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How Canary Islands Students Performed in PISA

This chapter analyses the performance of Canary Islands students in PISA and draws national and international comparisons, including scores and rankings; distribution of students at proficiency levels; differences in performance between boys and girls, public and private schools, and between immigrant and native students, as well as the impact of socio-economic background on performance. The chapter concludes by listing the main findings of PISA for the Canary Islands.



The OECD Programme for International Student Assessment (PISA) is a comprehensive and rigorous international measurement and comparison of secondary school students' skills, competences, attitudes and learning strategies. Representative samples of 15-year-old students in OECD member and partner countries take tests in three subjects, reading literacy, mathematical literacy and science. In each PISA round one of these subjects is examined more intensively than the other two; in 2009, reading literacy was the main subject.

This chapter will describe how PISA 2009 results for the Canary Islands compared to those of 14 other Spanish regions, Spain as a whole, and 64 other participating countries.

SCORES AND RANKINGS

PISA performance scales are constructed so that for each of the three subjects, the mean score among OECD countries is around 500, with about two-thirds of students scoring between 400 and 600 score points. In the main domain tested, reading, Spain achieved a mean score of 481, which was significantly below the OECD average of 493. It ranked between 24th and 28th among the OECD's 34 member countries. Compared to other countries in membership of both the OECD and the EU, Spain was above Austria; similar to Italy, Slovenia, Greece, the Czech Republic and the Slovak Republic (though the first three of these had higher scores, in Italy's case 5 points higher); significantly below OECD average performers Sweden, Germany, Ireland, France, Denmark, the United Kingdom, Hungary and Portugal; and very significantly below above-average performers such as Finland, the Netherlands, Belgium, Estonia and Poland.

Table 2.1 shows mean scores in reading, mathematics and science for the Spanish regions. Table 2.2 shows each country's mean score in reading and its highest and lowest possible rank: because figures are derived from samples, it is not possible to determine a precise rank with confidence.

Students in the Canary Islands achieved a mean reading score of 448, 45 points below the OECD average and 33 points below Spain's score. As 39 points equates to a year of schooling, the average Canary Islands 15-year-old is more than a year behind counterparts in the average-performing countries and nearly a year behind the average Spanish student. Only Ceuta and Melilla's students had a lower reading score, 412, putting them nearly a year behind Canary Islands students. Internationally, the Canary Islands reading score is similar to that of Chile, which ranked 33rd of 34 OECD members, though above EU members Bulgaria and Romania.

In **mathematics**, the OECD average was 496. Spain's score was again significantly below this, at 483 statistically similar to the scores of Hungary (490), Ireland and Portugal (487) and Italy, which scored the same. In mathematics Canary Islands students scored 435 points, which is 61 points lower than the OECD average and 48 points below the Spanish average performance. Therefore the average Canary Islands 15-year-old is a year and a half of schooling behind counterparts in average-performing OECD and EU countries such as France, the Slovak Republic, Austria, Poland, Sweden, the Czech Republic and the United Kingdom, more than a year behind the average Spanish student. Within Spain, only Ceuta and Melilla's students had a lower score (417). Internationally, the Canary Islands mathematics score is between those of Serbia (442) and Azerbaijan (431); but above the scores of Bulgaria, Romania and Chile.

In **science**, the OECD average was 501. Spain's score was significantly below this at 488, but statistically similar to the scores of Austria (494), Portugal (493), the Slovak Republic (490), Italy (489) and Luxembourg (484). Canary Islands students scored 452 points in science, which is 49 points (more than a year of schooling) behind the OECD average and 36 points (nearly a year of schooling) behind the average Spanish student. Within Spain, only Ceuta and Melilla's students scored lower (416). Internationally, the Canary Islands science score is between those of Turkey (454) and Chile (447); but above the scores of Serbia, Bulgaria and Romania.

Table 2.1 Mean score in reading, mathematics and science, by region in Spain

	Reading		Mathematics		Science	
	Mean score	Standard Error	Mean score	Standard Error	Mean score	Standard Error
Andalusia	461	(5.5)	462	(5.2)	469	(5.3)
Aragon	495	(4.1)	506	(5.2)	505	(4.3)
Asturias	490	(4.8)	494	(4.6)	502	(4.9)
Balearic Islands	457	(5.6)	464	(4.5)	461	(5.7)
Basque Country	494	(2.9)	510	(2.8)	495	(2.5)
Canary Islands	448	(4.3)	435	(4.1)	452	(4.1)
Cantabria	488	(4.1)	495	(5.0)	500	(4.7)
Castile and Leon	503	(4.9)	514	(5.3)	516	(4.9)
Catalonia	498	(5.2)	496	(6.0)	497	(5.9)
Ceuta and Melilla	412	(2.5)	417	(2.4)	416	(2.6)
Galicia	486	(4.4)	489	(4.3)	506	(4.9)
La Rioja	498	(2.4)	504	(2.7)	509	(2.6)
Madrid	503	(4.4)	496	(4.4)	508	(4.2)
Murcia	480	(5.1)	478	(5.6)	484	(5.3)
Navarre	497	(3.1)	511	(3.6)	509	(3.2)
Spain average	481	(2.0)	483	(2.1)	488	(2.1)
OECD average	493	(0.5)	496	(0.5)	501	(0.5)

Source: OECD, PISA 2009 Database.



Table 2.2 Mean score and rank range of the countries/economies in reading

Statistically significantly above the OECD average

Not statistically significantly different from the OECD average

Statistically significantly below the OECD average

	Reading scale					
	Mean Score	Standard Error	Range of rank			
			OECD countries		All countries/economies	
		Upper rank	Lower rank	Upper rank	Lower rank	
Shanghai-China	556	(2.4)			1	1
Korea	539	(3.5)	1	2	2	4
Finland	536	(2.3)	1	2	2	4
Hong Kong-China	533	(2.1)			3	4
Singapore	526	(1.1)			5	6
Canada	524	(1.5)	3	4	5	7
New Zealand	521	(2.4)	3	5	6	9
Japan	520	(3.5)	3	6	5	9
Australia	515	(2.3)	5	7	8	10
Netherlands	508	(5.1)	5	13	8	16
Belgium	506	(2.3)	7	10	10	14
Norway	503	(2.6)	7	14	10	18
Estonia	501	(2.6)	8	17	11	21
Switzerland	501	(2.4)	8	17	11	21
Poland	500	(2.6)	8	17	11	22
Iceland	500	(1.4)	9	16	12	19
United States	500	(3.7)	8	20	11	25
Liechtenstein	499	(2.8)			11	23
Sweden	497	(2.9)	10	21	13	26
Germany	497	(2.7)	11	21	14	26
Ireland	496	(3.0)	12	22	15	27
France	496	(3.4)	11	22	14	27
Chinese Taipei	495	(2.6)			17	27
Denmark	495	(2.1)	15	22	18	26
United Kingdom	494	(2.3)	15	22	19	27
Hungary	494	(3.2)	13	22	16	27
Portugal	489	(3.1)	18	24	23	31
Macao-China	487	(0.9)			27	30
Italy	486	(1.6)	22	24	27	31
Latvia	484	(3.0)			27	34
Slovenia	483	(1.0)	23	26	30	33
Greece	483	(4.3)	22	29	27	37
Spain	481	(2.0)	24	28	30	35
Czech Republic	478	(2.9)	24	29	31	37
Slovak Republic	477	(2.5)	25	29	32	37
Croatia	476	(2.9)			33	39
Israel	474	(3.6)	26	31	33	40
Luxembourg	472	(1.3)	29	31	36	39
Austria	470	(2.9)	29	32	36	41
Lithuania	468	(2.4)			38	41
Turkey	464	(3.5)	31	32	39	43
Dubai (UAE)	459	(1.1)			41	43
Russian Federation	459	(3.3)			41	43
Chile	449	(3.1)	33	33	44	44
Serbia	442	(2.4)			45	46
Bulgaria	429	(6.7)			45	50
Uruguay	426	(2.6)			46	50
Mexico	425	(2.0)	34	34	46	49
Romania	424	(4.1)			46	50
Thailand	421	(2.6)			47	51
Trinidad and Tobago	416	(1.2)			50	52
Colombia	413	(3.7)			50	55
Brazil	412	(2.7)			51	54
Montenegro	408	(1.7)			53	56
Jordan	405	(3.3)			53	58
Tunisia	404	(2.9)			54	58
Indonesia	402	(3.7)			54	58
Argentina	398	(4.6)			55	59
Kazakhstan	390	(3.1)			58	60
Albania	385	(4.0)			59	60
Qatar	372	(0.8)			61	63
Panama	371	(6.5)			61	64
Peru	370	(4.0)			61	64
Azerbaijan	362	(3.3)			63	64
Kyrgyzstan	314	(3.2)			65	65

Source: OECD, PISA 2009 Database.



Taking **all three subjects together**, the Canary Islands students' results were the second-worst of the 15 Spanish regions participating in PISA, though considerably better than those of the worst, Ceuta and Melilla. Castile and Leon, Spain's strongest overall performer, scored above the OECD average in all three domains, as did Aragon, La Rioja, Madrid and Navarre.

PROFICIENCY LEVELS

Proficiency levels for each subject are defined for the purpose of describing the competences and skills of students performing at each level. Student scores in science and mathematics were grouped into seven proficiency levels, with Level 6 representing the highest scores and Below Level 1 the lowest scores. For reading, there is one extra proficiency level: Level 1 is split into Level 1a (higher) and Level 1b (lower), so that the lowest of all is Below Level 1b. High-performing school systems achieve good results in PISA for students at both ends of the performance distribution, supporting the lowest performers to reach at least the baseline level, and helping very good students to secure excellent results in all subjects.

In each subject, Level 2 is the baseline level. In reading, for example, Level 2 questions may require students to locate one or more pieces of information, which may need to be inferred and to meet several conditions; or to recognise the main idea in a text, construing meaning when the information is not prominent. Typical reflective tasks at this level require students to compare the text and outside knowledge, or make connections between them.

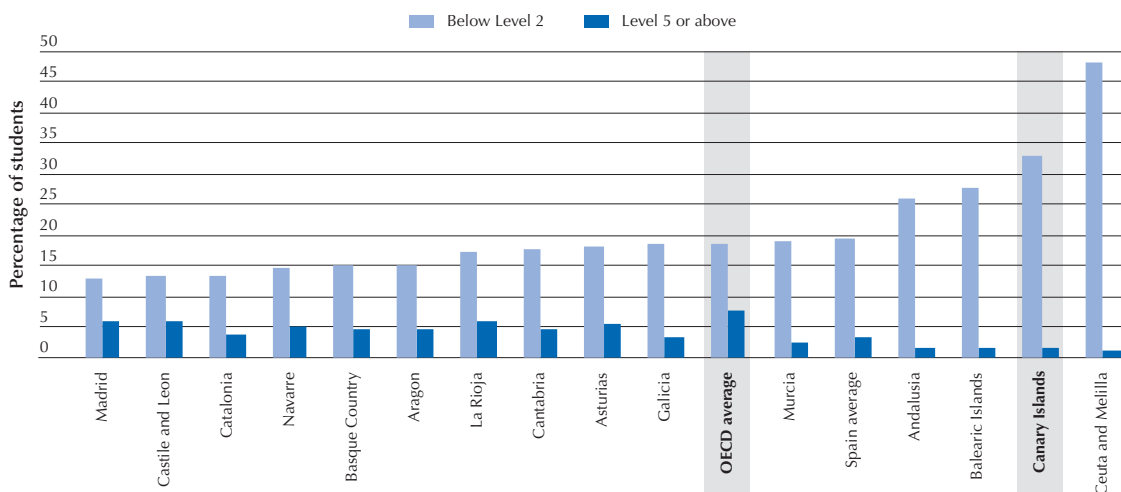
The low mean scores of Canary Islands students in all three subjects are primarily due to the high proportion of students not achieving Level 2, the baseline proficiency level. As shown in Figure 2.1, in the Canary Islands, 33% of students performed below Level 2 in **reading**, compared with 20% in Spain, 19% across the OECD and 13% in Madrid and Castile and Leon. Within Spain, only Ceuta and Melilla had more students below Level 2 (48%).

Of the one-third of students below Level 2 in the Canary Islands, two-thirds performed at Level 1a, which is only just below, suggesting that quite a small general improvement in reading performance could boost numbers of students reaching Level 2 significantly. However, in the Canary Islands – as in Andalusia, the Balearic Islands and, unsurprisingly, Ceuta and Melilla – appreciable numbers of students performed at the very lowest proficiency level, “Below Level 1b”.

The proportion of Canary Islands students performing below Level 2 in **science** was 32%. In **mathematics** it was even higher, at 43%.

■ Figure 2.1 ■

Percentage of students at reading proficiency levels below Level 2, and Level 5 or above



Source: OECD, PISA 2009 Database.

Nor can the Canary Islands find much joy in their students' performance at the high end of the PISA performance scale. In **reading**, the proportion of top performing students (at Levels 5 or 6) in the Canary Islands was less than 2%. This was lower than in Spain (3%) and considerably lower than in the OECD as a whole (8%). The Canary Islands, the Balearic Islands and Andalusia had the lowest percentages across Spain's regions, only Ceuta and Melilla (1%) being lower.

In **mathematics**, the Canary Islands had the lowest share of Level 5 and 6 students of any Spanish region, at 1%; by contrast, 14-15% of students in Castile and Leon, Rioja and Aragon reached these levels. In science, the share of top performing students is only 2%



in the Canary Islands; other regions such as Aragon, Asturias, Cantabria, Castile and Leon, Galicia, La Rioja, Madrid and Navarre reach shares above 5%. And only about 10% of the Canary Islands' top-performing readers were also top performers in the other two subjects – a small proportion compared with other participating Spanish regions.

DIFFERENCES BETWEEN BOYS AND GIRLS

In all participating countries and regions, girls outperformed boys in **reading**. This is also true in the Canary Islands where in PISA 2009 girls outperformed boys by 25 points. However, this gender gap in girls' favour was smaller than the averages for Spain (29 points) or the OECD as a whole (39 points). A much higher proportion of boys (39%) than girls (27%) failed to reach the baseline Level 2.

By contrast, in most countries, boys outperformed girls in **mathematics**. The OECD average gender gap was 12 points in boys' favour. The Canary Islands had a bigger gender gap of 17 points, but this is not untypical of Spain, where the average gender gap was 19 points. Only in Madrid was there no significant difference between boys and girls in mathematics.

In **science**, there was no significant gender gap across the OECD, but there was in Spain, where boys outperformed girls by 7 points on average. In the Canary Islands, boys outperformed girls by 15 points. The only regions with bigger gender gaps were Murcia (24 points) and Andalusia (16 points). Many Spanish regions had no significant gender gap in science.

This is an indication that Canary Islands secondary schooling might be less effective for girls than for boys. In PISA 2009, girls in the Canary Islands performed on average 52 score points below the average reading score of girls in the OECD area, while the score point difference between boys in the Canary Islands and boys in the OECD area was only 38 score points. Boys also outperformed girls by a bigger margin than the OECD average in mathematics and particularly in science. Here the score point difference for gender specific averages between the Canary Islands and the OECD area was 57 score points for girls and 42 score points for boys.

IMPACT OF SOCIO-ECONOMIC BACKGROUND ON PERFORMANCE

Students' socio-economic background is summarised in the *PISA index of social, economic and cultural status*. This index is calculated by taking into consideration the parents' education and occupations and an array of household possessions. The index is standardised to have a mean of zero and a standard deviation of one across countries in the OECD area. A minus score on the index shows a socio-economically disadvantaged background, a plus score shows the opposite.

The average socio-economic status of students in the Canary Islands is low. Mean socio-economic status of PISA 2009 participants was -0.62, the lowest of all participating regions in Spain. Two out of five students in the Canary Islands came from a low socio-economic background. When PISA results were statistically adjusted to compensate for differences in socio-economic status, the mean reading score of Canary Islands students rose from 448 to 467 points; but this is still significantly below average performance in Spain and across the OECD.

The PISA 2009 report looked at the relationship between socio-economic background and performance in each participating country and region. The relationship is expressed in terms of the number of points' improvement in student reading scores associated with one unit on the PISA index of economic, social and cultural status. The lower the number of points, the less inequity there is between social groups in that country or region. On this measure, the Canary Islands system, while by no means achieving full equity, is more equitable than many others.

Across OECD countries, students from more socio-economically advantaged backgrounds (among the top one seventh) outperform students from average backgrounds in reading by 38 points, or about one year's worth of education. In the Canary Islands, on average, one unit on the PISA index of economic, social and cultural status was associated with a reading score improvement of 27 points. This figure was lower than in several other Spanish regions (national average 29 points), such as La Rioja, Ceuta and Melilla and Asturias, but similar to the Balearic Islands, Catalonia and Murcia. Some 9% of the performance variation between Canary Islands students could be attributed to their socio-economic background. In Spain and across the OECD, differences in socio-economic background explained 14% of the variation in scores.

Variations in performance occur both between schools and within schools. If students are admitted to them on the basis of particular characteristics, for example whether they have high ability or parents able to pay substantial fees, a high proportion of the variation is likely to occur between schools. If admission arrangements are broadly the same for all schools, a high proportion of the variation is likely to occur within schools – as students attending the same school display different abilities or effort, or are exposed to different teaching quality or learning opportunities. In the Canary Islands, **variation within schools was observed to be bigger than variation between schools**, with 79% of variation attributable to the former, 21% to the latter. In the Canary Islands, therefore, the amount of variation explained by differences between schools is similar to Spain as a whole (22%) but much less than across the OECD as a whole (39%). Overall, the total variance in student performance in the Canary Islands is slightly below that observed on average across OECD countries, while Spain as a whole recorded 12% less variation in students' reading performance than the OECD average.

DIFFERENCES BETWEEN PRIVATE AND PUBLIC SCHOOLS

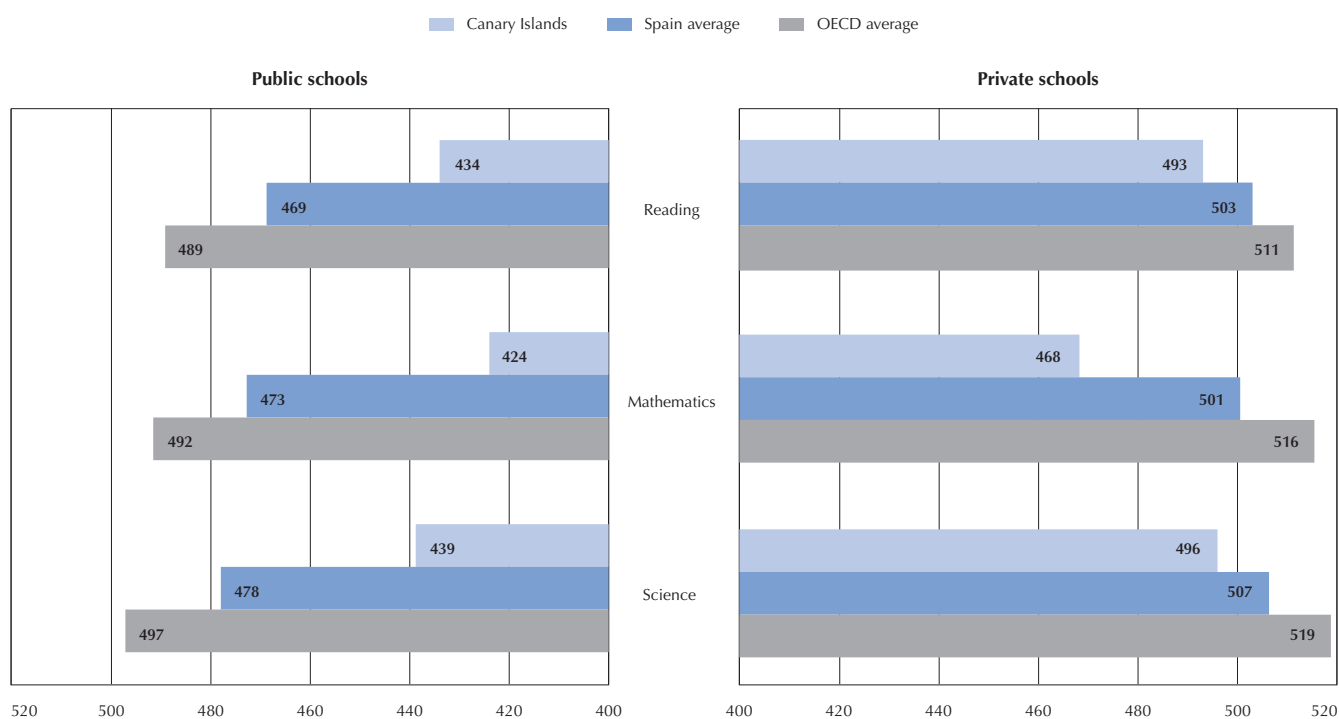
PISA sampled both private and public schools. The database for the Canary Islands consists of 250 students in 9 private schools and 1 046 students in 36 public schools, representative for some 16 000 15-year-old students. However, the PISA 2009 sample contained no fully private schools, so the following description of private and public schools relates to private state-subsidised schools.

On average, private schools outperformed public schools by 59 points in reading, 44 points in mathematics and 57 points in science, as shown in Figure 2.2 which also shows averages for Spain and the OECD. Though Canary Islands private schools are below the averages for Spanish private schools in all subjects, they are closer to the Spain figure than the public schools figure in all subjects, and in reading and science the differences between Islands private schools and Spanish private schools are relatively small. It seems that in the Canary Islands, private schools are better than public schools in ensuring achievement levels comparable with those in other Spanish regions. For private schools as for public schools, the weakest subject was mathematics, where there were large gaps between the Canary Islands score, the Spanish average score and the OECD average score.

However, in general, students who attend private schools are from more advantaged socio-economic backgrounds. After adjusting for the socio-economic characteristics of students and schools according to standard PISA conventions, public schools in the Canary Islands perform better than private schools. We see a similar pattern for most regions in Spain and many OECD countries.

Figure 2.2

Mean performance of public and private schools



Source: OECD, PISA 2009 Database.

PERFORMANCE OF IMMIGRANT STUDENTS AND SPECIAL PROGRAMMES

Of the Canary Islands students in the PISA sample, 12% had an **immigrant background** (10% are first-generation students). This figure was similar to the OECD and Spanish averages of about 10%. Almost all immigrant students spoke Spanish at home. Less than 1% of these students spoke Galician and Catalan and less than 3% spoke another language at home.

Canary Islands statistical sources show that about 50% of the students with foreign nationality on the Islands come from Spanish speaking countries in South America, around one-third from countries within the European Union, and 12% from the African continent (ISTAC, 2009).



PISA 2009 found no statistically significant performance difference between native and immigrant students. Integration of immigrant students in schools seemed to be relatively high. 20% of students were in schools where the share of students with immigrant background was higher than 25%. Only the Balearic Islands and Madrid have higher shares.

Probably due to the low share of immigrant students whose first language was not Spanish, PISA found that special programmes for students with an immigrant background were relatively uncommon. Only a small minority of students were in schools that provided special programmes and measures, such as instruction in the mother tongue and reduced class size. PISA also found that, apart from reduced class sizes which benefited 12% of the private school students, only few of these programmes extended to private schools. Sixty-seven percent of the students whose first language was not Spanish were in public schools, attending regular classes and receiving additional periods of instruction aimed at developing skills in Spanish (e.g. reading literacy, grammar, vocabulary, communication).

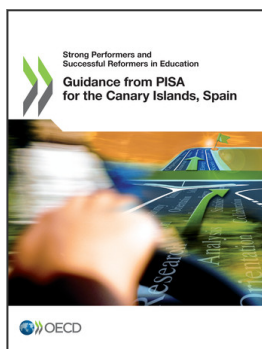
SUMMARY OF PISA FINDINGS IN THIS CHAPTER

This chapter has set out key general PISA findings illustrating the quality and equity of school education in the Canary Islands. Further findings will be presented in later chapters where relevant. These chapters will also contain recommendations for improvement. The key points for readers to carry forward from this chapter are that, by Spanish national and by international standards:

- The average PISA performance of Canary Islands 15-year-olds in reading, mathematics and science is low – the second-lowest of all Spanish regions.
- Mathematics performance is particularly low.
- Numbers failing to reach even the baseline Level 2 are very high, particularly in mathematics and boys' reading. The proportion of students reaching highest performance levels is very low.
- Canary Islands secondary schooling seems less effective for girls than for boys in mathematics and science. In reading, girls are not as far ahead of boys than in most OECD countries.
- The average socio-economic status of students in the Canary Islands is the lowest of all Spanish regions in PISA. However, even when PISA results are statistically adjusted to take account of socio-economic status differences, students' reading performance remains significantly below Spanish and OECD averages.
- On the positive side, socio-economic differences between students make less difference to their results in the Canary Islands than across the OECD, and there is much less performance variation between schools than within schools.
- Private schools outperform public schools, but differences in results can be attributed to socio-economic differences in pupil populations. Private schools are closer than public schools to the performance levels of their counterparts in Spain as a whole, but maths results are problematic in both private and public schools.
- Commendably, immigrant students perform as well as native students.

Reference

ISTAC (Instituto Canario de Estadística) 2009, *Alumnado extranjero según titularidad de los centros y enseñanzas*, last accessed 14 September 2011, www2.gobiernodecanarias.org/istac/jaxi-web/menu.do?path=/03031/E41001A/P0001&file=pcaxis&type=pcaxis.



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