	397	(6.8)	-13	(5.6)
Turkey	418	(4.6)	430	(4.1)	-12	(4.1)
Greece	468	(4.5)	479	(3.4)	-11	(4.7)
Liechtenstein	516	(7.6)	527	(6.3)	-11	(11.1)
Lithuania	483	(3.1)	493	(3.1)	-9	(2.8)
Azerbeidjan	379	(3.1)	386	(2.7)	-8	(2.0)
Slovenia	515	(2.0)	523	(1.9)	-8	(3.2)
Latvia	486	(3.5)	493	(3.2)	-7	(3.1)
Iceland	488	(2.6)	494	(2.1)	-6	(3.4)
Kirgyzstan	319	(3.6)	325	(3.0)	-6	(3.0)
Serbia	433	(3.3)	438	(3.8)	-5	(3.8)
Tunisia	383	(3.2)	388	(3.5)	-5	(3.4)
New Zealand	528	(3.9)	532	(3.6)	-4	(5.2)
Norway	484	(3.8)	489	(3.2)	-4	(3.4)
Estonia	530	(3.1)	533	(2.9)	-4	(3.1)
Finland	562	(2.6)	565	(2.4)	-3	(2.9)
Basque Country	493	(4.1)	496	(3.5)	-3	(3.2)
Uruguay	427	(4.0)	430	(2.7)	-3	(4.0)

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	SCIENCE					
	Во	ys	Gi	rls	Differenc	es (B–G)
COUNTRIES	Score	SE	Score	SE	Differ.	SE
Korea	521	(4.8)	523	(3.9)	-2	(5.5)
Croatia	492	(3.3)	494	(3.1)	-2	(4.1)
Montenegro	411	(1.7)	413	(1.7)	-2	(2.6)
Romania	417	(4.1)	419	(4.8)	-2	(3.3)
Australia	527	(3.2)	527	(2.7)	0	(3.8)
Ireland	508	(4.3)	509	(3.3)	0	(4.3)
Belgium	511	(3.3)	510	(3.2)	1	(4.1)
Sweden	504	(2.7)	503	(2.9)	1	(3.0)
United States	489	(5.1)	489	(4.0)	1	(3.5)
OECD	501	(0.7)	499	(0.6)	2	(0.7)
France	497	(4.3)	494	(3.6)	3	(4.0)
Italy	477	(2.8)	474	(2.5)	3	(3.5)
Japan	533	(4.9)	530	(5.1)	3	(7.4)
Poland	500	(2.7)	496	(2.6)	3	(2.5)
Israel	456	(5.6)	452	(4.2)	3	(6.5)
Russian Federation	481	(4.1)	478	(3.7)	3	(2.7)
Canada	536	(2.5)	532	(2.1)	4	(2.2)
Spain	491	(2.9)	486	(2.7)	4	(2.4)
Macao-China	513	(1.8)	509	(1.6)	4	(2.7)
Czech Republic	515	(4.2)	510	(4.8)	5	(5.6)
Portugal	477	(3.7)	472	(3.2)	5	(3.3)
Hungary	507	(3.3)	501	(3.5)	6	(4.2)
Slovak Republic	491	(3.9)	485	(3.0)	6	(4.7)
Switzerland	514	(3.3)	509	(3.6)	6	(2.7)
Germany	519	(4.6)	512	(3.8)	7	(3.7)
Mexico	413	(3.2)	406	(2.6)	7	(2.2)
Netherlands	528	(3.2)	521	(3.1)	7	(3.0)
Chinese Taipei	536	(4.3)	529	(5.1)	7	(6.0)
Hong Kong-China	546	(3.5)	539	(3.5)	7	(4.9)
Austria	515	(4.2)	507	(4.9)	8	(4.9)
Denmark	500	(3.6)	491	(3.4)	9	(3.2)
Luxembourg	491	(1.8)	482	(1.8)	9	(2.9)
Brazil	395	(3.2)	386	(2.9)	9	(2.3)
Colombia	393	(4.1)	384	(4.1)	9	(4.6)
United Kingdom	520	(3.0)	510	(2.8)	10	(3.4)
Indonesia	399	(8.2)	387	(3.7)	12	(6.3)
Chile	448	(5.4)	426	(4.4)	22	(4.8)

The positive differences mean that the boys' results are better than the girls'.

The negative differences indicate that the girls have better results than the boys. The statistically significant differences are in bold.

As shown, the Basque Country is one of the 38 countries where there is no difference in the Science results between boys and girls. In 12 countries, the girls obtained results significantly higher than the boys, and in 9 countries the boys significantly exceed the girls.

The difference between the boys' and girls' scores in OECD is 2 points in favour of the boys, and it is significant. In Spain, the boys' average is likewise 5 points higher than the girls', but this difference is not significant.



Graph 4. PISA 2006 Science results by gender

When comparing the global results by gender from the Basque Country, Spain, and OECD, the Basque girls are 3 points lower than the OECD girls' scores, and 10 points above the Spanish girls' average, and this difference is statistically significant. The Basque boys are 8 points below OECD boys —although this difference is not significant—, and 2 points above the Spanish average.

Results by educational level

The majority of the 15-year-old students are at the 4th level of Compulsory High School Education; nevertheless, there are students of the same age that attend other educational levels. Here are the results obtained at each level, not considering 2 students from first year of CSE and first year of Higher Secondary Education due to their low numeric representativeness.

STUDENTS PERCENTAGE AT EACH EDUCATIONAL LEVEL				
Level	Ν	%		
2 nd CSE	153	3.90		
3 rd CSE	773	19.73		
4 th CSE	3,001	76.37		

STUDENTS' PERCENTAGE AT EACH EDUCATIONAL LEVEL

SCIENCE 2006. RESULTS BY EDUCATIONAL LEVELS

	Average	SE	SD (SE)
2 nd CSE	366.2	7.3	70.4 (6.5)
3 rd CSE	429.6	3.6	67.8 (2.6)
4 th CSE	518.0	3.3	72.8 (1.5)

The previous data show that the best results (518) are obtained by the 4th year CSE students, while the 3rd year students, who have repeated 1 year, obtained 429.5 points. The students from CSE 2nd year obtained 152 points less than the ones from CSE 4th year according to their age. These differences are significant in all cases.

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Global results by stratum: the differences are to a large extent due to the economic, social, and cultural status

The results obtained in Science are analysed according to the educational stratum and the economic, social, and cultural status.

When the network and the linguistic model are analysed together in the Basque Country, there are important differences in the Science results.

Stratum	Average	(SE)	SD	(SE)
Subs. Private A	513.8	(8.4)	81.9	(3.3)
Subs. Private B	504.6	(9.8)	80.1	(3.1)
Subs. Private D	501.3	(6.5)	78.8	(2.1)
Public D	486.9	(5.6)	81.0	(2.6)
Public B	476.7	(11.8)	92.1	(5.2)
Public A	435.6	(10.5)	88.0	(7.4)





It can be stated that the public network stratum obtains results below the average of OECD (500) and Basque Country (495), while the private schools obtain results above the average of OECD and Basque Country.

The following chart shows the significance of the score differences between the strata.

	Public A	Public B	Public D	Subs. Private A	Subs. Private B	Subs. Private D
Public A		Ļ	Ļ	Ļ	Ŷ	Ļ
Public B	î		=	Ļ	=	Ļ
Public D	ſ	=		Ļ	=	=
Subs. Private A	1	Ŷ	î		=	=
Subs. Private B	î	=	=	=		=
Subs. Private D	î	Ŷ	=	=	=	

The chart reads from left to right.

↑ ë Positive significant difference at 95%. ↓ Negative significant difference at 95%.

= There is no significant difference at 95%. Difference significance at 95%.



Graph 7. PISA 2006 Science results by stratum

As it can be seen in the previous graph, the Public A stratum has some significantly lower results than the rest of the stratum.

Subsidized Private D has no significant differences with any of the other strata; however, the B and A subsidized private strata (without significant differences between them) have a higher result than Public B and D strata (without significant differences between them).

PISA elaborates an economic, social, and cultural index from data related to the parents' profession, certain material assets at home, and a series of cultural activities the family performs. This information is reflected in two indexes: the students' economic, social, and cultural index, and the school's economic, social, and cultural index. The average established by OECD for each one of these indexes is 0.00 with a standard deviation of 1.00. From these values that may oscillate between +1 and -1, each country is at one point of the index according to the obtained score.

The economic, social, and cultural status data from the Basque students of each stratum are the following:

Stratum	Level
Public A	-0.75
Public B	-0.44
Public D	-0.10
Subs. Private B	0.03
Subs. Private D	0.09
Subs. Private A	0.18
Basque Country	-0.04
OECD	0.00

As regards the rest of the countries, Basque Country has a value in this index that is slightly lower than the OECD average.



Graph 8. Economic, social, and cultural index by stratum (Linguistic model and Network)

As it can be seen, there is an unbalance in the students' economic, social, and cultural status between the different strata, and it is clear that the Public A model schools have the lowest socio-economic index.

Since the results are highly influenced by this variable, the Science result of each stratum has been estimated taking into account the economic, social, and cultural index and subtracting its influence, that is, it is estimated what the expected results would be if all the strata had an average index equal to the one from the OECD (0.00).



Graph 9. Increase in the Science score if the economic, social, and cultural index is the same as the OECD average (0.00)

CHANGE IN SCORE WHEN CONTROLLING THE STUDENTS' ECONOMIC, SOCIAL, AND CULTURAL INDEX

			Score
	Initial	Final	increase
Public A	435.6	454.2	18.6
Public D	486.9	489.9	3.0
Public B	476.7	492.1	15.4
Basque Country	494.7	496.5	1.9
Subs. Private D	501.3	499.5	-1.8
Subs. Private B	504.6	503.8	-0.8
Subs. Private A	513.8	509.4	-4.4





The initial results would be compensated after having introduced the students' economic, social, and cultural variable. The strata where the results vary the most are those where said index is the lowest. For example, the Public A stratum would increase its average score by 18.6 points.

Once this is adjusted, the differences between the strata would be limited to the Public A Model, which has a significant difference below the rest, and to the Public D Model as regards the subsidized Public A.

In addition to the individual index of the economic, social, and cultural status, another aspect that affects the results is this index's average in each school. The value of these indexes in each stratum is the following:

	Individual	School
Public A	-0.75	-0.78
Public B	-0.44	-0.60
Public D	-0.10	-0.14
Basque Country	-0.04	-0.11
Subs. Private B	0.03	0.01
Subs. Private D	0.09	0.08
Subs. Private A	0.18	0.12

ECONOMIC, SOCIAL, AND CULTURAL INDEX

As it can be seen, the average values are quite similar to some specific characteristics in the public schools where the averages are a little lower than those at the individual level; it should be taken into account that these school averages are only for information purposes since they are not weighted in each school's specific value.

If the influence of this index is controlled, from the individual perspective as well as from the school's perspective (with two individualized variables, so that each student is assigned their value in the index as well as the average value of said index, which includes all the students from the school who participated in the test), the obtained results are the following:



Graph 11. Science score increase if the students' and the school's individual economic, social, and cultural index is controlled

Initial Score Final Score increase Score final Public A 435.6 454.2 18.6 489.7 54.1 Public D 486.9 489.9 3.0 491.0 4.1 Basque Country 494.7 496.5 1.9 497.6 2.9			Individual		Individua	l + School
Public A 435.6 454.2 18.6 489.7 54.1 Public D 486.9 489.9 3.0 491.0 4.1 Basque Country 494.7 496.5 1.9 497.6 2.9		Initial	Final	Score increase	Final	Score increase
Public D 486.9 489.9 3.0 491.0 4.1 Basque Country 494.7 496.5 1.9 497.6 2.9	Public A	435.6	454.2	18.6	489.7	54.1
Basque Country 494.7 496.5 1.9 497.6 2.9	Public D	486.9	489.9	3.0	491.0	4.1
	Basque Country	494.7	496.5	1.9	497.6	2.9
Subs. Private D 501.3 499.5 -1.8 497.8 -3.5	Subs. Private D	501.3	499.5	-1.8	497.8	-3.5
Subs. Private B 504.6 503.8 -0.8 502.8 -1.8	Subs. Private B	504.6	503.8	-0.8	502.8	-1.8
Subs. Private A 513.8 509.4 -4.4 504.8 -9.0	Subs. Private A	513.8	509.4	-4.4	504.8	-9.0
Public B 476.7 492.1 15.4 511.0 34.3	Public B	476.7	492.1	15.4	511.0	34.3

CHANGE IN SCORE WHEN CONTROLLING THE INDIVIDUAL AND THE SCHOOL'S SOCIAL AND CULTURAL INDEX

*Sorted by final individual score plus the school's score



Graph 12. Change in Science score if the students' and the school's individual economic, social, and cultural index is controlled

After controlling the variables related with the students' and the school's economic, social, and cultural indexes, the difference between the strata is only statistically significant between the Public D model and the subsidized Private A model.

It can be stated, therefore, that the stratum results are conditioned by social, economic, and cultural variables up to the point that if these indexes are the same, the differences decrease considerably.

Results by language of the test²

It was decided in the PISA 2003 test that each student from the D model would take the test in their native language, and the differences were not statistically significant between Basque and Spanish speakers either. This deci-

⁽²⁾ See study "Student Performance in Chinese Medium-of-Instruction (CMI) and English Medium-of-Instruction (EMI) Schools: What we learned from the PISA study en Hong Kong", Esther Sui-Chu Ho y Evelyn Yee-Fun Man (The Chinese University of Hong Kong). Several conclusions may be drawn from these results. First, the students' performance in areas with a high linguistic requirement such as Reading and Science is often infra-valued when tested in English (L2). This is because they are less competent in L2 than in L1. www.isei-ivei.net/cast/pub/indexpub.htm

sion was based on the research carried out by the ISEI-IVEI. It confirmed that the bilingual students did better in the language they mastered, and their competence level was underestimated when taking the tests in the second language.

The same criteria were maintained in PISA 2006. The following chart refers to the D model students that have taken the test in Spanish or in Basque, according to their native language.

LANGUAGE OF THE TEST						
	Ν	%	Average	SE	SD	(SE)
Spanish	1,468	73.3%	492.4	4.4	80.9	(2.2)
Basque	535	26.7%	495.1	6.0	78.7	(2.6)

There are no significant differences between the results obtained by the students who have taken the test in Basque and the ones that took it in Spanish, both being very similar.

It may be concluded that the students that learn in Basque and take the test in Spanish have not suffered, as their performance was of the same level as those that took the test in Basque, with said language being their native language.



Graph 13. PISA 2006 Science results by language of the test

These results are in accordance with those offered by other international research where the students have taken the different PISA tests in their native language, and not in the language of instruction.

Results by Autonomous Communities

Unlike PISA 2003 where only the Autonomous Communities from Castilla y Leon, Catalonia, and Basque Country participated with their own sample, in PISA 2006 there has been an increase in the number of Autonomous Communities that have taken part in it, from 3 to 10.

Global performance

The following chart shows the global results each Autonomous Community obtained in Science, sorted from higher to lower score.

	Average	SE	Significance with Basque Country
Castile and Leon	520	(3.9)	1
La Rioja	520	(2.5)	↑
Aragón	513	(3.9)	↑
Navarre	511	(2.9)	↑
Cantabria	509	(3.6)	↑
Asturias	508	(4.9)	↑
Galicia	505	(3.4)	1
Basque Country	495	(3.5)	—
Catalonia	491	(5.1)	—
Andalusia	474	(4.0)	\downarrow
Spain	488	(2.5)	
OECD	500	(0.5)	

Significant differences at 95%:

↑ Score significantly higher than the average of Basque Country

 $\downarrow\,$ Score significantly lower than the average of Basque Country

We can see that 7 Autonomous Communities have obtained global results significantly higher than the ones from the Basque Country: Castilla y Leon, La Rioja, Aragon, Navarre, Cantabria, Asturias, and Galicia. Andalusia obtained scores significantly lower than Basque Country, while the ones from Catalonia are similar.

Results by Science performance levels

The following chart summarizes the students' percentages by Science performance levels of each Autonomous Community.

IN AUTONOMOUS COMMUNITIES							
	Level –1	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
Castile and Leon	0.9	7.9	24.4	34.0	25.1	7.1	0.6
Asturias	2.3	10.0	24.8	35.0	22.1	5.2	0.5
La Rioja	2.0	8.3	23.3	32.4	25.1	8.0	0.8
Cantabria	2.9	9.6	24.8	33.1	22.8	6.4	0.4
Basque Country	3.2	12.5	27.9	33.5	18.5	4.0	0.3
Aragón	2.4	9.9	24.3	31.0	24.5	7.2	0.8
Galicia	2.8	11.4	26.9	30.8	21.4	6.0	0.7
Navarre	2.0	11.6	24.9	30.6	22.5	7.6	0.9
Catalonia	4.7	13.9	26.2	31.7	18.9	4.2	0.4
Andalusia	5.9	17.4	30.2	29.0	14.6	2.8	0.1
Spain	4.7	14.9	27.4	30.2	17.9	4.5	0.3
OECD	5.2	14.1	24.0	27.4	20.3	7.7	1.3

STUDENTS' PERCENTAGES BY PERFORMANCE LEVELS

The following graph has been sorted according to the sum of the students' percentages at the intermediate levels 2, 3, and 4, from higher to lower. To the left of the 0 value are the lowest levels in each Community, less than 1 and 1 and to the right of the 0 value are the levels 2, 3, and 4, as well as those corresponding to higher levels 5 and 6.



Graph 14. Students' percentages by performance levels in Autonomous Communities. Distribution sorted by the sum of levels 2, 3, and 4

The Basque Country would be in the 5th place among the Autonomous Communities, after Castile and Leon, Asturias, La Rioja, and Cantabria.

The Communities with better global results, such as La Rioja and Castile and Leon, have a higher percentage of students that are in higher levels. On the contrary, those Communities with lower global scores, such as Andalusia and Catalonia, have higher students' percentages that do not exceed the lower performance levels.

II. PISA 2003-2006 SCIENCE PERFORMANCE EVOLUTION

This is the second time the Basque Country is part of the PISA project, since in 2003 as well as this time, PISA 2006, it participates with an enhanced sample.

As previously mentioned, PISA's triennial assessments focused their attention in certain areas laying the basis for later assessments. The assessment's basic design remains constant to compare results over time.

Therefore, it is hasty to discuss the Science performance evolution since this is the first year the Science area is the assessment's main objective. In fact, PISA 2006 will be the basis to compare the results with all the later Science assessments. The direct comparison of PISA 2006 results with the ones obtained in PISA 2003 is not possible due to the imbalance between the items used in one case (14 links in 2000 and 2003), and in the other (103 items).

Nevertheless, it is possible to provide information about the evolution of the results in the Basque Country in this period.

Science results evolution in the Basque Country PISA 2003-PISA 2006

The score used in all of the assessments as a reference is the OECD average. Thus, in PISA 2003 the result average of the Basque Country was significantly lower than the OECD, while in PISA 2006 the results were at the same level as the OECD average.

According to both assessments' scores, it can be stated that the results in the Basque Country have had a positive evolution since it reached the OECD average, even exchanging positions with the results in Spain. Notwithstanding this improvement, the differences in 2006, as it happened in 2003, are not significant with the OECD.

The following graph shows situation in Basque Country as regards the OECD average. The boxes mean scores are the same as the OECD average; thus, in 2003, Basque Country was below the OECD average, while in 2006, it was at the OECD average together with countries such as Hungry, Sweden, Poland, Denmark, and France.



Graph 15.

Results evolution by gender

As regards the differences between boys and girls, the situation remains the same as in 2003: there are no differences between boys and girls, although the girls obtained more points than the boys in both assessments. The difference between both groups, 6 points in 2003, has been reduced to 3 in this assessment.

However, boys and girls have improved their results as regards the OECD average, since in PISA 2003 there were in both cases significant differences in favour of the OECD, and in 2006 said differences have disappeared in the girls' and in the boys' groups.

III. SCIENCE AREA CONCLUSIONS

1. Science global performance

- 1. The students of the Basque Country obtain the same score in Science as the OECD countries' average. According to the significance of the results of the participating countries, it is in the 21st place.
- 2. The Basque education system is an **equitable system**, where 80% of the 15-year-old students achieve intermediate performance levels in Science, a percentage clearly higher than the OECD average (72%), and slightly higher than the average of Spain (76%).
- 3. 15.7% of the students are at the lowest performance levels versus 24.4% of the OECD average. This positive comparison should not hide the worrying fact that 3.2% of the Basque students do not reach the most elementary level, as compared to 5.2% of OECD, and that 12.5% only reach level 1 versus 14.1% of OECD.
- 4. The low percentage of students that reach high performance levels (4.3%) shows a lack of excellence in the Science results.
- 5. The students' CSE level significantly affects the Science performance. The best results are obtained by the 4th year CSE students (518), who are above the Basque Country and the OECD global average. The 2nd and 3rd CSE students have obtained significantly lower results.
- 6. Performance by stratum:
 - There are important differences in the Science performance among strata. A large part of these differences is due to the students' economic, social, and cultural variable; if its influence is not considered, these differences cease. The same happens if the school's economic, social, and cultural index is controlled.
 - There is an unbalance in the students' economic, social, and cultural status in the different strata, which clearly shows that the Public A model schools have the least value in this index.
- 7. There are no significant differences between the results obtained by the D model students who have taken the test in Basque and the ones who took it in Spanish.
- 8. The results of the Basque Country are the same as the average of Spain and Catalonia; they are higher than the Andalusia, and significantly lower than the rest of the Autonomous Communities that participated in this test.
- 9. The difference in the Science result in the Basque Country between boys and girls is one of the smallest (–3). The Basque girls obtain better performance than the boys, a fact that occurs in 26 of the 58 countries that participated in the PISA 2006 assessment.

2. Science sub-scales performance

- Within the scientific competence sub-scales or abilities, the Basque Country students obtained the same results as the OECD average in "Explain phenomena scientifically" and "Use of scientific proof". However, they obtained lower results in the sub-scale Identify scientific matters.
- In the scientific knowledge sub-scales they have obtained results similar to the OECD countries average in "Live systems" and "Earth and space systems", while the result in "Physical systems" is significantly lower.
- There are significant differences between Basque boys and girls in "Earth and space" (498 points for the boys versus 486 for the girls), and "Physical systems" (488 for the boys to 469 for the girls). There are also differences in "Live systems", but they are not significant.

3. Science performance evolution PISA 2003-2006

When comparing the results between the 2003 and 2006 assessments, there is a positive evolution in the Basque students' performance, since there has been a noticeable increase in Science.

Nevertheless, the majority's perception can not hide the fact that the Science results are low, and that an effort is still necessary for the students' performance to continue increasing, not only in the global average but also in each one of the different performance levels, with more emphasis in the higher levels where the students' percentage is certainly scarce. It would be desirable to increase the obtained score in the consequent sub-scales, in skills as in content.




I. MATHEMATICS RESULTS

In 2003, PISA focused the assessment mainly in Mathematics competence -and therefore, there were four sub-scales scores plus the global score-; the PISA 2006 assessment tested the 15-year-old students' Mathematics competence through only one global scale. Consequently, the results analysis is focused in only one score corresponding to the Mathematics area.

Mathematics global performance

The Basque 15-year-old students' average score in Mathematics competence is **501 points**.

Comparing these results with those obtained by the OECD countries' students, we can see that the Basque students equal the average score obtained by the OECD countries.

Science	Ν	Average	Standard Error	SD (SE)
Basque Country	3,929	501	3.4	84.9 (1.8)
OECD	251,278	498	0.5	92 (0.4)

* There are no significant differences with 95% of reliability level

The Basque students' Mathematics training has no significant difference with the OECD countries average.



Graph 16. Mathematics results PISA 2006

The following table shows the results obtained in Mathematics competence in all the participating countries, and the relative position each one has according to the obtained score. It is sorted in decreasing order according to the score obtained in Mathematics, starting with the best scored country, Chinese Taipei with 549 points, and ending with Kirguistan with 311 points.

Country	Score	SE	Significance with OECD
Chinese Taipei	549	(4.1)	1
Finland	548	(2.3)	1
Hong Kong-China	547	(2.7)	1
Korea	547	(3.8)	1
Netherlands	531	(2.6)	1
Switzerland	530	(3.2)	1
Canada	527	(2.0)	1
Macao-China	525	(1.3)	1
Liechtenstein	525	(4.2)	1
Japan	523	(3.3)	1
New Zealand	522	(2.4)	1
Belgium	520	(3.0)	1
Australia	520	(2.2)	1
Estonia	515	(2.7)	1
Denmark	513	(2.6)	1
Czech Republic	510	(3.6)	1
Iceland	506	(1.8)	1
Austria	505	(3.7)	1
Slovenia	504	(1.0)	1
Germany	504	(3.9)	
Sweden	502	(2.4)	
Ireland	501	(2.8)	
Basque Country	501	(3.4)	
OECD	498	(0.5)	
France	496	(3.2)	
United Kingdom	495	(2.1)	
Poland	495	(2.4)	
Slovak Republic	492	(2.8)	
Hungary	491	(2.9)	\downarrow
Luxembourg	490	(1.1)	,

MATHEMATICS RESULTS AVERAGE BY COUNTRY

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Country	Score	SE	Significance with OECD
Norway	490	(2.6)	\downarrow
Lithuania	486	(2.9)	\downarrow
Latvia	486	(3.0)	\downarrow
Spain	480	(2.3)	V
Azerbeidjan	476	(2.3)	¥
Russian Federation	476	(3.9)	¥
United States	474	(4.0)	¥
Croatia	467	(2.4)	\downarrow
Portugal	466	(3.1)	\downarrow
Italy	462	(2.3)	\downarrow
Greece	459	(3.0)	\downarrow
Israel	442	(4.3)	\downarrow
Serbia	435	(3.5)	\downarrow
Uruguay	427	(2.6)	\downarrow
Turkey	424	(4.9)	\downarrow
Thailand	417	(2.3)	¥
Romania	415	(4.2)	\downarrow
Bulgaria	413	(6.1)	\downarrow
Chile	411	(4.6)	\downarrow
Mexico	406	(2.9)	\downarrow
Montenegro	399	(1.4)	V
Indonesia	391	(5.6)	\downarrow
Jordan	384	(3.3)	V
Argentina	381	(6.2)	\downarrow
Colombia	370	(3.8)	\downarrow
Brazil	370	(2.9)	↓
Tunisia	365	(4.0)	V
Qatar	318	(1.0)	\downarrow
Kirgyzstan	311	(3.4)	ļ

Significant differences at 95%:

 \uparrow : score significantly higher than the OECD average

 \downarrow : score significantly lower than the OECD average

Significant difference as regards the average score of Basque Country

The white colour of the table represents the countries with the same average score as the Basque Country, with no statistically significant differences between them. The highlighted rows represent the countries with results significantly higher or lower than the Basque Country. The last column indicates with arrows if the score of each country is significantly higher or lower than the OECD average.

As it can be seen, Basque 15-year-old students are slightly above the OECD countries' average. They obtained the same or similar scores in Mathematics as Germany, Sweden, Ireland, or France. Fifteen of the participating countries (highlighted) obtained scores significantly higher than the Basque Country, while 33 countries obtained significantly lower scores.

Results by Mathematics performance levels

The results have been grouped in different performance levels according to the obtained scores. The levels have been established so there is a 62-point gap between one level and the next. When a student is at a specific level, it means that said student exceeds at least 62% of the items at said level, as well as most of the items from the lower levels and a smaller percentage of the items from the higher levels.

The following table shows the score obtained at each level, as well as the students' percentage, both with respect to the OECD countries' average as well as in the Basque Country average.

LEVEL	Score	OECD (%)	Basque Country
Less than 1	<357.77	7.7	5.1
1	357.77-420.07	13.6	11.8
2	420.07-482.38	21.9	23.0
3	482.38-544.68	24.3	28.2
4	544.68-606.99	19.1	21.7
5	606.99-669.3	10.0	8.5
6	> 669.3	3.3	1.6

Most of the Basque Country students are at intermediate performance levels, with the lowest percentage of students at the extremes, that is, those corresponding to very high or very low performance.



Graph 17. Students' Percentage at the performance levels. PISA 2006 Mathematics

10.1% of the Basque Country students are at levels 5 and 6, which are indicators of excellence in the Mathematics results; this percentage is a little lower than the OECD average percentage where 13.3% of the students are at these levels.

16.9% of the Basque Country students are at the lowest performance levels —Level 1 and Level less than 1—, a percentage clearly lower than the OECD average, where 21.2% of the students do not exceed these minimum levels of Mathematics training. The following graph shows the distribution of the participating countries' students in the 6 Mathematics literacy levels. They have been grouped according to the students' percentage at the intermediate levels, combining levels 2, 3, and 4 and sorting them from highest to lowest percentage. The lowest levels are to the left of the 0 value, less than 1 and 1; the intermediate levels —2, 3, and 4— to the right, as well as the higher levels 5 and 6.

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FIRST PISA 2006 ASSESSMENT REPORT



Graph 18. Students' distribution by levels. Mathematics Sorted by students' percentage at levels 2, 3, and 4

The Basque Country has one of the highest percentages of students at the intermediate performance levels. It is in 4th place after Estonia, Azerbeidjan, and Ireland, with a students' percentage in this intermediate section similar to Denmark, Canada, or Macao-China. It is worth noting the similarity of the Basque students' results with the ones from Ireland, in the global result as well as in the distribution of students' percentage in the performance levels, which is practically the same.

As it can be seen, the countries with good results have higher students' percentages in the higher performance levels. For example Chinese Taipei that has more than 30% of the students in these optimal performance levels, and Korea or Finland, where 24% of the students have higher performance. These countries also have very low percentages of students in the lower levels.

Spain has a lower percentage of students in these average performance levels, but it still is above the OECD average.

The Basque Country situation shows in detail that 72.9% of the 15-year-old students are in intermediate performance levels in Mathematics. This percentage is higher than OECD countries' average, where 65.3% of the students reach these levels, and it is also higher than Spain's, where 68.1% of the students are at these intermediate levels.

The percentage of Basque students in the extremes —the lowest levels and those that indicate excellence in the results— is lower than in the OECD.

These data may be interpreted in two ways. A positive aspect comes from 16.9% of students versus the OECD 21.2% in the lowest performance levels, level 1 and less than 1. Comparing these percentages as a whole may indicate good results; the negative aspect, however, is that a percentage of them, exactly 5 out of 100 Basque students, do not reach the most elementary level, and that 12 out of 100 only reach level 1.

Taking into account the higher performance levels — levels 5 and 6—, only 10.1% of Basque students are at this level. These data, showing that lack of students that perform optimally, get worse especially in level 6, the highest Mathematics training, since only 1.6% of the 15-year-old students reach this level.

As regards these data, it could be stated that the Basque education system is quite equitable, where the vast majority reach average levels of Mathematics training. However, it also shows a lack of students that reach higher Mathematics training since the percentage of students that reaches these levels is considerably lower than the OECD average.

Results by gender

The following table shows the Mathematics results obtained by students from different countries. It has been sorted from highest to lowest, using the difference in the scores obtained by girls with respect to boys.

	MATHEMATICS					
	Gi	rls	Во	ys	Differ	ence*
COUNTRIES	Score	SE	Score	SE	Differ.	SE
Oatar	325	(1.3)	311	(1.6)	-14	(2.1)
Jordan	388	(3.9)	381	(5.3)	-7	(6.5)
Thailand	420	(2.6)	413	(3.8)	-7	(4.2)
Iceland	508	(2.2)	503	(2.6)	-4	(3.2)
Bulgaria	415	(6.5)	412	(6.7)	_4	(4.9)
Azerbeidian	477	(2.6)	475	(2.4)	-1	(2.0)
Liechtenstein	525	(7.0)	525	(7.4)	0	(11.7)
Kirguistan	310	(3.4)	311	(4.0)	1	(2.9)
Estonia	514	(3.0)	515	(3.3)	1	(3.2)
Lithuania	485	(3.3)	487	(3.3)	2	(3.0)
Basque Country	500	(3.4)	502	(4.2)	3	(3.3)
Greece	457	(3.0)	462	(4.3)	5	(4.5)
Slovenia	502	(1.8)	507	(1.8)	5	(2.9)
Sweden	500	(3.0)	505	(2.7)	5	(2.9)
Latvia	484	(3.2)	489	(3.5)	5	(3.0)
Serbia	433	(4.4)	438	(4.0)	5	(4.5)
Russian Federation	473	(3.9)	479	(4.6)	6	(3.3)
Turkey	421	(5.1)	427	(5.6)	6	(4.6)
Norway	487	(2.8)	493	(3.3)	6	(3.1)
France	492	(3 3)	499	(4.0)	6	(3.7)
Romania	412	(4.9)	418	(4.2)	7	(3.3)
Belgium	517	(3.4)	524	(4.1)	7	(4.8)
United States	470	(3.9)	479	(4.6)	9	(2.9)
Spain	476	(2.6)	484	(2.6)	9	(2.2)
Mexico	401	(3.1)	410	(3.4)	9	(2.6)
Poland	491	(2.7)	500	(2.8)	9	(2.6)
Korea	543	(4.5)	552	(5.3)	9	(6.3)
Hungary	486	(3.7)	496	(3.5)	10	(4.3)
Denmark	508	(3.0)	518	(2.9)	10	(2.8)
Czech Republic	504	(4.8)	514	(4.2)	11	(5.6)
New Zealand	517	(3.6)	527	(3.1)	11	(4.7)
Macao-China	520	(1.7)	530	(2.1)	11	(2.9)
OECD	492	(0.6)	503	(0.7)	11	(0.7)
Ireland	496	(3.2)	507	(3.7)	11	(4.1)
Montenegro	393	(1.9)	405	(2.3)	12	(3.3)
Finland	543	(2.6)	554	(2.7)	12	(2.6)
Israel	436	(4.3)	448	(6.6)	12	(6.9)
Netherlands	524	(2.8)	537	(3.1)	13	(2.8)
Argentina	375	(7.2)	388	(6.5)	13	(5.6)
Uruguay	420	(3.1)	433	(3.6)	13	(4.2)
Chinese Taipei	543	(5.9)	556	(4.7)	13	(6.7)
Croatia	461	(2.8)	474	(3.2)	13	(3.8)
Switzerland	523	(3.6)	536	(3.3)	13	(2.7)
Canada	520	(2.0)	534	(2.4)	14	(1.9)
Slovak Republic	485	(3.5)	499	(3.7)	14	(4.6)
Australia	513	(2.4)	527	(3.2)	14	(3.4)
Portugal	459	(3.2)	474	(3.7)	15	(3.3)
Tunisia	358	(4.4)	373	(4.4)	15	(3.6)
Hong Kong-China	540	(3.7)	555	(3.9)	16	(5.5)

	MATHEMATICS					
	Gi	rls	Во	Boys		ence*
COUNTRIES	Score	SE	Score	SE	Differ.	SE
Luxembourg	482	(1.8)	498	(1.7)	17	(2.8)
Italy	453	(2.7)	470	(2.9)	17	(3.4)
United Kingdom	487	(2.6)	504	(2.6)	17	(2.9)
Indonesia	382	(4.0)	399	(8.3)	17	(7.3)
Brazil	361	(3.0)	380	(3.4)	19	(2.8)
Germany	494	(3.9)	513	(4.6)	20	(3.7)
Japan	513	(4.9)	533	(4.8)	20	(7.2)
Colombia	360	(5.0)	382	(4.1)	22	(4.6)
Austria	494	(4.1)	517	(4.4)	23	(4.7)
Chile	396	(4.7)	424	(5.5)	28	(4.8)

* Positive differences mean that the boys' results are better than the girls'.

Negative differences indicate that the girls have better results than the boys. Statistically significant differences are in bold.

The Basque Country has the smallest difference in Mathematics between girls and boys. There is a three-point difference between these two groups that is not significant, that is, the girls and the boys practically obtained the same results in Mathematics. (Boys: 502.5 points; girls: 499.7 points; difference: 2.7 points).

As regards the OECD countries, the differences between boys and girls are considerably reduced. Boys exceed the girls in 11 points in the OECD average, while in the Basque Country the boys exceed the girls in less than 3 points. This situation is similar to that in Greece, Sweden, or Lithuania, where the boys only slightly exceeded the girls' scores.



Graph 19. PISA 2006 Mathematics results by gender

As regards OECD, Basque boys obtained similar results, without significant differences. The Basque girls, however, with 499.7 points obtained results significantly higher than the OECD girls' (492 points).

	Basque Country OE		Significance with OECD
Boys	502.5	503	=
Girls	499.7	492	1

Results by educational level

The 15-year-old students in the Basque Country usually attend the 4th year CSE; however, those who have repeated a year or have started school later may be of the same age in the 2nd or 3rd year CSE. The distribution of students that participated in PISA 2006 was the following (2 students were not taken into account since one was attending the 1st year CSE and the other the 1st year of Higher Scondary Education):

STUDENTS' PERCENTAGE IN EACH LEVEL ACCORDING TO THE SAMPLE

Level	Ν	%
2 nd CSE	153	3.9
3 rd CSE	773	19.7
4 th CSE	3,001	76.4

*2006 weighted data

Most of the students participating in PISA 2006 are attending the level corresponding to their age. 76.4% were in the 4th year CSE, 19.7% in the 3rd year CSE and have repeated one school year, while 3.9% of the 15-year-old students, who allegedly have repeated two school years, attend the 2nd year CSE.

MATHEMATICS 2006. RESULTS BY EDUCATIONAL LEVELS					
	Average	Standard Error	SD (SE)		
2 nd CSE	360.6	7.5	63.3 (6.7)		
3 rd CSE	428.7	3.7	65.8 (2.5)		
4 th CSE	526.9	3.0	71.2 (1.4)		

The 15-year-old students attending their age-corresponding level —4th year CSE— obtain better performance. With 526.9, points they exceeded the Basque Country average by 25 points. The 3rd year cluster, who repeated one school year, obtained an average score of 428.7 points, which is lower than the Basque Country global average. The cluster corresponding to the 2nd year CSE, who allegedly have repeated two school years, obtained the lowest results.

The differences are significant in all the cases: the students that attend school with their age group obtained results significantly higher than those who repeated one or two school years. Likewise, those attending the 2nd year CSE obtained results significantly lower than those attending CSE 3rd and 4th years.



Graph 20. PISA 2006 Mathematics results by educational level

Global Results by stratum: influence of the economic, social, and cultural status

The global results obtained in Mathematics are analysed according to different variables in the education system such as the students' stratum, and the incidence of the economic, social, and cultural status.

When analysing the network and the linguistic model together, that is, the stratum where the students are trained, there are large differences as shown by the following graph.



Graph 21. PISA 2006 Mathematics results by stratum

There is a 101-point difference in Mathematics between the 15-year-old students in the Public A model and the subsidized Private B model, which reached the highest score. Transferring this score to the levels established by PISA for this area, these data would mean that the Public A Model students would not exceed level 1 performance. The students from the rest of the strata would be in level 3, which includes scores between 482 and 544 points.

The three public network models are below the Basque Country average, while the three from the subsidized private network exceed it. The following chart shows the significance of the differences existing between them:

	Public A	Public B	Public D	Subs. Private A	Subs. Private B	Subs. Private D
Public A		Ļ	Ļ	Ļ	ţ	Ļ
Public B	Ť		=	=	=	=
Public D	Ť	=		=	ţ	Ļ
Subs. Priv. A	Ť	=	=		=	=
Subs. Priv. B	Ť	=	Ť	=		=
Subs. Priv. D	î	=	↑	=	=	

DIFFERENCE SIGNIFICANCE AT 95%

The chart reads from left to right.

↑ Positive significant difference at 95%. ↓ Negative significant difference at 95%.

= There is no significant difference at 95%. Difference significance at 95%.



Graph 22. PISA 2006 Mathematics Results by Stratum

Public A stratum obtained scores significantly lower than the rest of the stratum. Public D score is lower than subsidized B and D, and the same as subsidized A. There are no significant differences between the subsidized network strata.

Public B stratum has the same results as Public D and as subsidized network models, despite the fact that its scores are much lower; this is because this stratum has very few students.

These performance differences between the strata are in part modified when analysing the influence of the students' and the school's economic, social, and cultural status. In the case of Mathematics, the analysis is done through the student's economic, social, and cultural index since when the second index is corrected (school's economic, social, and cultural status) the results are not modified (see section Science "indexes elaboration").

The following graph shows the average economic, social, and cultural index of the Basque students and of the different strata.



Graph 23. Economic, social, and cultural index by stratum (Linguistic model and network)

As previously mentioned, there are important differences in the economic, social, and cultural index corresponding to each stratum. Since this variable has a large incidence in the results, the final performance in Mathematics has been estimated in each stratum if the influence of this factor is not considered. That is, the expected results are estimated in each stratum if all had the same economic, social, and cultural index as the OECD (0.00).

Public A and B strata experience a higher increase in the final score in accordance with the low economic, social, and cultural index they have. The three strata corresponding to the subsidized network slightly decrease the final result when controlling the influence of this index.





The following table shows the variation of the Mathematics score in each stratum. When controlling the influence of the economic, social, and cultural index, making it equal to the OECD, the Basque Country global score is 502.8 points. Public B and D models have practically the same score as the OECD average.

			Score
	Initial	Final	increase
Public A	416.1	428.0	11.9
Public B	485.3	497.6	12.3
Public D	496.8	499.7	3.0
Subs. Priv. A	508.3	503.72	-4.6
Subs. Priv. D	516.6	514.9	-1.7
Subs. Priv. B	517.5	516.6	-0.9
Basque Country	501.1	502.8	1.7

MATHEMATICS SCORE BY STRATUM CONTROLLING THE INDIVIDUAL INDEX

The changes in the Mathematics scores when not considering the influence of the economic, social, and cultural index do not prevent some significant differences. That is the case of Public A stratum, which maintains a score lower than the rest of the stratum, and subsidized B, that maintains a score significantly higher than Public D. Only the differences between Public D and subsidized D models are equal.

	Public A	Public B	Public D	Subs. Private A	Subs. Private B	Subs. Private D
Public A		Ļ	Ļ	Ļ	Ļ	Ļ
Public B	Ť		=	=	=	=
Public D	Ť	=		=	Ļ	=
Subs. Priv. A	Ť	=	=		=	=
Subs. Priv. B	↑	=	↑	=		=
Subs. Priv. D	Ť	=	=	=	=	

DIFFERENCE SIGNIFICANCE AT 95% CONTROLLING THE INDEX

The chart reads from left to right.

↑ Positive significant difference at 95%. ↓ Positive significant difference at 95%.

= No existe diferencia significativa al 95%.



Graph 25. Change in the Mathematics score if the students' individual economic, social, and cultural status index is controlled

When the effect of the individual socio-economic level is not considered, there is only a significant difference between the results from Public B and subsidized B strata.

In the case of Mathematics, when the school's economic, social, and cultural index is not considered, the same mentioned differences remain in all the strata.

Global results by language of the test

As previously mentioned in the introduction, the D model students have taken the test in the same language they usually speak in their family context. In this model, the students that took the test in Spanish obtained a score lower than the ones that took it in Basque, both cases being higher than the Basque Country average. **The difference in the score of these groups is not statistically significant.**



Graph 26. PISA 2006 Mathematics Results in Model D By Language of the test

Results by Autonomous Communities

The number of Spanish Autonomous Communities participating with their own sample has considerably increased in the PISA 2006 assessment. Unlike PISA 2003, where only Castile and Leon, Catalonia, and the Basque Country participated, there are now seven more Communities. Each of their results is reflected in the following tables.

Community	Average	SE	Significance with Basque Country
La Rioja	526	2.2	1
Castile and Leon	515	3.3	1
Navarre	515	3.5	1
Aragón	513	4.5	1
Cantabria	502	2.6	
Basque Country	501	3.4	
Asturias	497	4.9	
Galicia	494	4.1	
Catalonia	488	5.2	\downarrow
Andalusia	463	4.2	\downarrow
Spain	480	2.3	\downarrow
OECD	498	0.5	

GLOBAL MATHEMATICS PERFORMANCE

 $\uparrow\,$ Score significantly higher than the average of Basque Country

↓ Score significantly lower than the average of Basque Country

The performance of the Basque students is similar to Cantabria, Asturias, and Galicia. The 15-year-old students from La Rioja, Castile and Leon, Navarre, and Aragon have results significantly higher than the Basque Country. Basque students obtained results significantly higher than the average of Spain; they are also significantly higher than those from Catalonia and Andalusia.

Results by Mathematics performance levels

STUDENTS PERCENTAGE BY PERFORMANCE LEVELS								
	IN AUTONOMOUS COMMUNITIES							
	Level –1	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	
La Rioja	3.1	8.0	18.8	27.0	24.8	13.8	4.5	
Castile and Leon	2.6	9.8	22.4	28.9	22.4	11.0	2.8	
Navarre	4.4	11.0	20.7	24.2	23.1	13.3	3.2	
Aragón	5.9	10.7	20.8	23.8	21.9	12.1	4.7	
Cantabria	5.7	11.2	22.6	27.9	22.2	8.6	1.8	
Basque Country	5.1	11.8	23.0	28.2	21.7	8.5	1.6	
Asturias	4.8	11.7	24.8	30.3	19.9	7.2	1.3	
Galicia	5.3	13.0	25.4	28.8	18.9	7.0	1.6	
Catalonia	7.6	13.4	25.2	27.4	18.3	6.8	1.3	
Andalusia	10.9	19.0	28.0	25.0	13.0	3.6	0.5	
Spain	8.7	15.7	25.7	26.2	16.6	6.0	1.2	
OECD	7.7	13.5	21.9	24.3	19.1	10.1	3.4	

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The Communities that achieved the best results have higher percentages of students in the higher performance levels (levels 5 and 6). For example, La Rioja has almost 19% of the students in high levels. Likewise, Navarre, Aragon, and Castile and Leon exceed the OECD average percentage (13.4% of the students in levels 5 and 6).

On the other hand, very high percentages in the lower performance levels (levels 1 and less than 1) are in accordance with the lowest global results. That is the case of Andalusia or Catalonia. The percentage of students in the intermediate levels is quite balanced in all the Communities, and it fluctuates between 66% and 73%.

The Basque Country, as regards the rest of the Communities, is in an intermediate situation. Its percentages in the average performance levels are within the highest, close to 73%; the percentage of students that reach the higher levels (10.1%) is in an intermediate situation, as the percentage that is in the lowest levels (16.9%).



Graph 27. Students' percentage by performance levels in Autonomous Communities Sorted by Mathematics performance levels 2, 3, and 4

II. MATHEMATICS PERFORMANCE EVOLUTION PISA 2003-2006

The Basque Country participation in the last two PISA assessments with its own sample makes it possible to start a comparative analysis of the results obtained in Mathematics in the PISA 2003 and PISA 2006 assessments, and to assess the performance evolution in this area. The following should be taken into account in order to compare the data:

 The average established for Mathematics in PISA 2003 was 500 points. In the PISA 2006 assessment, the average for all the countries has been established at 498 points.



Graph 28. Mathematics average established by OECD

 Consequently, the Basque Country results in PISA 2006 are compared with the average established this year for the OECD (498 points). Additionally, and to be able to assess the increase or decrease of the global score, it will be compared with the variation the average established for all the countries suffered in the two assessments (two points: from 500 to 498).

Now it can be seen the evolution of the participating countries. Among them, Indonesia, Brazil, Greece and Mexico have experienced a significant increase in the results obtained in PISA 2006 as regards the 2003 assessment.

Others, such as France, Iceland, Japan, or Liechtenstein obtain results significantly lower than those from the previous assessment.

The Basque Country maintains the results obtained in the PISA 2003 assessment. The same happens in Germany, Portugal, Denmark and Ireland, where there are no differences in the results achieved in both assessments.

DIFFERENCE IN MATHEMATICS PERFORMANCE PISA 2003 - PISA 2006

	PISA 2003	PISA 2006	Difference		PISA 2003	PISA 2006	Difference
Indonesia	360	391	31	Canada	532	527	-5
Mexico	385	406	20	Slovak Republic	498	492	-6
Greece	445	459	14	Czech Republic	516	510	-7
Brazil	356	370	13	Sweden	509	502	-7
Russian Federation	468	476	7	Netherlands	538	531	-7
Tunisia	359	365	7	United States	483	474	-9
Korea	542	547	5	Belgica	529	520	-9
Poland	490	495	5	Iceland	515	506	-10
Uruguay	422	427	5	Liechtenstein	536	525	-11
Finland	544	548	4	Japan	534	523	-11
Switzerland	527	530	3	France	511	496	-15
Latvia	483	486	3	United Kingdom	—	495	
Hungary	490	491	1	Argentina	—	381	
Germany	503	504	1	Azerbeidjan	—	476	
Turkey	423	424	1	Bulgaria	_	413	
Portugal	466	466	0	Chile	—	411	
Thailand	417	417	0	Chinese Taipei	—	549	
Austria	506	505	0	Colombia	—	370	
Basque Country	502	501	-1	Croatia	—	467	
Denmark	514	513	-1	Estonia	_	515	
Ireland	503	501	-1	Israel	_	442	
New Zealand	523	522	-1	Jordan	_	384	
OECD	500	498	-2	Kirgyzstan	_	311	
Macao-China	527	525	-2	Lithuania	_	486	
Hong Kong-China	550	547	-3	Montenegro	_	399	
Luxembourg	493	490	-3	Qatar	_	318	
Italy	466	462	-4	Romania	-	415	
Australia	524	520	-4	Serbia	_	435	
Spain	485	480	-5	Slovenia	-	504	
Norway	495	490	-5				

* Numbers in bold indicate significant differences at 95% of reliability; in bold and cursive, significant differences at 90% of reliability.

Mathematics results evolution PISA 2003-2006 in the Basque Country

THE BASQUE COUNTRY RESULTS IN MATHEMATICS					
	Average	Standard Error	SD (SE)		
PISA 2003	502	2.8	82.4 (1.15)		
PISA 2006	501	3.4	84.9 (1.8)		

The Basque students' Mathematics results remain the same since they obtained 501.6 points in PISA 2003 and 501 points in PISA 2006. However, comparing these results with the OECD average, there has been a slight improvement since if the OECD average varies, there are 3 points more as related to said average.



Graph 29. Mathematics results in the Basque Country

Considering the data as a whole, it may be stated that in this period the same Mathematics results are maintained. As in PISA 2003, they are still the same as the OECD average and they are significantly higher than the average of Spain.

The average of Spain score as compared to the 2003 assessment suffers a slight, insignificant decrease of 5 points, with results significantly lower than the OECD and the Basque Country. If in PISA 2003 the Basque Country had a 17-point difference with the average of Spain, in PISA 2006 there is a 21-point gap.



Graph 30. Comparison of Mathematics results 2003-2006

Results evolution by performance levels

The distribution of students in each Mathematics performance level is very similar to the PISA 2003 assessment. If the levels are classified into three groups according to low, mid, or high performance, the students are distributed similarly to the PISA 2003 assessment. Nevertheless, there are slight fluctuations of students' percentages that move from one level to another.

Even though these fluctuations in percentages are not very high, they are important due to the qualitative jump there is in the performance between the three levels. Thus, for example, the OECD students in the intermediate level increase 1.6%, while the ones in the higher level decrease 1.3%.

In the average of Spain, the percentage of students decreases in the intermediate level (-1%) and high level (-0.5%) at the expense of a 1.7% increase of the students in the low level.

Levels	Basque Country		OECD		Spain	
	2003	2006	2003	2006	2003	2006
Levels 0 and 1. Low	16.3	16.9	21.4	21.3	23.0	24.7
Levels 2, 3, and 4. Intermediate	74.0	72.9	63.9	65.3	69.1	68.1
Levels 5 and 6. High	9.7	10.1	14.7	13.4	7.9	7.2

EVOLUTION OF THE STUDENTS' PERCENTAGE IN THREE MATHEMATICS PERFORMANCE LEVELS

In the case of the Basque Country, and as regards the PISA 2003 results, the percentage of intermediate level students decreases 1.1%. This percentage is divided in a slight increase of students in the low level (0.6%) and in high performance (0.4%).

If the evolution of the percentage of high level students is analysed and compared with OECD, it can be seen that the 5% gap there was in PISA 2003 between the Basque Country and OECD has been reduced 1.6% in PISA 2006.



Graph 31. Evolution of the students' percentage in each Mathematics level

Results evolution by Autonomous Communities

When analysing the results evolution and comparing the Basque Country with the Autonomous Communities participating with their own sample in the PISA 2003 and 2006 projects, the positive evolution of Castile and Leon stands out. Not only does it maintain a result higher than the other two communities, but it also considerably increases it by 12 points. Catalonia decreases 7 points in its global result, while the Basque Country maintains the same result.

	Basque Country	Castile and Leon	Catalonia	
PISA 2003	502	503	495	
PISA 2006	501	515	488	
Difference	-1*	+12	-7	

* The actual difference is -0.53 points, since in PISA 2003 the score was 501.63 points and in PISA 2006 was 501.09 points.

Graph 32. Evolution of Mathematics results by Autonomous Communities with their own sample. PISA 2003 - PISA 2006



Results evolution by gender

The Mathematics performance evolution of the Basque boys and girls shows that both groups have had a very similar evolution. The boys maintained the same score, while the girls slightly decreased in this period.

	Basque Country		OE	CD	Spain		
	Girls	Boys	Girls	Boys	Girls	Boys	
PISA 2003	501	502	494	506	481	490	
PISA 2006	500	502	492	503	476	484	
Difference	-1		-2	-2	-5	-5	

When comparing the Basque boys' and girls' evolution in relation with the OECD and the average of Spain evolution, we can see that the Basque boys and girls maintained their results, while both groups from OECD and Spain had slightly lower average results. In the case of OECD, the boys decreased 2 points as regards PISA 2003; in Spain the boys and the girls decreased 5 points.

Results evolution by educational level

The students' distribution in the different educational levels is similar to the PISA 2003 assessment. There are, nevertheless, slight differences. For example, the percentage of students attending the school year corresponding to their

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age —4th year CSE— increases 1%. The percentage of students that have repeated two school years also increased 2 points, reaching 3.9% of the 15-year-old students who were in their 2nd year CSE in PISA 2006.

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	PISA 2	2003	PISA 2006		
Level	Students' %	Average	Students' %	Average	
2 nd CSE	1.9	391.1	3.9	360.6	
3 rd CSE	22.7	432.5	19.7	428.7	
4 th CSE	75.4	525.2	76.4	526.9	

* Weighted data

As regards the average scored achieved by the students in each level, the difference between the results is significantly lower within the CSE 3^{rd} and 4^{th} levels.



Graph 33. Results Evolution by educational levels

It can also be seen the significantly negative evolution of the students in their 2^{nd} year CSE. Not only do they obtain the lowest score, but they are also the ones that lose the most points—30 points— as regards the PISA 2003 assessment. The 3^{nd} year CSE students decrease almost 4 points, while those in the 4th year slightly increase the average by 2 points.



Graph 34. PISA 2003-2006 Results differences by educational levels

III. MATHEMATICS AREA CONCLUSIONS

1. Global Mathematics performance

- The Mathematics performance of the Basque 15-year-old students is at the OECD average. Even though they exceed the average score achieved in the OECD countries by 3 points, this difference is not significant.
- According to the global Mathematics results, it may be stated that the Basque education system is an **equitable** system, where a majority reaches average levels of Mathematics training. However, this also shows a shortage of students in the higher Mathematics performance levels, since the percentage of students that reaches these levels is considerably lower than the OECD average. On the other hand, there are fewer students in the OECD than in the lower levels.
- The 15-year-old students in their 4th year CSE obtained the best results. They are significantly higher than those from their 3rd and 2nd year CSE groups. It can be stated that the students who have repeated one or two school years obtain significantly lower scores.
- Fifteen participating countries obtained scores significantly higher than the Basque Country, while 33 have significantly lower scores.
- The Mathematics score obtained by the Basque 15-year-old students (501 points) is the same or similar to those from Germany, Sweden, France, or Ireland.
- Among the participating countries, the Basque Country has a higher concentration of percentages of students, the fourth one specifically, in the intermediate Mathematics performance levels (2, 3, and 4).
- Comparing the results with the more successful countries, it can be seen that the Basque Country has a slightly lower percentage of students reaching high levels; on the other hand, the percentage of students with low scores is higher than those from the countries that obtained better results.
- As regards OECD, the percentage of Basque students in the extremes, very low or very high performance, is smaller:
 - Only 10.1% reach levels 5 and 6, excellence results indicators, versus 13.3% from OECD students' average. This percentage is higher than the average of Spain where only 7.2% reached these levels.
 - 16.9% of the Basque students do not exceed the lower performance levels —Level 1 and Less than 1 Level—. In OECD 21.2% do not exceed these minimum levels of Mathematics training.
- The Basque Country Mathematics results are very similar to Ireland's. They coincide not only in the global performance, but also in the students' distribution in each level.
- Boys and girls perform similarly in Mathematics. The boys' slightly higher score is not significant, and the difference is one of the most reduced among the participating countries.
- The Basque 15-year-old girls obtained Mathematics results significantly higher than the OECD girls'. The Basque boys obtained the same results as those from OECD.
- As regards the 10 Autonomous Communities participating in PISA 2006, the Basque Country obtained a score significantly higher than the average of Spain in Mathematics. Likewise, it is significantly higher than Catalonia and Andalusia, but lower than La Rioja, Castile and Leon, Navarre, and Aragon.

2. Mathematics performance evolution PISA 2003-PISA 2006

- It may be said that the Basque Country Mathematics results in the PISA 2003 and PISA 2006 assessment periods were steady and balanced.
 - Steady since it maintained the students' performance within the OECD average, even though there has been a slight performance improvement due to the decrease of the OECD average in PISA 2006.
 - The percentage of students distributed in each performance level is also steady with hardly any fluctuations. Higher percentages of students in the intermediate performance levels remain. Nevertheless, during this period there has been a slight reduction (1.6%) in the gap with OECD in the percentage of students in high levels.
 - The significantly lower differences in the performance of the students who have repeated any school year remain.
 However, the significant decrease in the number of students in their 2nd year CSE who are 30 points lower than the previous PISA 2003 assessment is noticeable.
 - As regards the boys' and girls' performance, the Mathematics results are very balanced; there are no performance differences between them, and both groups progressed similarly in this period.



I. READING RESULTS

In the PISA 2000 assessment, the study was primarily focused on the Reading analysis; in 2003, Mathematics was the main focus, and in this 2006 survey the knowledge area of Scientific Competence has been the priority. In 2000, the test consisted of a large number of reading items —85—, while in the 2003 and 2006 assessments, the competence in this area is measured through 28 items whose characteristics have already been mentioned.



Graph 35. Reading results PISA 2006

Global results

The Basque students' results from the sample compared with the OECD in the PISA 2006 assessment are the following:

Lectura	Ν	Average	Standard Error	SD (SE)
Basque Country	3,929	487	4.2	89 (2.4)
OECD	251,278	492	0.6	99 (0.4)

In the table and the graph, the Basque Country global score is 5 points lower than the OECD. Nevertheless, it is within the average of the OECD countries since the difference is not statistically significant.

The following table shows Basque Country's situation according to the obtained results in relation with all the countries that have been part of this assessment.

Country	Score	SE	Significance with OECD	Country	Score	SE	Significance with OECD
Korea	556	(3,8)	ſ	Latvia	479	(3,7)	\downarrow
Finland	547	(2,1)	1	Luxembourg	479	(1,3)	\downarrow
Hong Kong-China	536	(2,4)	1	Croatia	477	(2,8)	\downarrow
Canada	527	(2,4)	1	Portugal	472	(3,6)	\downarrow
New Zealand	521	(3,0)	1	Lithuania	470	(3,0)	\downarrow
Ireland	517	(3,5)	1	Italy	469	(2,4)	\downarrow
Australia	513	(2,1)	1	Slovack Repubic	466	(3,1)	\downarrow
Liechtenstein	510	(3,9)	1	Spain	461	(2,2)	\downarrow
Poland	508	(2,8)	1	Greece	460	(4,0)	\downarrow
Sweden	507	(3,4)	↑	Turkey	447	(4,2)	\downarrow
Netherlands	507	(2,9)	↑	Chile	442	(5,0)	\downarrow
Belgium	501	(3,0)	↑	Russian Federation	440	(4,3)	\downarrow
Estonia	501	(2,9)	↑	Israel	439	(4,6)	\downarrow
Switzerland	499	(3,1)	↑	Thailand	417	(2,6)	\downarrow
Japan	498	(3,6)		Uruguay	413	(3,4)	\downarrow
Chinese Taipei	496	(3,4)		Mexico	410	(3,1)	\downarrow
United Kingdom	495	(2,3)		Bulgaria	402	(6,9)	\downarrow
Germany	495	(4,4)		Serbia	401	(3,5)	\downarrow
Denmark	494	(3,2)		Jordan	401	(3,3)	\downarrow
Slovenia	494	(1,0)	1	Romania	396	(4,7)	\downarrow
Macao-China	492	(1,1)		Indonesia	393	(5,9)	\downarrow
OECD	492	(0,6)		Brazil	393	(3,7)	\downarrow
Austria	490	(3,9)		Montenegro	392	(1,2)	\downarrow
France	488	(4,1)		Colombia	385	(5,1)	\downarrow
Basque Country	487	(4,1)		Tunisia	380	(4,0)	\downarrow
Iceland	484	(1,9)	\downarrow	Argentina	374	(7,2)	\downarrow
Czech Republic	483	(4,2)	Ļ	Azerbeidjan	353	(3,1)	\downarrow
Norway	484	(3,2)	Ļ	Qatar	312	(1,2)	\downarrow
Hungary	482	(3,3)	↓	Kirgyzstan	285	(3,5)	↓

Significant differences at 95%:

 $\ensuremath{\uparrow}$: score significantly higher than the OECD average

 \downarrow : score significantly lower than the OECD average

score significantly different (higher or lower) than the average of Basque Country

This table is sorted from highest to lowest average score. There are significant differences with Basque Country only with the countries in the highlighted rows. From all of the 57 countries participating in the assessment, 14 have a significantly higher average, while 27 are significantly lower.

The countries in the table between Japan and Luxemburg have the same average as Basque Country since the difference is not statistically significant, even though the score is different.

Results by performance levels

According to the percentage of students distributed in the performance levels previously defined, the comparative data between the Basque Country and the OCDE countries averages are the following:

STUDENTS PERCENTAGE IN PISA 2006 LEVELS

LEVEL	Score	OECD	Basque Country
> 1	<334.8	7.4	5.2
1	334.8-407.5	12.7	12.5
2	407.5-480.2	22.7	25.9
3	480.2-552.9	27.8	33.0
4	552.9-625.6	20.7	19.3
5	>625.6	8.6	4.2

Graph 36. Percentage of students in the performance levels PISA 2006 Reading



In Basque Country, 5.2% of the population is at the lowest level (less than 1), and 4.2% at the highest level (5). The largest percentage of students, 78.2%, is at the intermediate performance levels (2, 3, and 4). Comparing the results with the OECD, we can see that the OECD doubles Basque Country in the students' percentage at excellence level. At the other extreme, the less than 1 level, Basque Country's percentage is 2 points lower than the OECD. The largest difference is at level 3, where Basque Country is 5 points above the OECD percentage. The differences are statistically significant in all the levels except in 1 and 4.

Even though Basque Country has half the students that the OECD has in the excellence level, the positive aspect is that it has a lower students' percentage in the lowest performance levels. Basque Country's percentage of students at the lowest reading performance levels (–1 and 1) is 17.7%, versus 20.2% of the students from the OECD countries.

The graph shows the distribution by levels of the countries participating in PISA 2006, sorted according to the students' percentage at levels 2, 3, and 4, from highest to lowest. The levels less than 1 and 1 for each country are to the left of the value 0. The Basque Country is in sixth place, with a higher percentage of students at intermediate levels since, as previously mentioned, more than three quarters of the sample's population is distributed among them.



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Graph 37. Students' distribution by levels. Reading Sorted by the total students' percentage at levels 2, 3, and 4

According to the students' percentage at the mid levels (2 and 3), Basque Country is in third place with a percentage similar to Spain's. The important difference lies in the fact that in the lowest levels (–1 and 1), Basque Country has 11% of its population less than Spain, and 9% more in the higher levels (4 and 5). Basque Country should reduce the population percentage in the lowest levels by almost 3 points to reach the goal set by the European Union for 2010, whose aim is that less than 15% of the students are at the –1 and 1 reading levels.

Comparing the Basque Country with the OECD, there are positive aspects as the lower percentage of the population at the lowest performance levels, and 8% higher at the mid levels; as negative aspects, the percentage of students at the high levels is 8% higher in the OECD. The differences are statistically significant in all cases.

Results by gender

In all the participating countries, the girls obtained a higher score than the boys. There is a 38-point difference in the OECD average between both genders. The scores by gender sorted from highest to lowest difference of results between boys and girls from each country are the following.

	READING					
	Girls		Boys		Differences (B–G)	
COUNTRIES	Score	SE	Score	SE	Differ.	SE
Qatar	346	(1.6)	280	(1.9)	-66	(2.6)
Bulgaria	432	(6.9)	374	(7.7)	-58	(6.3)
Greece	488	(3.5)	432	(5.7)	-57	(5.6)
Jordan	428	(3.4)	373	(5.6)	-55	(6.5)
Thailand	440	(3.0)	386	(4.0)	-54	(4.7)
Argentina	399	(7.4)	345	(8.3)	-54	(7.3)
Slovenia	521	(1.4)	467	(1.9)	-54	(2.7)
Lithuania	496	(3.2)	445	(3.5)	-51	(3.0)
Kirgyzstan	308	(3.3)	257	(4.4)	-51	(3.4)
Finland	572	(2.3)	521	(2.7)	-51	(2.8)
Latvia	504	(3.5)	454	(4.3)	-50	(3.2)
Croatia	502	(3.3)	452	(3.8)	-50	(4.7)
Iceland	509	(2.3)	460	(2.8)	-48	(3.3)
Norway	508	(3.3)	462	(3.8)	-46	(3.3)
Estonia	524	(3.1)	478	(3.2)	-46	(2.7)
Czech Republic	509	(5.4)	463	(5.0)	-46	(6.2)
Uruguay	435	(3.8)	389	(4.4)	-45	(4.9)
Montenegro	415	(1.8)	370	(2.0)	-45	(2.9)
Liechtenstein	531	(6.3)	486	(7.7)	-45	(11.7)
Austria	513	(5.5)	468	(4.9)	-45	(6.0)
Romania	418	(5.2)	374	(4.5)	-44	(3.4)
Turkey	471	(4.3)	427	(5.1)	-44	(4.3)
Israel	460	(4.6)	417	(6.5)	-42	(6.8)
Germany	517	(4.4)	475	(5.3)	-42	(3.9)
Slovack Repubic	488	(3.8)	446	(4.2)	-42	(5.4)
Serbia	422	(4.2)	381	(3.4)	-42	(4.0)
Italy	489	(2.8)	448	(3.4)	-41	(4.0)
Sweden	528	(3.5)	488	(4.0)	-40	(3.2)
Poland	528	(2.8)	487	(3.4)	-40	(2.9)
Belgium	522	(3.5)	482	(4.1)	-40	(4.8)
Hungary	503	(3.9)	463	(3.7)	-40	(4.1)
OECD	511	(0.7)	473	(0.7)	-38	(0.8)
Russian Federation	458	(4.3)	420	(4.8)	-38	(3.2)
Tunisia	398	(3.9)	361	(4.6)	-38	(3.6)
New Zealand	539	(3.6)	502	(3.6)	-37	(4.6)
Basque Country	506	(4.0)	469	(4.9)	-37	(3.4)
Australia	532	(2.2)	495	(3.0)	-37	(3.6)
Spain	479	(2.3)	443	(2.6)	-35	(2.1)
Korea	574	(4.5)	539	(4.6)	-35	(5.9)
France	505	(3.9)	470	(5.2)	-35	(4.4)

	RADING					
	Girls		Boys		Differences (B–G)	
COUNTRIES	Score	SE	Score	SE	Differ.	SE
Ireland	534	(3.8)	500	(4.5)	-34	(4.9)
Mexico	427	(3.0)	393	(3.5)	-34	(2.5)
Portugal	488	(3.5)	455	(4.4)	-33	(3.7)
Canada	543	(2.5)	511	(2.8)	-32	(2.3)
Brazil	408	(3.7)	376	(4.3)	-32	(3.0)
Luxembourg	495	(2.1)	464	(2.0)	-32	(3.2)
Hong Kong-China	551	(3.0)	520	(3.5)	-31	(4.5)
Switzerland	515	(3.3)	484	(3.2)	-31	(2.6)
Japan	513	(5.2)	483	(5.4)	-31	(7.7)
Denmark	509	(3.5)	480	(3.6)	-30	(3.2)
United Kingdom	510	(2.6)	480	(3.0)	-29	(3.5)
Macao-China	505	(1.5)	479	(1.8)	-26	(2.4)
Netherlands	519	(3.0)	495	(3.7)	-24	(3.4)
Chinese Taipei	507	(4.2)	486	(4.4)	-21	(5.4)
Azerbeidjan	363	(3.3)	343	(3.5)	-20	(2.6)
Colombia	394	(5.6)	375	(5.6)	-19	(5.3)
Indonesia	402	(4.2)	384	(8.7)	-18	(6.3)
Chile	451	(5.4)	434	(6.0)	-17	(5.7)

The negative differences indicate that the girls obtained better results than the boys.

Basque girls also obtained better reading competence performance than the boys, as it occurred in PISA 2003. The girls (506 points) reached an average score that was 37 points higher than the boys (469), and this difference is statistically significant. Basque Country is at an intermediate position among the countries according to the difference between boys and girls, and one point from OECD.

The comparison within the same gender shows that the girls from Basque Country are at the OECD girls average; even though they are 5 points below, the difference in score is not statistically significant. The boys are also at the OECD average since the 4-point difference is not statistically significant either.

Comparing the OECD (492) global average score (boys and girls), the boys from Basque Country obtained lower scores (469) and they are significantly lower, while the girls' score (506) is significantly higher than the OECD average.



Graph 38. PISA 2006 Reading results by gender

Results by educational level

Even though 76% of the 15-year-old students participating in the test are in the 4th level of Compulsory Secondary Education, there are also students in other educational levels, CSE 2nd and 3rd levels. The following results were obtained by the students in each level of this educational stage (two students from the sample in CSE 1st year and Higher Secondary Education respectively have not been considered).

PERCENTAGE OF STUDENTS AT EACH EDUCATIONAL LEVEL				
Level	Ν	%		
2 nd CSE	153	3.9		
3 rd CSE	773	19.7		
4 th CSE	3,001	76.4		

76% of the Basque Country sampled population is appropriately schooled, that is, they have not repeated any school year. 19.7% have repeated a year throughout the whole compulsory education period, and 3.9% has repeated two years; therefore, even though they are 15-years-old, they attend CSE 2nd year.

READING 2006. RESULTS BY EDUCATIONAL LEVELS				
	Average	SE	SD (SE)	
2 nd CSE	348	10.4	82.1 (6.1)	
3 rd CSE	418	5.3	79.0 (3.8)	
4 th CSE	513	3.6	73.8 (1.7)	

Graph 39. PISA 2006 Reading results by educational level



As expected, only the students attending CSE 4th year are above the Basque Country (26 points) and the OECD (22 points) average. The differences are statistically significant among all the school years.

Along the assessments, to be attending the age-appropriate level is a consistent academic success indicator.

Results by stratum and economic, social, and cultural status

The global Reading results are analysed according to the strata where the students are schooled, and the variables related with the students' and the school economic, social, and cultural status.

Analysing the school ownership together with the students' school linguistic model, important differences can be seen, as shown in the graph.



Graph 40. PISA 2006 Reading results by stratum

Considering only the initial scores, there is higher performance in the three linguistic models of the subsidized schools; nevertheless, attention should be paid to the statistic significance of the differences between the strata in the following table. The average score of the subsidized A and B models is significantly higher than that from all the public models. On the other hand, the Public A model obtained a score significantly lower than those from the rest of the strata.

	Public A	Public B	Public D	Subs. Private A	Subs. Private B	Subs. Private D
Public A		Ļ	Ŷ	Ļ	Ŷ	Ļ
Public B	î		=	Ļ	Ŷ	=
Public D	î	=		Ļ	Ļ	=
Subs. Private A	ſ	ſ	<u>↑</u>		=	=
Subs. Private B	ſ	ſ	↑	=		=
Subs. Private D	1	<u>↑</u>	=	=	=	

The chart reads from left to right.

↑ Significant positive difference at 95%. ↓ Significant negative difference at 95%.

= There is no significant difference at 95%.

These score differences between the strata are modified when the influence of the students' economic, social, and cultural status is controlled in each one of the strata, and in the schools they attend.

The economic, social, and cultural index of the Basque students and of the different strata is in the following graph.



Graph 41. PISA 2006 Reading results by stratum

Graph 42. Economic, social, and cultural index by stratum (Linguistic model and network)



The important differences in the economic, social, and cultural index between certain strata are evident. It is a given fact that this variable considerably affects the results, and it has been estimated what the final Reading score would be in each stratum without this factor. The results in the following table, sorted by final score, are the scores that would be obtained if this index was controlled.

			Score
	Initial	Final	increase
Public A	423.0	434.8	11.7
Public B	468.5	477.8	9.3
Public D	478.6	482.3	3.6
Subs. Private D	489.7	488.2	-1.4
Basque Country	487.4	489.5	2.1
Subs. Private A	507.3	504.3	-3.1
Subs. Private B	506.4	506.0	-0.4

CHANGE IN THE SCORE CONTROLLING THE ECONOMIC, SOCIAL, AND CULTURAL INDEX OF THE STUDENTS

The results improve in all of the public models, and it has a negative effect in the final results of the subsidized schools.

The following table and graph show the modification suffered by the strata in their initial score when controlling the influence of the individual economic, social, and cultural status of the students, and this index is controlled in relation with the school.

		Individual		Individual + School		
	Initial	Final	Score increase	Final	Score increase	
Public A	423.0	434.8	11.7	434.2	11.1	
Public B	468.5	477.8	9.3	493.3	24.9	
Public D	478.6	482.3	3.6	484.9	6.3	
Subs. Private A	507.3	504.3	-3.1	501.2	-6.2	
Subs. Private B	506.4	506.0	-0.4	505.2	-1.2	
Subs. Private D	489.7	488.2	-1.4	486.8	-2.8	
Basque Country	487.4	489.5	2.1	490.5	3.1	

CHANGE IN THE SCORE CONTROLLING THE INDIVIDUAL ECONOMIC, SOCIAL, AND CULTURAL INDEX OF THE STUDENTS AND THE SCHOOL

Graph 43. Change in the Reading score if the students' and the school economic, social, and cultural index is controlled


If the students' and the school economic, social, and cultural indexes are controlled and not considered, the differences by stratum are considerably modified. Comparing the following significance table with the previous one, the previous differences are reduced, and only Public A model exclusively remains with the subsidized A and B models.

DIFFERENCES SIGNIFICANCE NOT CONSIDERING THE SCHOOL

ECONOMIC, SOCIAL, AND CULTURAL LEVEL							
	Public A	Public B	Public D	Subs. Private A	Subs. Private B	Subs. Private D	
Public A		=	=	Ļ	Ļ	=	
Public B	=		=	=	=	=	
Public D	=	=		=	=	=	
Subs. Private A	↑	=	=		=	=	
Subs. Private B	↑	=	=	=		=	
Subs. Private D	=	=	=	=	=		

Results by language of the test

D

As summarized in the introduction of this document, the D model students complying with a series of linguistic requirements took the test in Basque. The table shows the score corresponding to the D model students according to the language in which they took the test.

ODEL AVERAGE SCORE ACCORDING TO THE LANGUAGE OF THE								
	Score	Standard Error	SD					
Spanish	483	6.4	88.0 (4.0)					
Basque	484	7.9	89.8 (3.8)					

The point difference in favour to the D model students that took the test in Basque is not statistically significant.

Results by Autonomous Communities

Global performance

The number of Spain Autonomous Communities participating in PISA 2006 has increased considerably. In addition to the three from PISA 2003 —Castile and Leon, Catalonia, and Basque Country— there are seven more, as showed in the following table:

Community	Average	SE	Significance with Basque Country
La Rioja	492	2.6	
Basque Country	487	4.2	
Aragón	483	5.2	
Navarre	481	2.7	
Galicia	479	3.4	
Castile and Leon	478	3.4	
Asturias	477	4.7	
Catalonia	477	5.1	
Cantabria	475	4.0	
Andalusia	445	4.1	\downarrow
Spain	461	2.2	V
OECD	492	0.6	

↓ Score significantly lower than Basque Country's average

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The differences in the averages obtained in the Communities as regards Basque Country are not significant, except for Andalusia that is significantly below the Basque Country average. Spain's score is also significantly lower. According to the direct score obtained in each one of them, La Rioja is the only one that obtained the same score as OECD.

Results by Reading performance levels

	STODENTS TERCENTAGE BITTER ORMANCE LEVELS							
		IN AUTONOI	NOUS COMMU	INITIES				
	Level –1	Level 1	Level 2	Level 3	Level 4	Level 5		
La Rioja	3.3	12.3	26.2	34.7	19.9	3.7		
Basque Country	5.2	12.5	25.9	33	19.3	4.2		
Aragón	5.4	12.6	27.1	34.2	17.5	3.2		
Navarre	4.4	13.2	29.6	35.2	15.5	2.1		
Galicia	6.1	14	27.5	32.8	16.4	3.3		
Castile and Leon	3.6	13.9	32.3	33.5	15.1	1.6		
Asturias	5.7	12.5	29.9	33.9	15.6	2.4		
Catalonia	6.6	14.6	27.1	31.6	17.1	3.1		
Cantabria	5.6	14.1	30.5	32	15.3	2.5		
Andalusia	11	20.3	32.3	26.9	8.8	0.7		
Spain	8.7	17	30.2	29.7	12.6	1.8		
OECD	7.4	12.7	22.7	27.8	20.7	8.6		

STUDENTS' PERCENTAGE BY PERFORMANCE | EVELS





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According to the percentages in Reading performance levels in the Communities participating in PISA 2006 with their own sample, in the excellence level, although still low, the highest percentages correspond to Basque Country and La Rioja (4.2% and 3.7% respectively).

Likewise, in the mid-high levels (3 and 4) the highest percentage corresponds to La Rioja with 54.6% of the students, followed by Basque Country with 52.3%, and Aragon with 51.7%. The lowest percentage in these levels corresponds to Andalusia, 35.7%. The rest of the Communities are between 47% in Cantabria, and 50.7% in Navarre.

Lastly, analysing the students' percentage in the lowest competence levels, La Rioja with 15.6% has the lowest percentage, two points less than Basque Country. On the other hand, Andalusia stands out with 31% of the students in these levels.

In summary, Basque Country's situation as regards the Autonomous Communities is the following: it has the highest percentage of students at the excellence level. It has the second place in the mid-high levels (3 and 4) by students' percentage. It has one of the lowest percentages in the lowest levels (–1 and 1), with La Rioja being the only one that is higher.

II. READING PERFORMANCE EVOLUTION. PISA 2003-PISA 2006

The Basque Country participation in the last two PISA assessments with its own sample makes it possible to compare the Reading results in the 2003 to 2006 period, and to assess the performance evolution in this area.

The following shows the evolution of the participating countries. As it can be seen, Hong Kong-China, Korea, and Poland have experienced a significant increase.

Uruguay, Spain, Norway, Liechtenstein, Greece, and Australia obtained results significantly lower than in the previous assessment.

In Basque Country, even though its direct score is 10 points lower, the difference is not statistically significant, and it is equal to the OECD average as in the previous assessment.

	PISA 2003	PISA 2006	Difference*		PISA 2003	PISA 2006	Difference*
Uruguay	434	413	-22	Ireland	515	517	2
Spain	481	461	-20	Denmark	492	494	2
Norway	500	484	-15	Finland	543	547	3
Liechtenstein	525	510	-15	Germany	491	495	4
Greece	472	460	-13	Tunisia	375	380	6
Australia	525	513	-13	Turkey	441	447	6
Latvia	491	479	-11	Mexico	400	410	11
Brazil	403	393	-10	Poland	497	508	11
Basque Country	497	487	-10	Indonesia	382	393	11
France	496	488	-8	Korea	534	556	22
Iceland	492	484	-7	Hong Kong-China	510	536	27
Italy	476	469	-7	Estonia		501	
Sweden	514	507	-7	Chinese Taipei		496	
Netherlands	513	507	-6	United Kingdom		495	
Belgium	507	501	-6	Slovenia		494	
Czech Republic	489	483	-6	Croatia		477	
Macao-China	498	492	-5	Lithuania		470	
Portugal	478	472	-5	Chile		442	
Thailand	420	417	-3	Israel		439	
Slovack Repubic	469	466	-3	Bulgaria		402	
Russian Federation	442	440	-2	Serbia		401	
OECD	494	492	-2	Jordan		401	
Canada	528	527	-1	Romania		396	
New Zealand	522	521	-1	Montenegro		392	
Austria	491	490	0	Colombia		385	
Japan	498	498	0	Argentina		374	
Luxembourg	479	479	0	Azerbeidjan		353	
Switzerland	499	499	0	Qatar		312	
Hungary	482	482	1	Kirgyzstan		285	

READING PERFORMANCE DIFFERENCE PISA 2003 - PISA 2006

Numbers in bold indicate that the differences are significant at 95% reliability; those in bold and italics are the significant differences at 90% reliability.

Of the 39 countries among which comparisons can be made, 23 of them have lowered their scores, although only 6 do it significantly, 12 have improved, only 3 significantly, and 4 remain the same.

Observing the fluctuations in the countries that have complied with the three PISA assessments, it seems that two assessments do not provide sufficient perspective about the tendency of the education systems. Nevertheless, the decreasing scores, even though the difference is not significant, should be taken as an indicator to prompt reflection.

Results evolution in the Basque Country

The results obtained by Basque Country after participating twice in PISA place it at the OECD average. Even though there is little change, the score in PISA 2003 was higher but its score in PISA 2006 places it below. There is a 10-point difference between the two assessments scores, although it is not statistically significant.

^{*} The subtraction does not coincide exactly in some of the differences due to the decimal adjustment when the average scores are rounded up. The differences correspond to the tables prepared by the OECD.



Graph 45. Reading results in the Basque Country

Results evolution by performance levels

Comparing the evolution of the students' percentage distribution by performance levels, Basque Country maintains the percentage of the lowest levels, and the percentage at the highest levels is reduced in favour of levels 3 and 4. In the OECD, the students' percentages increase in the lowest levels to the detriment of the mid levels, and the highest levels percentages remain the same. There is an important decrease in the Spain in the highest levels, and the low and mid levels increase.

	Basque Country		OECD		Spain	
	2003	2006	2003	2006	2003	2006
Levels 1 and –1	17.1	17.7	19	20.1	21.1	25.7
Levels 2 and 3	53.6	58.8	51.4	50.6	55.7	59.9
Levels 4 and 5	29.3	23.5	29.5	29.3	23.2	14.4

STUDENTS' PERCENTAGE EVOLUTION IN THREE READING PERFORMANCE LEVELS

Compared with the OECD, Basque Country maintains a lower percentage in the low and high levels in 2006, and it has 8% more in the mid levels.

Compared with Spain, Basque Country maintains a higher percentage of the population in the high levels, lower in the lower levels, and similar in the mid levels in 2006.

Notwithstanding, both are lower in the higher performance levels as regards the 2003 assessment, Basque Country 6 points and Spain 9. Spain, especially, has increased the percentages of the lower levels (–1 and 1), and Basque Country has reduced the higher levels (4 and 5). The target tendency should be aimed to increase the high levels through the transfer of the population in the lower levels.

The percentages of Basque students in the low levels (-1 and 1) are lower than in the OECD and Spain in both applications.



Graph 46. Basque Country PISA 2003-2006

Results evolution by Autonomous Communities

Comparing the evolution of Basque Country's average results with the ones from the two Autonomous Communities participating with their own sample in PISA 2003, Castile and Leon, which had the highest score in this year's assessment, has decreased more points, 21, followed by Basque Country, which, despite decreasing 10 points, has the best score (487) of the three Communities in PISA 2006.

	PISA 2003	PISA 2006	Difference
Basque Country	497	487	-10
Castile and Leon	499	478	-21
Catalonia	483	477	-6



Graph 47. Reading results evolution by Autonomous Communities with their own sample. PISA 2003-PISA 2006

The difference is only significant in the case of Castile and Leon.

Results evolution by performance levels

Analysing by performance levels, it stands out as a negative aspect that in the three Communities participating in PISA 2003, the students' percentage decreases in the excellence level, 5, where Basque Country still maintains its percentage, despite all the higher percentages, with 4.2%. On the other hand, at levels –1 and 1, the Basque Country maintains the same percentage from one assessment to the next, and it is the same as Castile and Leon which has increased 3 points.

	Basque	Country	Cata	lonia	Castile a	and Leon
	2003	2006	2003	2006	2003	2006
Level –1	5.3	5.2	6.2	6.6	4.4	3.6
Level 1	11.8	12.5	13	14.6	10.4	13.9
Level 2	22.8	25.9	26.5	27.1	23.9	32.3
Level 3	30.8	33	31.9	31.6	32.1	33.5
Level 4	22.6	19.3	18.1	17.1	23.2	15.1
Level 5	6.6	4.2	4.3	3.1	5.9	1.6

Joining the performance levels two by two, Basque Country's results compared with the other two Communities participating in PISA 2003 and 2006 maintains the highest percentage in the high levels despite decreasing almost 6%. Catalonia decreases less (2%) in these levels, while Castile and Leon decreases 12% of the students in the high levels.

	Basqu	e Country	Cata	lonia	Castile a	and Leon
	2003	2006	2003	2006	2003	2006
Levels 1 and –1	17.1	17.7	19.2	21.2	14.8	17.5
Levels 2 and 3	53.6	58.8	58.4	58.7	56.0	65.8
Levels 4 and 5	29.2	23.5	22.4	20.1	29.1	16.7



Graph 48. Unified level percentage: low, mid, and high

In Basque Country, the highest percentage is at levels 2 and 3 (59% of the students), 23.5% of the students are at the highest levels in the current assessment. This is compatible with the fact that the difference in the average scores of the two assessments is not significant.

Results evolution by gender

Weighting the results evolution by gender, the girls again achieve a higher Reading level average, as it occurred in the 2003 assessment.

	G	iirls	Bo	ys	Differ	ence*
	2003	2006	2003	2006	2003	2006
Basque Country	519	506	474	469	-45	-37
OECD	511	511	477	473	-34	-38
Spain	500	479	461	443	-39	-35

The negative differences indicate that the girls have better results than the boys. All the differences are statistically significant.

Both genders in the Basque Country have obtained a lower score than in PISA 2006; the girls have decreased 13 points and the boys 6. The distance has been reduced by 8 points since the girls have decreased more than the boys from 45 points in PISA 2003 to 37 points in PISA 2006, in both cases in favour of the girls. The difference as regards the average obtained by the OECD students is not significant in either of the genders.

Graph 49. Differences boys and girls. PISA 2003 and PISA 2006



Results evolution by educational level

The data weighted by sampled population show that the percentage of appropriate-status students who have not repeated any school year is 1% higher in this assessment than in PISA 2003, and the percentage of students who have repeated two school years has increased 2%.

	PISA	2003	PISA 2006		
	Average	% Populat.	Average	% Populat.	
2 nd CSE	376	1.9	348	3.9	
3 rd CSE	423	22.7	418	19.7	
4 th CSE	522	75.4	513	76.4	

^{*} The subtraction does not coincide exactly in some differences due to the decimal adjustment when rounding the average scores. The differences correspond to the tables prepared by OECD.



Graph 50. Results evolution by educational levels

The students' Reading score in PISA 2006 has significantly decreased in the 4th year CSE. The appropriate-status students have decreased 9.7 points in Reading as regards PISA 2003.

In the 2003 and 2006 assessments, the appropriate status students, 4th year CSE, are above the average of Basque Country.

III. AREA CONCLUSIONS

1. Global Reading performance

- The average Reading performance obtained by Basque students is at the OECD average since despite having a lower score, the five-point difference is not statistically significant.
- The equity of Basque Country's education system has also been maintained as shown from the data gathered in this area. The largest percentage of students is at the intermediate levels (2 and 3) with 60% of the total. Only 4% of the students reach excellence level 5.
- Compared with OECD, a positive aspect is that the percentage of Basque students at the lowest levels (less than 1 and 1) is 2.5% less. It is 8.4% higher at the mid levels, but at the highest levels (4 and 5), the percentage is 5.6% lower than the OECD.
- The average obtained by the Basque students places them in twenty-fourth place among all the 57 participating countries. Their difference, however, is only significantly lower than 14 of them.
- Basque Country has a global average higher than Spain, and this difference is statistically significant.
- The Reading results of the girls from all the countries participating in the assessment are higher than the boys. There is a 37-point difference in the results between them in the Basque Country.
- CSE educational level significantly affects the results; only 4th year students are above the Basque Country and the OECD global average.

• From the ten Spanish Autonomous Communities participating in PISA 2006, Basque Country is in second place as regards global average scores, although the difference is only significantly higher than Andalusia's. Despite being low (4%), the Basque Country has the highest percentage from the 10 Communities at excellence level, and in the lowest levels (less than 1 and 1) it is together with Castile and Leon and Navarre, after La Rioja with 2% less of its population in these levels.

2. Reading performance evolution PISA 2003-PISA 2006

At first it seems that both assessments do not provide enough perspective about the tendency of the education systems, although they do provide useful information for analysis. The Reading score reduction is not significant; however, it is convenient to consider it as an indicator, and it should spark an alert towards the corresponding reflection about the reasons that may have caused it, and help to take the necessary educational measures.

- In the global result, Basque Country still is in the OECD reading average since the score difference is not statistically significant: it was 3 points above the average score, and in PISA 2006 it was 5 points below it. It should be taken into account that although there is an almost 10-point difference as compared to its previous score, this difference is not significant.
- As regards the Reading performance by competence levels between PISA 2003 and PISA 2006, the Basque Country maintains the percentage in the low levels (–1 and 1), lower than the OECD and Spain in both assessments, and in 2006 there is an increase in the mid levels to the detriment of the higher levels.
- As regards the Autonomous Communities participating in both assessments —Catalonia, Castile and Leon, and the Basque Country— there is a score decrease in all of them. In the 2003 assessment, Basque Country was between both of them, and in 2006 it obtains the highest average score even though the differences are not significant and none of the three achieved the OECD average points.
- The difference between the boys' and girls' results, which in PISA 2003 was very high, has been reduced 8 points. Both genders have reduced the results as regards the mentioned year, the girls have lost 13 points and the boys 5, who continue to get the worst results. The boys are 23 points below the OECD global average score, and 18 from Basque Country's. The girls' average is 14 points above the OECD global average, and 19 above the Basque Country global average.
- The 4th year CSE students, despite obtaining 9 points less than the 2003 assessment, are above Basque Country and the OECD global average scores.
- In PISA 2003, the 4th year students were 28 points above the OECD average, while in PISA 2006 they are 22 points above it.

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5. BASQUE EDUCATION SYSTEM CHARACTERISTICS

Equity and excellence analysis in PISA 2006

The students' global performance from a country, estimated through the arithmetic average of the obtained scores, permits comparing them with other countries and knowing the level of results with them. Nevertheless, one of the challenges of any education system, in addition to obtaining good average results, is achieving equity and obtaining high excellence percentages from its students.

The term equity refers to all the students having access to schools that offer an equivalent level of quality in all of the schools, capable of compensating or at least not enhancing the students' inequalities of origin; therefore, it uses several pedagogic strategies according to the cognitive styles, the learning needs, etc., required by the students.

The students' dispersion average permits estimating the equity level of an education system.

Within the equity concept, UNICEF defines in its report "Innocenti Report Card, n°4. November 2002" the term **Relative Equity** as the difference between the students who have obtained the best results and those who have obtained the worst results, that is, the students within the 90th and 10th percentiles. It proposes to complement this concept with that of **Absolute Equity**, or the percentage of students at level 1 and less than 1 from the performance levels established by PISA.

The concept of **Excellence** is measured by the percentage of students at the highest performance levels.

Equity and excellence are two complementary concepts; when there is lack of balance between them there may be systems with high excellence levels, with a high percentage of students in the elite, and, nevertheless, they have an excessive percentage of students at the lowest levels. This would be the case of a system with a good level of excellence, but a low equitable level.

The following table and graphs show the situation of the countries participating in PISA 2006 according to the excellence and absolute equity levels achieved in the Science area. The table is sorted by the absolute equity perspective.

ISEI·IVE

FIRST PISA 2006 ASSESSMENT REPORT

COUNTRIES	Absolute Equity Level <1 & 1	Excellence Level Levels 5 & 6	COUNTRIES	Absolute Equity Level <1 & 1	Excellen Level Levels 5 8
Finland	4,1	20,9	Lithuania	20,3	5,0
Estonia	7,7	11,5	Iceland	20,6	6,3
Hong Kong-China	8,7	15,9	Norway	21,1	6,1
Canada	10,0	14,4	France	21,2	8,0
Macao-China	10,3	5,3	Luxembourg	22,1	5,9
Korea	11,2	10,3	Russian Federation	22,2	4,2
Chinese Taipei	11,6	14,6	Greece	24,0	3,4
Japan	12,0	15,1	United States	24,4	9,1
Australia	12,9	14,6	Portugal	24,5	3,1
Liechtenstein	12,9	12,2	Italy	25,3	4,6
Netherlands	13,0	13,1	Israel	36,1	5,2
New Zealand	13,7	17,6	Serbia	38,5	0,8
Slovenia	13,9	12,9	Chile	39,7	1,9
Hungary	15,0	6,9	Uruguay	42,1	1,4
Germany	15,4	11,8	Bulgaria	42,6	3,1
Ireland	15,5	9,4	Jordan	44,3	0,6
Czech Republic	15,5	11,6	Thailand	46,1	0,4
Basque Country	15,7	4,3	Turkey	46,6	0,9
Switzerland	16,1	10,5	Romania	46,9	0,5
Austria	16,3	10,0	Montenegro	50,2	0,3
Sweden	16,4	7,9	Mexico	50,9	0,3
United Kingdom	16,7	13,7	Argentina	56,3	0,4
Croatia	17,0	5,1	Colombia	60,2	0,2
Poland	17,0	6,8	Brazil	61,0	0,6
Belgium	17,0	10,1	Indonesia	61,6	0,0
Latvia	17,4	4,1	Tunisia	62,8	0,1
Denmark	18,4	6,8	Azerbeidjan	72,5	0,0
OECD	19,2	9,0	Qatar	79,1	0,3
Spain	19,6	4,9	Kirgyzstan	86,3	0,0
Slovak Republic	20,2	5,8			

As it can be seen, the Basque Country data as regards absolute equity are above the OECD average; however, there are only 4.3% of the students at the excellence level.

The absolute equity level of all the countries participating in the PISA 2006 assessment is graphically represented below using the Science results. The countries with a low percentage of students at levels 1 and less than 1 have a higher indicator of absolute equity in their education system.

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Graph 51. Absolute equity in Science Nevels -1 and 1

In this absolute equity graph there are only 17 countries with a students' percentage lower than the Basque Country in the low performance levels. It is situated better than the OECD average with 3.5% less students in these levels.

On the other hand, the following graph shows the excellence level of the participating countries. The graph is sorted from highest to lowest percentage of students at the highest performance levels.



Graph 52. Excellence level in Science Levels 5 and 6

The situation of the Basque Country in this aspect indicates an excellence level lower than the OECD average.

From the viewpoint of the obtained results evolution, comparing PISA 2003 with PISA 2006, it can be seen that there has been a 6.2 point-reduction in the students at the lowest Science levels, from 21.9% in 2003 to 15.7% in 2006. As regards the highest levels, the student's percentage has been reduced by 1.1 points.

BASQUE EDUCATION SYSTEM CHARACTERISTICS

LEVEL	Score	PISA 2003	PISA 2006
<1	<334.94	6.1	3.2
1	334.94-409.54	15.8	12.5
2	409.54-484.14	27.2	27.9
3	484.14-558.73	28.8	33.5
4	558.73-633.33	16.7	18.5
5	633.33-707.93	4.9	4
6	>707.93	0.5	03

STUDENTS' PERCENTAGE BY SCIENCE PERFORMANCE LEVELS

Graph 53. Performance levels comparison. PISA 2003-PISA 2006



As previously mentioned, equity is a positive characteristic of any education system, that is, that any student may have access to schools that offer an equivalent level of quality and which compensate the inequalities, as well as offer more to those who need it. The equitable systems make it possible for the education process to balance the differences due to the individual situations and characteristics instead of enhancing said origin distances.

Several procedures are used to measure the equity of the system. One of them is comparing the percentage of students at the intermediate competence levels, as previously shown. Another is comparing the distance in points between a country's 10th and 90th percentiles, that is, how many points separate 10% of the students with the best and worst results, also called relative equity.

The following graph shows the situation of all the countries that took the PISA 2006 Science assessment. The relative equity is represented through a bar proportional to the distance between the 10th and 90th percentile points. The line indicates the average score of each country.

Those countries with a shorter bar, that is, with a smaller difference between the 10th and 90th percentiles, have more similar results among their students, or less dispersion, and therefore, more relative equity.

Specifically, the Basque Country is at a high equity level with a 214-point distance, versus 240 from the OECD average.



Graph 54. Science relative equity Points between the 10 and 90 percentiles

It is important to supplement the partial analysis with a more global vision from the complete analysis of all the results data so as to have a more general perspective of the education system: excellence and equity.

The data indicate that the Basque Country has a Science result similar to the OECD average:

- A better equity level.
- An average situation as regards the percentage of students at the lowest levels.
- Low percentage of students achieving high results in that topic.

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• There has been an improvement in the percentage of students at the intermediate levels (2, 3, and 4) to the detriment of the lowest levels, which is very positive, but it has also been to the detriment of the highest levels (5 and 6), which distances students from the improvement in the excellence levels.

In summary, from the Science area's perspective, the Basque Country provides a very equitable education system but should look for measures to generate an improvement in the results and to bring a higher percentage of students closer to the excellence levels.

GENERAL CONCLUSIONS 6

6. GENERAL CONCLUSIONS

After having participated in the PISA 2006 international test, its data analysis provides certain conclusions about the characteristics of the Basque Education System.

The following are the most relevant aspects:

From PISA 2006 perspective

It is positive that:

- The Basque Education System is an equitable system with a high percentage of 15-year-old students at the intermediate performance levels.
- The result achieved in Science has considerably improved and is at the OECD average.
- The students of the Basque Country in the three areas, Science, Mathematics, and Reading, are at the OECD average.
- The results obtained in all the areas are well-balanced, that is, there is no area that stands out from another for its higher or lower performance.
- The boys' and girls' performance in Science and Mathematics is very well-balanced, but not in Reading.
- The percentage of Basque students not achieving the lowest performance levels is lower than the OECD in all the areas.
- The students in their 4th year CSE obtained the highest scores in all the areas.

The following aspects require attention:

- The low percentage of students achieving the higher performance levels. This is a constant feature in all the areas.
- The convenience to continue decreasing the percentage of students at the lowest performance levels in general.
- The convenience to continue recovering and improving the global Reading performance level.

Education system evolution from PISA 2003 to PISA 2006

Taking into account that the Basque Country has participated in PISA with their own sample only twice (2003 and in the current PISA 2006), it may be premature to point out clear tendencies in the results evolution. Nevertheless, both assessments provide useful information that when carefully managed provide some evolutionary conclusions:

- As regards the global results in each area:
 - The noticeable increase achieved in the global Science score.
 - The maintenance of the Mathematics performance.
 - The decrease score in Reading performance, even though it is not significant.
- A constant feature in both assessments: the students' CSE level significantly affects the results of all the areas. Only the 15-year-old students attending 4th year CSE are above the Basque Country and the OECD global average.
- The difference in the results obtained by the boys and girls is being reduced. In this period there has been an evolution towards a more similar performance in Science and Mathematics, but not in Reading, where the girls stand out. This occurs in all the participating countries.
- An analysis by performance levels shows that:
 - The highest levels (5 and 6) lower the population percentage in the Reading and Science areas, and it slightly increases in Mathematics.

- The intermediate levels increase in Reading and Science and slightly decrease in Mathematics.
- The lowest levels (>1 and 1) are reduced in Science, they are the same in Reading, and they slightly increase in Mathematics.
- The language of the test does not have incidence when the boys and girls take the test in the language they usually use, either Basque or Spanish.

ANNEX

SCIENTIFIC KNOWLEDGE SUB-SCALES

KNOWLEDGE ABOUT SCIENCE

	Average	SE
Finland	558	(1,7)
Hong Kong-China	542	(2,5)
New Zealand	539	(2,5)
Canada	537	(2,0)
Australia	533	(1,9)
Japan	532	(3,2)
Netherlands	530	(2,6)
Korea	527	(3,0)
Liechtenstein	526	(4,2)
Chinese Taipei	525	(3,0)
Estonia	523	(2,1)
Belgium	519	(2,3)
United Kingdom	517	(1,9)
Switzerland	514	(2,7)
Ireland	513	(2,7)
Germany	512	(3,1)
Slovenia	510	(1,6)
France	507	(3,1)
Macao-China	505	(1,2)
Austria	504	(3,3)

	Average	SE
OECD	500	(0,5)
Czech Republic	499	(2,9)
Sweden	498	(2,2)
Croatia	494	(2,1)
Denmark	493	(2,6)
Iceland	493	(1,8)
Hungary	492	(2,2)
United States	492	(3,7)
Poland	491	(2,1)
Basque Country	492	(3,1)
Latvia	491	(2,6)
Spain	489	(2,0)
Luxembourg	488	(1,3)
Lithuania	482	(2,1)
Portugal	481	(2,7)
Norway	480	(2,7)
Slovack Repubic	478	(2,3)
Russian Federation	475	(3,3)
Italy	472	(1,8)
Greece	471	(2,8)

	Average	SE
Israel	466	(3,4)
Chile	443	(3,7)
Serbia	431	(2,6)
Uruguay	431	(2,4)
Bulgaria	426	(5,5)
Turkey	425	(3,1)
Thailand	421	(1,8)
Mexico	413	(2,1)
Romania	413	(3,6)
Jordan	409	(2,5)
Montenegro	407	(1,6)
Argentina	397	(4,8)
Colombia	396	(2,9)
Brazil	394	(2,5)
Tunisia	389	(2,6)
Indonesia	387	(2,8)
Azerbeidjan	355	(2,1)
Qatar	343	(1,0)
Kirgyzstan	309	(2,5)

EARTH AND SPACE

	Average	SE
Finland	554	(1,8)
Canada	540	(1,8)
Estonia	540	(2,4)
Slovenia	534	(1,7)
Korea	533	(3,0)
Australia	530	(1,9)
Japan	530	(3,0)
New Zealand	530	(2,4)
Chinese Taipei	529	(3,0)
Czech Republic	526	(3,6)
Hong Kong-China	525	(2,4)
Netherlands	518	(2,7)
Liechtenstein	513	(4,8)
Hungary	512	(2,7)
Germany	510	(3,6)
Ireland	508	(2,8)
Macao-China	506	(1,4)
United Kingdom	505	(1,9)
United States	504	(4,0)
Austria	503	(3,6)

	Average	SE
Iceland	503	(1,6)
Slovack Repubic	503	(2,6)
Switzerland	502	(2,9)
Poland	501	(2,4)
OECD	500	(0,5)
Sweden	498	(2,3)
Norway	497	(2,8)
Croatia	497	(2,4)
Belgium	496	(2,4)
Latvia	494	(3,3)
Spain	493	(2,3)
Basque Country	492	(3,3)
Denmark	487	(2,8)
Lithuania	487	(2,5)
Russian Federation	482	(3,4)
Portugal	479	(2,7)
Greece	477	(2,9)
Italy	474	(2,0)
Luxembourg	471	(1,6)
France	463	(2,8)

	Average	SE
Bulgaria	443	(5,5)
Serbia	441	(2,7)
Thailand	430	(1,7)
Chile	428	(3,4)
Turkey	425	(3,6)
Jordan	421	(2,9)
Israel	417	(3,2)
Mexico	412	(2,4)
Montenegro	411	(1,8)
Romania	407	(4,0)
Indonesia	402	(2,9)
Azerbeidjan	400	(2,5)
Uruguay	397	(2,6)
Argentina	384	(5,4)
Brazil	375	(2,5)
Colombia	370	(2,9)
Tunisia	352	(2,6)
Qatar	350	(1,1)
Kirgyzstan	315	(2,6)

LIVING SYSTEMS

	Average	SE
Finland	574	(1,8)
Hong Kong-China	558	(2,3)
Chinese Taipei	549	(3,3)
Estonia	540	(2,4)
Canada	530	(2,1)
New Zealand	528	(2,7)
Japan	526	(2,7)
Czech Republic	525	(2,8)
United Kingdom	525	(2,2)
Macao-China	525	(1,3)
Germany	524	(3,0)
Liechtenstein	524	(4,4)
Australia	522	(2,1)
Austria	522	(3,4)
Slovenia	517	(1,6)
Sweden	512	(2,2)
Switzerland	512	(2,8)
Hungary	509	(2,4)
Netherlands	509	(2,4)
Poland	509	(2,1)

	Average	SE
Ireland	506	(3,0)
Denmark	505	(2,9)
Lithuania	503	(2,5)
Belgium	502	(2,2)
OECD	502	(0,5)
Slovack Repubic	500	(2,3)
Basque Country	500	(3,4)
Luxembourg	499	(1,4)
Korea	498	(2,8)
Spain	498	(2,2)
Croatia	498	(2,1)
Norway	496	(2,8)
France	490	(3,0)
Russian Federation	490	(3,2)
Italy	488	(1,7)
United States	487	(4,1)
Iceland	481	(1,6)
Latvia	481	(2,8)
Greece	475	(2,7)
Portugal	475	(2,4)

	Average	SE
Israel	458	(3,0)
Jordan	450	(2,9)
Serbia	449	(2,6)
Bulgaria	445	(5,3)
Chile	434	(3,7)
Uruguay	433	(2,3)
Thailand	432	(1,8)
Montenegro	430	(1,5)
Romania	426	(3,5)
Turkey	425	(3,6)
Brazil	403	(2,5)
Mexico	402	(2,2)
Azerbeidjan	398	(2,6)
Tunisia	392	(2,6)
Argentina	391	(5,2)
Indonesia	391	(2,8)
Colombia	384	(2,8)
Qatar	361	(0,9)
Kirgyzstan	330	(2,3)

	Average	SE
Finland	560	(1,7)
Hong Kong-China	546	(2,4)
Chinese Taipei	545	(3,1)
Estonia	535	(2,0)
Czech Republic	534	(3,3)
Hungary	533	(2,5)
Netherlands	531	(2,5)
Slovenia	531	(1,5)
Japan	530	(3,2)
Korea	530	(3,0)
Canada	529	(1,9)
Austria	518	(3,7)
Macao-China	518	(1,6)
Sweden	517	(2,2)
Germany	516	(3,1)
New Zealand	516	(2,4)
Australia	515	(1,9)
Liechtenstein	515	(4,1)
United Kingdom	508	(2,0)
Belaium	507	(2,1)

PHYSICAL SYSTEMS

	Average	SE
Switzerland	506	(2,6)
Ireland	504	(2,6)
Slovack Repubic	504	(2,5)
Denmark	502	(2,8)
OECD	500	(0,5)
Poland	497	(2,1)
Latvia	495	(2,4)
Iceland	493	(1,6)
Croatia	493	(2,2)
Norway	491	(2,7)
Lithuania	490	(2,2)
United States	485	(3,8)
France	482	(2,7)
Russian Federation	479	(2,9)
Basque Country	479	(2,9)
Spain	477	(1,8)
Greece	474	(2,8)
Luxembourg	474	(1,1)
Italy	472	(1,7)
Portugal	462	(2,4)

	Average	SE
Israel	443	(3,1)
Bulgaria	436	(4,6)
Serbia	435	(2,7)
Azerbeidjan	433	(2,1)
Chile	433	(3,6)
Jordan	433	(2,6)
Romania	429	(3,2)
Uruguay	421	(2,4)
Turkey	416	(3,1)
Mexico	414	(2,1)
Montenegro	407	(1,5)
Thailand	407	(1,8)
Tunisia	393	(2,2)
Indonesia	386	(3,0)
Brazil	385	(2,6)
Argentina	383	(4,7)
Colombia	378	(2,7)
Qatar	358	(1,0)
Kirgyzstan	349	(2,2)

ATTITUDES SUB-SCALES

	Average	SE
Colombia	644	(3,5)
Thailand	642	(1,9)
Azerbeidjan	612	(2,3)
Mexico	611	(1,7)
Jordan	609	(1,9)
Indonesia	608	(2,1)
Brazil	592	(2,2)
Romania	591	(2,3)
Chile	591	(3,3)
Tunisia	590	(1,9)
Kirgyzstan	580	(1,8)
Portugal	571	(1,8)
Argentina	567	(3,0)
Uruguay	567	(2,2)
Qatar	565	(1,3)
Montenegro	561	(1,6)
Greece	549	(1,7)
Lithuania	544	(1,9)
Russian Federation	541	(2,1)
Turkey	540	(2,6)

INTEREST IN SCIENCE

	Average	SE
Hong Kong-China	536	(2,1)
Croatia	535	(1,9)
Spain	534	(1,6)
Chinese Taipei	533	(2,0)
Italy	529	(1,3)
Macao-China	524	(1,8)
Serbia	523	(2,0)
Bulgaria	523	(2,4)
Hungary	522	(1,9)
Slovak Republic	522	(1,9)
France	520	(2,4)
Luxembourg	515	(1,4)
Germany	513	(1,8)
Japan	512	(2,1)
Israel	509	(2,6)
Austria	507	(1,9)
Basque Country	507	(2,2)
Slovenia	505	(1,4)
Liechtenstein	504	(5,5)
Latvia	504	(1,9)

	Average	SE
Switzerland	504	(1,5)
Belgium	503	(1,4)
Estonia	502	(1,5)
Poland	501	(1,8)
OECD	500	(0,3)
Czech Republic	489	(2,0)
Korea	486	(2,1)
Ireland	481	(1,9)
United States	480	(2,8)
Norway	472	(2,2)
Canada	469	(1,5)
Iceland	466	(2,1)
Australia	465	(1,3)
United Kingdom	464	(1,7)
Denmark	463	(1,8)
New Zealand	461	(2,0)
Sweden	454	(2,3)
Netherlands	452	(2,0)
Finland	448	(2,1)

SUPPORT FOR SCIENTIFIC ENQUIRY

	Average	SE
Thailand	569	(2,3)
Chile	564	(3,0)
Turkey	563	(3,3)
Jordan	555	(3,0)
Chinese Taipei	546	(2,2)
Colombia	546	(2,6)
Azerbeidjan	542	(2,8)
Lithuania	541	(2,4)
Romania	540	(3,2)
Portugal	538	(2,0)
Mexico	536	(2,0)
Tunisia	534	(2,6)
Greece	533	(2,4)
Spain	529	(1,7)
Montenegro	529	(1,7)
Hong Kong-China	529	(2,3)
Bulgaria	527	(3,9)
Liechtenstein	524	(5,8)
Luxembourg	522	(1,9)
Indonesia	521	(2,8)

	Average	SE
Macao-China	521	(1,5)
Serbia	520	(2,2)
Qatar	520	(1,7)
Brazil	519	(1,8)
Germany	518	(2,7)
Austria	515	(2,4)
Croatia	514	(1,8)
Poland	513	(2,2)
Basque Country	513	(2,5)
Hungary	512	(2,0)
Israel	512	(3,1)
Italy	511	(1,6)
Uruguay	510	(1,9)
Switzerland	510	(2,0)
Russian Federation	508	(2,6)
France	507	(2,5)
Argentina	506	(2,9)
Slovenia	502	(1,5)
Kirgyzstan	502	(2,5)
Canada	501	(1,9)

	Average	SE
OECD	500	(0,4)
Slovak Republic	497	(2,0)
Estonia	497	(1,8)
Korea	495	(2,4)
Latvia	494	(2,1)
Belgium	492	(1,7)
Iceland	491	(2,2)
United States	490	(2,5)
Australia	487	(1,6)
Norway	485	(2,5)
Czech Republic	485	(2,4)
Ireland	484	(1,9)
Denmark	483	(2,6)
Finland	479	(2,0)
Sweden	471	(3,0)
New Zealand	470	(1,8)
United Kingdom	470	(1,8)
Japan	468	(2,3)
Netherlands	447	(1,7)

	Average	Boys	Girls
Scientific competence			
 Identify scientific issues 	487	474	500
 Explain phenomena scientifically 	493	498	488
 Using scientific evidence 	498	495	502
Scientific knowledge			
 Knowledge about Science 	492	485	498
 Knowledge of Science 			
- Earth and space	492	498	486
- Living systems	500	502	498
- Physical systems	479	488	469
Attitudes			
 Interest towards Science 	507	512	503
 Support of research 	513	515	511

RESULTS BY GENDER IN THE SCIENCE SUB-SCALES IN THE BASQUE COUNTRY