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Analysis of PISA 2006 Preferred Items Ranking Using the Percent-Correct Method

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ANALYSIS OF PISA 2006 PREFERRED ITEMS RANKING USING THE PERCENT-CORRECT METHOD

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ABSTRACT

This paper uses an approximate average percent-correct methodology to compare the ranks that would be obtained for PISA 2006 countries if the rankings had been derived from items judged by each country to be of highest priority for inclusion. The results reported show a remarkable consistency in the country rank orderings across different sets of countries' preferred items when comparing with the rank reported in the PISA 2006 initial report (OECD, 2007). On average, only few countries systemically go up or down in their ranking position. As these countries are in a group of moderate performers with very comparable outcomes, these shifts in the ranking would probably be associated with minor changes in mean performance on the final PISA scale. The analysis suggests that PISA rankings are noticeably stable thanks to the large enough pool of test items able to accommodate diverse preferences. The paper shows how important it is to base a choice of test items on a properly structured process which allows different experts and countries to equally contribute. The evidence presented demonstrates that in PISA, average rank positions of countries across different sets of preferred items are apparently stable and experts are not able to predict which items can elevate performance of their countries in the final test.

RESUME

Le présent document repose sur une méthodologie fondée sur la moyenne des pourcentages de réponses correctes. Il vise à déterminer le rang que les pays auraient obtenu à l'évaluation PISA 2006 si le classement avait été réalisé à partir des items considérés comme prioritaires par chaque pays. Sur les différents groupes d'items préférés des pays, les résultats montrent une cohérence remarquable avec le classement réel qui figure dans le rapport initial PISA 2006 (OCDE, 2007). En moyenne, peu de pays gagnent ou perdent des places systématiquement. Étant donné que ces pays font partie d'un groupe de niveau moyen avec des résultats très comparables, les décalages dans le classement s'accompagneraient probablement de changements mineurs dans la performance moyenne sur l'échelle finale PISA. L'analyse suggère que les classements PISA sont manifestement stables grâce à l'existence d'un vivier d'items de tests suffisamment important pour autoriser toutes les préférences. Ce document montre qu'il est important de fonder le choix des items de tests sur un processus bien structuré, ce qui permet aux pays et aux experts de contribuer de la même façon. Les observations présentées ici établissent que pour PISA, le classement des pays selon les différents groupes d'items de premier choix est apparemment stable et les experts ne peuvent pas prédire quels items pourraient gonfler la performance de leur pays dans les tests finals.

Acknowledgements

The analytical methodology ACER had developed for ranking PISA 2003 preferred items was used for the ranking of preferred PISA 2006 items in this paper. The paper improved thanks to the useful insights by Andreas Schleicher and Miyako Ikeda, and the editorial work of Simone Bloem, Juliet Evans, Sophie Vayssettes and Elisabeth Villoutreix, from the OECD Secretariat.

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ANALYSIS OF PISA 2006 PREFERRED ITEMS RANKING USING THE PERCENT-CORRECT METHOD

Introduction

1. The PISA international results are based on a scaling of the raw data with an item response model (see *PISA 2006 Technical Report*). This scaling is undertaken for a number of reasons. First, and perhaps most importantly it supports the construction of described proficiency scales. Second, it enables the summarisation of students' responses to many items with simple indices. In doing so it ensures that the indices reflect the fact that distinct sub-samples of students respond to test booklets that are made of different subsets of items.¹

2. Through the application of the scaling model the PISA 2006 country level scores of each PISA domain are derived from *all* of the items in the PISA 2006 item pool that pertain to that domain.² This procedure reflects the PISA approach, which was one of building internationally supported assessment frameworks and then developing items pools that sample widely from those frameworks in an agreed fashion.

3. This approach does, however, have the potential to hide possibly interesting differences in patterns of performance at lower levels of aggregation. The study reported here investigates the impact of the selection of science items on the ranking of the countries. The analysis is preliminary because it uses an approximate percent-correct methodology.

4. As part of the PISA 2006 item development process each country was invited to rate each of the Field Trial items according to their *priority for inclusion* in the PISA 2006 Main Study. This data was used by the Consortium in the process of selecting Field Trial items for inclusion in the Main Study. The priorities for inclusion ratings were provided on a five-point scale (1 = low, through to 5 = high) (see *PISA 2006 Technical Report* for details).

5. Here we use the results of these ratings to develop multiple sets of overall science rankings for the PISA 2006 countries – one based on each country's preferred set of items. The rankings are based upon an average percent-correct methodology, which is an approximation to a more complete scaling of the data.

Average Percent Correct Computation

6. For each item administered in PISA it is possible to compute the percentage of correct answers. This is simply the number of correct answers obtained in a particular country divided by the total number of students who responded to the question.³ We call this statistic the *item -p*.

¹ The use of scaling models also makes possible a range of statistical checks of the *reasonableness* of the data. A discussion of this is not however relevant here.

² With the exception of a small number of national level item deletions described in the PISA 2006 Technical Report.

³ To be more precise the statistic is the proportion of the total possible score, since the denominator is the sum of the maximum possible scores across all students who responded to the item, and the numerator is the sum of the observed scores. This makes the statistics suitable for use with items scored out of one or more. Further the summations are weighted with the PISA student weights.

7. The *item –p* statistics can be averaged over any subset of items to obtain an *average-p* for that item subset and countries can be ranked according to that average. This ranking usually provides a close approximation to the ranking that would be obtained from an application of the PISA scaling methodology.⁴

Priority for Inclusion

8. Table 1 shows the number of Main Study science items that were rated at the highest level 5 (very high priority for inclusion) by each country.

9. The second column presents the highest rated level by country. Some countries didn't rate any item at level 5. For these countries, namely Macao-China, Montenegro, and Slovak Republic, items ranked level 4 were considered as the most preferred. The number of items rated at the highest level by country is given in the third column.

10. One hundred and three science items were used in the PISA 2006 Main Study. These items are considered here. However, 22 items were not tested in the Field Trial and consequently were not rated by countries. These are items taken from previous PISA cycles which were included to allow score linking across PISA cycles. Thus, two sets of results are provided. The first based solely on new PISA 2006 items rated by countries at the highest level for inclusion; and the second based on the 22 items from previous cycles plus countries' highly preferred items developed for PISA 2006. There are more items in the second set making it more stable and better suited for comparisons. The discussion concentrates on the second set of results, while data are provided for both.

11. Table 1 does not list all countries participating in PISA 2006. Some countries did not provide these ratings or rated all items at the highest level.⁵ Additional statistics for all participating countries with comments explaining why some of them were not included in the analysis are presented in the table A1 in the Appendix.

12. In the analysis considering only new PISA 2006 items, data from countries that rated less than five items at the highest level were not used. Spain and Switzerland gave the highest ranks to only two items and were not considered, because any scores based on two items are too volatile to be compared. However, these two countries were considered in the analysis where items from previous cycles were included.

⁴ Small differences will occur for three reasons. First, the average percent correct methodology weights all items equally, whereas in the scaling the items are weighted according to the number of booklets that they were included in. Second, the average percent correct approach does not address the booklet effect that was observed in PISA. Third, the scaling methodology corrects for that fact that percentage values are bounded at zero and 100, and therefore cannot be regarded as interval.

⁵ A number of countries that did not provide ratings did so on the grounds that they deemed all items as appropriate for inclusion.

Table 1. Number of items rated the highest priority for inclusion by each country

Country	Items Rated Level 5	Maximum rated level	Items rated at the highest level in the country (5 or 4)
Australia	50	5	50
Austria	14	5	14
Belgium	18	5	18
Canada	28	5	28
Chile	22	5	22
Chinese Taipei	50	5	50
Colombia	58	5	58
Croatia	63	5	63
Czech Republic	13	5	13
Denmark	71	5	71
Estonia	52	5	52
Finland	33	5	33
France	36	5	36
Germany	8	5	8
Greece	6	5	6
Hong Kong-China	33	5	33
Hungary	20	5	20
Iceland	19	5	19
Indonesia	48	5	48
Ireland	38	5	38
Israel	34	5	34
Italy	14	5	14
Japan	25	5	25
Jordan	47	5	47
Korea	30	5	30
Lithuania	45	5	45
Luxembourg	38	5	38
Macao-China	0	4	18
Mexico	22	5	22
Montenegro	0	4	13
Netherlands	27	5	27
New Zealand	26	5	26
Norway	47	5	47
Poland	9	5	9
Portugal	34	5	34
Qatar	63	5	63
Romania	5	5	5
Serbia	52	5	52
Slovak Republic	0	4	16
Slovenia	46	5	46
Spain	2	5	2
Sweden	5	5	5
Switzerland	0	4	2
Tunisia	20	5	20
Turkey	74	5	74
United Kingdom	8	5	8
Uruguay	33	5	33

Rankings

13. Tables A2 and A3 in the Appendix present rankings for each country according to percent-correct scores obtained for distinct sets of items rated at the highest level of priority for inclusion by different countries. Table A2 gives rankings based on all PISA 2006 items, namely, those from previous cycles plus new items rated the highest priority for inclusion. Table A3 gives similar ranking based solely on new items developed for PISA 2006 and rated the highest priority for inclusion. Countries are sorted in alphabetical order. Note that while country rankings were produced for all countries participating in PISA, the list of countries which provided a basis for these rankings is shorter. It excludes countries which didn't provide item ratings (Table A2) or those which rated only few items the highest priority (Sweden and Switzerland in Table A3).

14. These results show quite a consistent ranking both across the sets of items and between the original ranking and the rankings based upon the various subsets of items. However, some countries' ranking positions vary more than others. Rankings vary less when preferred items were used together with items from previous cycles, because in this case the pool of items from which percent-correct scores were obtained was much larger. In this case ranking positions of Lithuania, Korea, and Russian Federation vary more than for other countries, but even for these countries' positions are remarkably stable. When only new PISA 2006 items are considered the ranks vary more. In this case ranking positions of Chinese Taipei, Korea, France, Croatia, and Japan, vary the most according to different sets of preferred items. In contrast, ranking positions of Finland or Canada do not change a lot.

15. The results in Tables A2 and A3 are summarised in Table 2 below. Table 2 shows the initial report rank (OECD, 2007), the average percent-correct rank based upon all items, the average percent-correct rank based upon new PISA 2006 items, and finally the ranking based upon that country's own highest rating items with and without previous cycles items considered.

16. Country ranks based on their preferred items are usually very similar to those obtained for the full set of PISA 2006 science items - see Figures 1 and 2 below. Country ranks are also very similar to those presented in the initial report (OECD, 2007), obtained with a proper scaling methodology.

17. There are, however, countries whose ranking position changes noticeably when only considering their preferred items. For example, the position of Macao-China or Lithuania increases by more than 5 ranks, while the position of the Slovak Republic visibly decreases. However, these shifts are usually in a range which includes a sampling error. Moreover, these countries are usually in a group of moderate performers with very similar outcomes. In other words, moving up or down the ranking doesn't mean that the mean performance of these countries on a final PISA scale would be noticeably different. In most cases, results would probably remain statistically similar to groups of countries with comparable performance levels.

18. Tables A4 and A5 in the Appendix provide additional statistics. Generally, the median ranking position across different sets of countries' preferred items is very similar to that obtained with a full set of items. Thus, on average countries have similar ranks to those presented in the initial report (OECD, 2007). The tables also provide a range of ranks according to different countries' preferred items.⁶

19. The tables show that the average rank across rankings based on different countries' preferred items is very close to the rank presented in the PISA 2006 initial report (OECD, 2007). While some

⁶ This range was calculated by taking the 5% and 95% percentile of country's positions across all rankings based on different countries sets of preferred items.

countries could gain from considering their preferred items it would be the opposite for others. There is no evidence that countries would generally gain from considering solely their preferred items.

20. The variation in ranks across different sets of preferred items can be considered as partly random. There are only few countries which on average gain or lose when only some of the items are considered. The average position for most countries is very similar to the one based on all items, which means that the choice of preferred items is not systematically affecting their rank. However, variation in rankings suggests that having a bigger pool of items which compromises different countries' or experts' views is of crucial importance for the robustness of PISA rankings.

Table 2. Country rankings according to PISA 2006 initial report (OECD, 2007), percent-correct score, and preferred items percent-correct score

Country	PISA 2006 initial report science literacy rank	Percent-correct rank based on all PISA 2006 items	Rank on own preferred new PISA 2006 items and items from previous cycles	Percent-correct rank based on new PISA 2006 items	Rank on own preferred new PISA 2006 items
Finland	1	1	1	1	1
Hong Kong-China	2	2	2	2	2
Canada	3	3	4	3	2
Chinese Taipei	4	6	7	6	8
Estonia	5	4	5	4	4
Japan	6	5	4	5	7
New Zealand	7	7	10	7	7
Australia	8	8	7	8	6
Netherlands	9	9	8	9	9
Korea	11	11	10	11	13
Slovenia	12	13	15	13	11
Germany	13	12	12	12	11
United Kingdom	14	14	14	14	13
Czech Republic	15	15	17	15	13
Switzerland	16	16	15	16	
Macao-China	17	18	11	18	12
Austria	18	19	22	19	17
Belgium	19	17	14	17	13
Ireland	20	20	18	20	13
Hungary	21	22	21	22	20
Sweden	22	21	21	21	30
Poland	23	23	24	23	27
Denmark	24	24	24	24	23
France	25	25	25	25	33
Croatia	26	27	28	27	29
Iceland	27	26	29	26	28
Slovak Republic	30	31	35	31	34
Spain	31	28	29	28	
Lithuania	32	34	28	34	31
Norway	33	30	28	30	27
Luxembourg	34	35	35	35	34
Italy	36	36	37	36	34
Portugal	37	37	37	37	35
Greece	38	38	33	38	37
Israel	39	39	39	39	39
Chile	40	40	41	40	41
Serbia	41	43	43	43	41
Uruguay	43	41	41	41	41
Turkey	44	45	45	45	44
Jordan	45	44	44	44	44
Romania	47	48	46	48	50
Montenegro	48	50	49	50	48
Mexico	49	47	48	47	49
Indonesia	50	53	52	53	52
Colombia	53	51	49	51	50
Tunisia	54	54	54	54	54
Qatar	56	56	56	56	56

Figure 1. Percent-correct ranking based on all PISA 2006 science items and the percent-correct ranking based on countries' preferred items plus the items kept from the previous PISA cycles

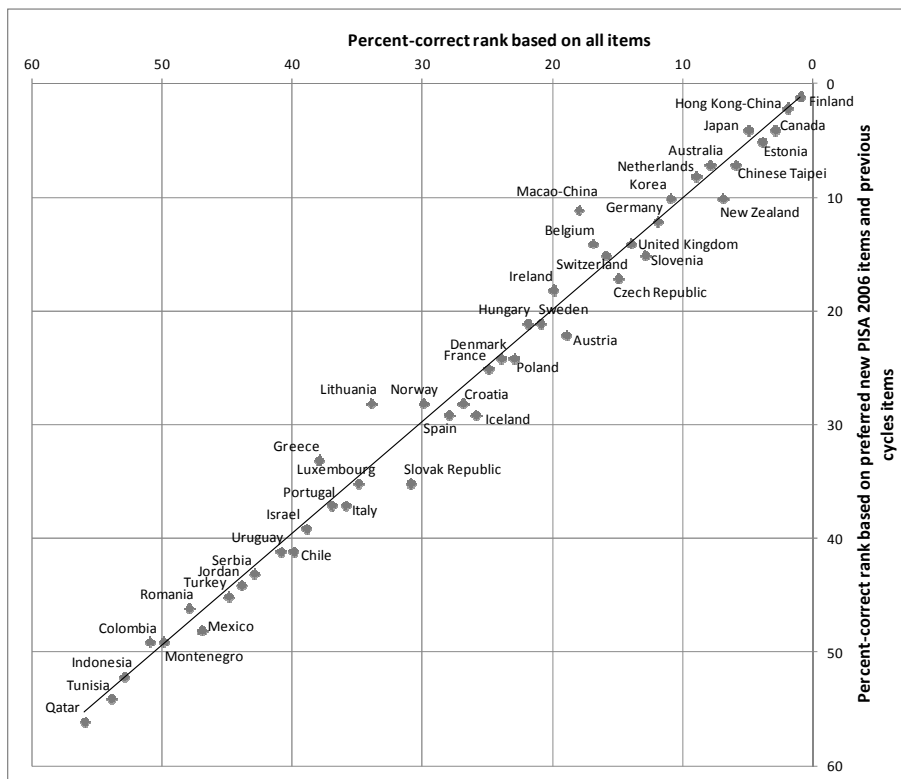
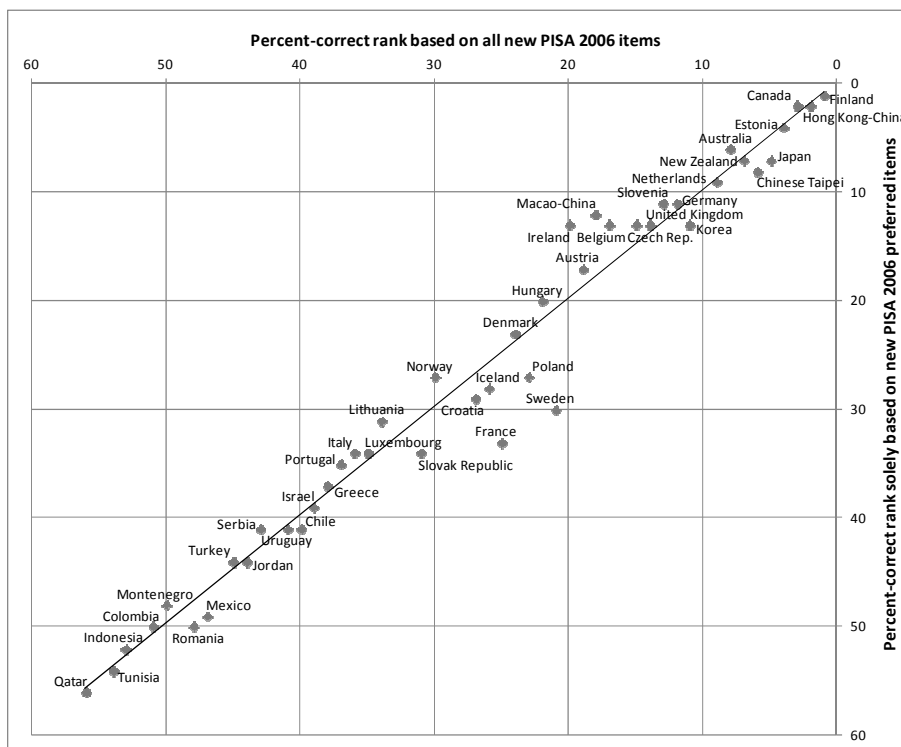


Figure 2. Percent-correct ranking based on science items used in PISA 2006 for the first time and the percent-correct ranking based on the countries' preferred items



Summary and Discussion

21. Using an approximate (average percent-correct) methodology we have compared the ranks that would be obtained for PISA 2006 countries if the rankings had been derived from items judged by each country to be of highest priority for inclusion.

22. The results show a remarkable consistency in the country rank orderings when taking the average position across rankings based on different countries' preferred items and comparing it with the rank reported in the PISA 2006 initial report (OECD, 2007). This stability in average ranking position is highly desirable, but note that the variation of ranks across different sets of preferred items is non negligible.

23. On average, only few countries systemically go up or down in their ranking position. Shifts in ranking positions for these countries are relatively small and comparable in magnitude to the sampling error (see Table 2.11c in the PISA 2006 initial report; OECD, 2007). For most of the countries such systematic shifts were not observed.

24. Relatively high variation in countries' ranks when different sets of items are considered suggests that the choice of items should compromise different experts' and countries' views. It also demonstrates the volatility of student assessment if the pool of test items is too narrow.

25. Two lessons can be drawn from this analysis. First, the pool of test items has to be big enough to provide robust comparisons of countries and to accommodate diverse preferences. PISA uses around 100 items for testing major domains and around 30 items for minor domains, which seems to be sufficient to limit the impact of individual countries' views. Second, although this analysis suggests that final rankings can depend upon the choice of items, experts cannot identify items in advance that will advantage or disadvantage their country. This paper shows that this is the case in PISA, because countries in general do not gain or lose from considering their preferred items only. In other words, experts are not able to predict which items can increase their country's chances of improving its ranking position in the final PISA test.

26. Note also that these results should be considered as indicative only. A more rigorous analysis would be to use the full PISA scaling methodology and use a wider variety of approaches for selecting item subsets. For example these analysis items should be replicated using sub-groups of items based on other features of the items, e.g. item type, text length, continuous versus non-continuous, source language submission (see Lafontaine, Monseur, 2007, for an example of such analysis using PISA 2000 data).

References

Lafontaine, D. & Monseur, C. (2007). *Impact of test characteristics on gender equity indicators in the assessment of reading comprehension*. University of Liege, Belgium.

OECD (2007), *PISA 2006 Science Competencies for Tomorrow's World Volume 1: Analysis*, OECD, Paris.

Appendix

Table A1. Preferred items statistics

Country	Items Rated Level Five	Items rated at the highest level in the country	Minimum rated level	Maximum rated level	Average rated level	Comments
OECD						
Australia	50	50	1	5	4.4	
Austria	14	14	1	5	3.8	
Belgium	18	18	1	5	3.6	
Canada	28	28	1	5	3.8	
Czech Republic	13	13	1	5	3.5	
Denmark	71	71	1	5	4.7	
Finland	33	33	1	5	3.7	
France	36	36	1	5	4.1	
Germany	8	8	2	5	3.6	
Greece	6	6	1	5	3.2	
Hungary	20	20	1	5	4	
Iceland	19	19	2	5	3.9	
Ireland	38	38	1	5	4.1	
Italy	14	14	2	5	3.7	
Japan	25	25	2	5	4.2	
Korea	30	30	1	5	4.1	
Luxembourg	38	38	1	5	4	
Mexico	22	22	2	5	4	
Netherlands	27	27	1	5	3.7	
New Zealand	26	26	1	5	4	
Norway	47	47	1	5	4.2	
Poland	9	9	1	5	3.7	
Portugal	34	34	1	5	4	
Slovak Republic	0	16	1	4	2.7	Ranking for the items rated level 4
Spain	2	2	1	5	2.9	Only two items were rated at the highest level
Sweden	5	5	1	5	3.7	
Switzerland	0	2	2	4	2.5	Only two items were rated at the highest level
Turkey	74	74	3	5	4.9	
United Kingdom	8	8	1	5	3.5	
United States						Not considered - Ranking not given
Partner countries and economies						
Argentina						Not considered - Ranking not given
Azerbaijan						Not considered - Ranking not given
Brazil						Not considered - Ranking not given
Bulgaria						Not considered - Ranking not given
Chile	22	22	2	5	4.1	
Chinese Taipei	50	50	2	5	4.5	
Colombia	58	58	2	5	4.7	
Croatia	63	63	2	5	4.7	
Estonia	52	52	1	5	4.5	
Hong Kong-China	33	33	1	5	4.1	
Indonesia	48	48	2	5	4.5	
Israel	34	34	1	5	3.9	
Jordan	47	47	2	5	4.3	
Kyrgyzstan	81	81	5	5	5	Not considered - Ranking given but all items included
Latvia						Not considered - Ranking not given
Liechtenstein						Not considered - Ranking not given
Lithuania	45	45	1	5	4.2	
Macao-China	0	18	2	4	3.1	Ranking for the items rated level 4
Montenegro	0	13	1	4	2.9	Ranking for the items rated level 4
Qatar	63	63	1	5	4.7	
Romania	5	5	1	5	2.5	
Russian Federation						Ranking not given
Serbia	52	52	1	5	4.5	
Slovenia	46	46	1	5	4.1	
Thailand						Not considered - Ranking not given
Tunisia	20	20	1	5	3.9	
Uruguay	33	33	1	5	4	

Table A2 [Part 1/4]. Country rankings according to other countries' most preferred new PISA 2006 items and items from previous PISA cycles

Country	Other countries' ranking positions according to the previous cycle items and a set of preferred new PISA 2006 items of:											
	<i>Australia</i>	<i>Austria</i>	<i>Belgium</i>	<i>Canada</i>	<i>Chile</i>	<i>Chinese Taipei</i>	<i>Colombia</i>	<i>Croatia</i>	<i>Czech Republic</i>	<i>Denmark</i>	<i>Estonia</i>	<i>Finland</i>
Argentina	50	51	51	51	50	50	50	50	52	49	49	50
Australia	7	8	9	9	8	6	5	8	10	7	8	10
Austria	20	22	21	21	20	20	19	18	20	18	19	19
Azerbaijan	55	55	55	55	55	55	55	55	55	55	55	55
Belgium	18	18	14	15	16	16	18	19	16	16	17	15
Brazil	53	52	53	52	54	52	52	52	51	52	52	52
Bulgaria	41	40	40	42	42	41	42	41	40	42	42	42
Canada	3	5	7	4	4	3	3	3	7	3	3	4
Chile	40	41	42	40	41	40	40	40	42	40	41	41
Chinese Taipei	6	7	6	10	7	7	11	5	4	9	7	5
Colombia	49	49	50	49	49	49	49	51	49	50	50	49
Croatia	28	25	26	26	27	27	27	28	24	27	26	28
Czech Republic	14	16	18	18	17	15	14	14	17	15	13	18
Denmark	24	30	24	25	24	24	25	24	27	24	25	25
Estonia	4	4	4	5	5	5	6	4	5	5	5	6
Finland	1	1	1	1	1	1	1	1	1	1	1	1
France	25	21	23	24	23	25	24	26	22	25	24	24
Germany	12	12	12	12	12	13	10	12	11	11	11	12
Greece	37	31	35	36	38	38	38	37	36	38	37	37
Hong Kong-China	2	2	2	2	2	2	2	2	2	2	2	2
Hungary	22	23	20	22	22	22	22	20	25	22	21	21
Iceland	27	29	28	27	28	26	29	25	30	26	28	27
Indonesia	52	54	54	53	52	53	54	53	54	54	54	54
Ireland	19	20	19	19	19	17	15	22	19	20	22	20
Israel	39	39	39	39	39	39	39	39	38	39	39	39
Italy	36	37	37	38	35	36	36	36	37	36	36	36
Japan	5	3	3	3	3	4	7	6	3	4	4	3
Jordan	45	44	44	44	44	44	44	44	44	44	44	44
Korea	10	6	5	6	6	9	13	10	6	12	12	8
Kyrgyzstan	57	57	57	57	57	57	57	57	57	57	57	57
Latvia	29	35	29	31	34	31	31	33	33	31	33	32
Liechtenstein	11	10	10	8	10	11	9	9	9	10	9	7
Lithuania	30	28	25	32	31	32	35	31	28	35	34	31
Luxembourg	35	36	33	34	32	35	32	35	31	34	32	34
Macao-China	17	14	13	16	14	18	20	16	13	19	16	14
Mexico	51	47	48	47	46	47	47	47	50	48	46	46
Montenegro	48	50	47	50	51	51	51	49	48	51	51	51
Netherlands	9	11	8	7	11	10	8	11	8	8	6	9
New Zealand	8	9	11	11	9	8	4	7	12	6	10	11
Norway	32	32	32	30	29	34	26	29	32	29	29	29
Poland	23	24	27	23	26	23	23	23	23	23	23	23
Portugal	38	38	38	37	37	37	37	38	39	37	38	38
Qatar	56	56	56	56	56	56	56	56	56	56	56	56
Romania	46	45	46	46	48	48	48	48	45	47	47	47
Russian Federation	26	26	30	29	33	33	34	32	26	32	30	30
Serbia	43	43	43	43	43	43	43	43	43	43	43	43
Slovak Republic	34	34	36	35	36	30	33	30	34	33	31	33
Slovenia	15	15	16	13	18	14	17	13	18	14	14	16
Spain	33	27	31	28	25	28	28	27	29	28	27	26
Sweden	21	19	22	20	21	21	21	21	21	21	20	22
Switzerland	16	17	15	14	15	19	16	17	15	17	18	13
Thailand	47	48	49	48	47	46	46	46	47	46	48	48
Tunisia	54	53	52	54	53	54	53	54	53	53	53	53
Turkey	44	46	45	45	45	45	45	45	46	45	45	45
United Kingdom	13	13	17	17	13	12	12	15	14	13	15	17
United States	31	33	34	33	30	29	30	34	35	30	35	35
Uruguay	42	42	41	41	40	42	41	42	41	41	40	40

Table A2 [Part 2/4]. Country rankings according to other countries' most preferred new PISA 2006 items and items from previous PISA cycles

Country	Other countries' ranking positions according to the previous cycle items and a set of preferred new PISA 2006 items of:													
	France	Germany	Greece	Hong Kong-China	Hungary	Iceland	Indonesia	Ireland	Israel	Italy	Japan	Jordan	Korea	Lithuania
Argentina	49	51	51	50	50	49	51	50	51	51	50	50	50	49
Australia	7	6	11	9	11	10	8	9	8	10	5	10	11	9
Austria	20	20	20	18	19	19	19	20	19	22	20	19	19	21
Azerbaijan	55	55	55	55	55	55	55	55	55	55	55	55	55	55
Belgium	16	16	16	19	14	16	15	14	15	17	14	16	15	15
Brazil	52	53	53	53	52	52	53	52	52	54	52	52	52	52
Bulgaria	42	40	40	42	42	41	41	42	42	40	41	42	42	42
Canada	4	3	6	4	6	5	3	3	4	6	3	5	4	3
Chile	40	42	42	41	40	42	40	41	40	42	40	41	40	41
Chinese Taipei	6	10	4	5	5	6	5	10	10	5	8	8	5	5
Colombia	51	49	50	49	49	51	50	49	47	49	48	49	51	50
Croatia	24	27	25	27	30	28	26	25	31	27	27	26	29	30
Czech Republic	15	17	17	15	18	14	14	19	18	14	18	13	18	14
Denmark	26	25	26	23	28	26	24	26	25	25	25	24	23	24
Estonia	5	4	5	6	4	4	4	4	3	4	9	3	3	6
Finland	1	1	1	1	1	1	1	1	1	1	1	1	1	1
France	25	21	24	24	22	20	25	24	23	20	22	25	25	25
Germany	12	12	10	11	12	11	12	11	12	11	12	11	12	12
Greece	37	35	33	37	36	37	36	36	36	36	36	36	37	36
Hong Kong-China	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Hungary	22	24	23	22	21	23	22	22	24	24	23	22	22	19
Iceland	27	32	28	28	26	29	27	31	29	26	29	30	27	26
Indonesia	54	52	54	54	54	53	52	54	54	53	53	54	54	54
Ireland	19	18	18	20	20	22	20	18	20	21	19	21	21	22
Israel	39	39	39	39	39	39	39	39	39	39	38	39	38	39
Italy	38	37	37	36	37	34	37	37	37	37	39	37	36	37
Japan	3	5	3	3	3	3	7	7	5	3	4	4	6	4
Jordan	44	44	43	44	44	44	44	44	44	43	45	44	44	44
Korea	8	11	7	13	7	8	11	13	11	7	7	12	10	10
Kyrgyzstan	57	57	57	57	57	57	57	57	57	57	57	57	57	57
Latvia	30	33	34	34	29	36	29	32	32	35	32	28	30	29
Liechtenstein	10	7	8	8	8	7	9	6	9	8	11	7	8	8
Lithuania	33	30	30	33	25	27	33	30	30	29	30	27	26	28
Luxembourg	35	34	32	31	35	33	35	29	33	33	35	33	31	34
Macao-China	17	14	12	14	15	12	18	16	14	13	17	18	16	13
Mexico	47	46	47	47	48	45	48	45	49	46	47	48	48	46
Montenegro	50	50	48	51	51	50	49	51	50	50	51	51	49	51
Netherlands	9	9	9	7	10	9	6	5	6	9	10	6	7	7
New Zealand	11	8	13	10	9	13	10	8	7	12	6	9	9	11
Norway	29	26	29	26	32	30	32	28	27	28	33	29	28	27
Poland	23	23	22	25	24	24	23	23	22	23	24	23	24	23
Portugal	36	38	38	38	38	38	38	38	38	38	37	38	39	38
Qatar	56	56	56	56	56	56	56	56	56	56	56	56	56	56
Romania	48	45	45	45	46	47	47	46	46	45	49	47	46	48
Russian Federation	31	29	31	30	27	31	30	35	26	31	31	32	32	33
Serbia	43	43	44	43	43	43	43	43	43	44	43	43	43	43
Slovak Republic	32	36	36	35	34	32	31	34	35	32	34	34	35	32
Slovenia	14	19	19	21	17	17	13	15	17	19	15	14	17	16
Spain	28	28	27	29	31	25	28	27	28	30	26	31	34	31
Sweden	21	22	21	17	23	21	21	21	21	18	21	20	20	20
Switzerland	18	15	15	16	16	15	16	17	16	16	16	15	14	18
Thailand	46	48	49	48	47	48	46	48	48	48	46	46	47	47
Tunisia	53	54	52	52	53	54	54	53	53	52	54	53	53	53
Turkey	45	47	46	46	45	46	45	47	45	47	44	45	45	45
United Kingdom	13	13	14	12	13	18	17	12	13	15	13	17	13	17
United States	34	31	35	32	33	35	34	33	34	34	28	35	33	35
Uruguay	41	41	41	40	41	40	42	40	41	41	42	40	41	40

Table A2 [Part 3/4]. Country rankings according to other countries' most preferred new PISA 2006 items and items from previous PISA cycles

Country	Other countries' ranking positions according to the previous cycle items and a set of preferred new PISA 2006 items of:										
	Luxembourg	Macao-China	Mexico	Montenegro	Netherlands	New Zealand	Norway	Poland	Portugal	Qatar	Romania
Argentina	51	51	51	51	50	49	50	50	51	49	50
Australia	8	7	8	9	10	11	9	8	6	7	10
Austria	21	20	20	21	21	19	19	22	19	20	21
Azerbaijan	55	55	55	55	53	55	55	55	55	55	55
Belgium	16	18	15	16	18	18	18	15	14	16	17
Brazil	53	52	53	52	54	52	52	53	52	52	54
Bulgaria	41	40	41	40	40	40	40	40	41	42	40
Canada	4	5	3	7	6	6	5	5	4	3	7
Chile	40	42	40	41	41	42	42	42	40	40	42
Chinese Taipei	5	3	7	3	3	5	6	7	8	5	8
Colombia	50	50	49	50	51	51	51	48	49	51	48
Croatia	26	30	29	26	26	27	25	28	25	27	30
Czech Republic	15	15	17	18	15	14	16	19	17	15	16
Denmark	24	24	23	27	25	26	24	26	27	25	24
Estonia	3	4	4	4	7	3	3	4	5	8	4
Finland	1	1	1	1	1	1	1	1	1	1	1
France	29	23	25	22	29	23	27	17	23	23	25
Germany	12	10	12	13	14	9	12	13	12	12	11
Greece	36	36	36	33	36	36	37	31	36	38	32
Hong Kong-China	2	2	2	2	2	2	2	2	2	2	2
Hungary	22	22	19	23	22	24	22	23	22	22	22
Iceland	25	31	27	29	24	30	26	30	26	26	26
Indonesia	52	54	52	54	52	54	53	52	53	53	53
Ireland	19	21	21	20	20	20	21	21	21	21	19
Israel	39	38	38	39	39	39	39	39	39	39	39
Italy	37	37	37	37	37	37	36	34	38	36	37
Japan	6	6	5	5	4	4	4	3	3	4	3
Jordan	44	44	45	44	44	43	44	44	44	44	43
Korea	9	14	9	6	5	12	11	6	7	11	5
Kyrgyzstan	57	57	57	57	57	57	57	57	57	57	57
Latvia	30	34	31	30	33	33	32	36	32	33	33
Liechtenstein	11	8	11	11	9	7	10	9	11	10	6
Lithuania	27	26	26	24	32	25	31	27	33	31	29
Luxembourg	35	35	32	35	35	34	35	35	34	34	34
Macao-China	17	11	16	10	13	13	14	12	18	18	12
Mexico	48	48	48	48	47	48	47	47	46	47	45
Montenegro	49	49	50	49	49	50	49	51	50	50	51
Netherlands	7	12	6	12	8	8	7	11	9	9	9
New Zealand	10	9	10	8	11	10	8	10	10	6	13
Norway	31	27	28	31	30	29	28	29	28	28	28
Poland	23	25	24	25	23	22	23	24	24	24	23
Portugal	38	39	39	38	38	38	38	38	37	37	38
Qatar	56	56	56	56	56	56	56	56	56	56	56
Romania	46	47	46	46	46	45	46	46	47	48	46
Russian Federation	34	28	35	28	27	28	29	32	30	35	31
Serbia	43	43	43	43	42	44	43	43	43	43	44
Slovak Republic	32	33	34	36	31	32	34	37	35	32	36
Slovenia	13	17	18	14	12	16	15	18	13	14	18
Spain	28	29	30	32	28	31	30	25	29	29	27
Sweden	20	19	22	19	19	21	20	20	20	19	20
Switzerland	18	16	14	17	16	17	17	16	15	17	15
Thailand	47	45	47	47	48	46	48	49	48	46	49
Tunisia	54	53	54	53	55	53	54	54	54	54	52
Turkey	45	46	44	45	45	47	45	45	45	45	47
United Kingdom	14	13	13	15	17	15	13	14	16	13	14
United States	33	32	33	34	34	35	33	33	31	30	35
Uruguay	42	41	42	42	43	41	41	41	42	41	41

Table A2 [Part 4/4]. Country rankings according to other countries' most preferred new PISA 2006 items and items from previous PISA cycles

Country	Other countries' ranking positions according to the previous cycle items and a set of preferred new PISA 2006 items of:									
	Serbia	Slovak Republic	Slovenia	Spain	Sweden	Switzerland	Tunisia	Turkey	United Kingdom	Uruguay
Argentina	51	50	49	53	51	51	51	49	51	49
Australia	9	8	7	11	10	10	11	7	8	7
Austria	19	18	20	21	20	21	19	18	24	19
Azerbaijan	55	55	55	55	55	55	55	55	55	55
Belgium	18	15	17	16	17	16	16	17	13	14
Brazil	52	52	52	54	53	54	52	52	52	52
Bulgaria	41	40	42	40	40	40	42	42	40	42
Canada	3	5	3	8	7	8	7	3	4	5
Chile	40	41	40	42	42	42	40	40	42	40
Chinese Taipei	6	3	6	3	4	5	4	6	6	3
Colombia	50	48	51	47	47	49	50	50	48	51
Croatia	28	33	26	27	25	29	28	26	25	27
Czech Republic	15	17	14	17	16	17	14	15	18	15
Denmark	24	23	25	26	26	25	27	24	26	25
Estonia	5	6	5	6	5	7	5	5	7	6
Finland	1	1	1	1	1	1	1	1	1	1
France	26	24	24	23	22	22	24	25	20	20
Germany	12	12	12	10	11	11	10	11	12	12
Greece	37	36	38	30	35	32	35	37	36	36
Hong Kong-China	2	2	2	2	2	2	2	2	2	2
Hungary	22	22	22	22	24	23	20	22	21	23
Iceland	27	28	28	32	30	26	29	27	29	30
Indonesia	53	54	54	50	54	53	53	53	54	53
Ireland	20	21	19	19	18	19	22	20	19	22
Israel	39	39	39	37	38	38	39	39	39	39
Italy	36	37	36	38	37	37	37	36	37	37
Japan	4	4	4	4	3	3	3	4	3	4
Jordan	44	44	44	43	43	43	44	44	44	44
Korea	10	7	11	5	6	4	6	12	5	11
Kyrgyzstan	57	57	57	57	57	57	57	57	57	57
Latvia	32	29	35	33	34	33	32	30	33	32
Liechtenstein	8	9	10	7	8	6	8	10	9	10
Lithuania	34	26	32	25	28	27	25	33	28	26
Luxembourg	35	34	33	36	31	35	34	35	34	35
Macao-China	16	13	16	12	13	12	13	19	17	13
Mexico	48	49	46	48	48	48	48	47	49	46
Montenegro	49	51	50	51	49	52	49	51	50	50
Netherlands	11	11	8	9	9	9	9	9	10	8
New Zealand	7	10	9	13	12	13	12	8	11	9
Norway	29	27	29	31	32	30	31	29	30	31
Poland	23	25	23	24	23	24	23	23	23	24
Portugal	38	38	37	39	39	39	38	38	38	38
Qatar	56	56	56	56	56	56	56	56	56	56
Romania	46	47	47	45	45	45	47	48	47	47
Russian Federation	25	30	34	28	29	31	26	34	31	29
Serbia	43	43	43	44	44	44	43	43	43	43
Slovak Republic	30	35	31	35	36	36	33	32	35	33
Slovenia	13	20	15	18	19	18	18	14	15	17
Spain	31	31	27	29	27	28	30	28	27	28
Sweden	21	19	21	20	21	20	21	21	22	21
Switzerland	17	14	18	14	15	15	15	16	16	18
Thailand	47	46	48	49	50	47	46	46	46	48
Tunisia	54	53	53	52	52	50	54	54	53	54
Turkey	45	45	45	46	46	46	45	45	45	45
United Kingdom	14	16	13	15	14	14	17	13	14	16
United States	33	32	30	34	33	34	36	31	32	34
Uruguay	42	42	41	41	41	41	41	41	41	41

Table A3 [Part 1/4]. Country rankings according to other countries' most preferred new PISA 2006 items

Country	Other countries' ranking positions according to the set of preferred new PISA 2006 items of:												
	Australia	Austria	Belgium	Canada	Chile	Chinese Taipei	Colombia	Croatia	Czech Republic	Denmark	Estonia	Finland	France
Argentina	49	50	50	51	48	49	48	50	51	49	49	49	49
Australia	6	6	6	7	5	5	5	7	7	5	8	8	4
Austria	16	17	19	18	16	17	13	15	16	15	14	18	17
Azerbaijan	55	53	55	55	55	55	55	55	55	55	55	55	55
Belgium	19	20	13	12	20	18	18	20	19	16	17	15	18
Brazil	53	51	53	52	54	52	52	52	49	52	52	52	52
Bulgaria	42	42	43	43	43	43	43	41	41	43	43	43	43
Canada	2	2	3	2	2	2	2	3	5	2	3	3	2
Chile	40	40	42	40	41	40	40	40	42	40	40	41	39
Chinese Taipei	9	8	9	13	10	8	15	5	3	9	9	6	8
Colombia	50	52	51	50	49	50	50	51	50	51	51	51	51
Croatia	28	26	25	24	25	27	28	29	17	30	24	29	23
Czech Republic	10	12	20	17	17	13	12	12	13	14	11	14	15
Denmark	23	38	24	27	26	28	24	24	30	23	25	26	27
Estonia	4	5	4	6	6	7	6	4	9	6	4	4	5
Finland	1	1	1	1	1	1	1	1	1	1	1	1	1
France	30	21	29	29	23	30	25	33	27	26	26	25	33
Germany	11	16	12	15	11	14	10	11	12	11	10	16	12
Greece	38	33	36	37	38	38	38	38	39	38	38	38	38
Hong Kong-China	3	11	2	3	3	3	4	2	2	3	2	2	3
Hungary	22	18	14	22	21	21	21	19	29	21	18	20	21
Iceland	26	29	26	23	29	24	31	26	28	25	29	24	25
Indonesia	52	54	54	53	52	53	54	53	54	54	54	53	54
Ireland	17	24	17	19	18	16	14	22	20	19	22	21	16
Israel	39	39	39	39	39	39	39	39	38	39	39	39	40
Italy	36	32	38	38	33	37	36	37	36	37	35	37	37
Japan	7	3	10	8	7	6	9	8	4	8	7	10	9
Jordan	46	44	44	44	47	45	46	44	47	44	44	46	44
Korea	13	9	8	10	9	12	20	14	11	17	21	11	14
Kyrgyzstan	57	57	56	57	57	57	57	57	57	57	57	57	57
Latvia	27	37	23	30	36	29	32	27	34	28	34	33	29
Liechtenstein	15	15	18	11	13	15	11	13	10	12	12	7	11
Lithuania	32	35	27	36	37	34	35	34	32	35	37	35	36
Luxembourg	34	36	30	33	30	35	33	35	25	33	30	32	35
Macao-China	21	23	15	21	14	22	22	18	21	22	20	19	20
Mexico	51	47	49	47	45	47	47	47	52	47	46	45	47
Montenegro	48	49	46	49	51	51	51	49	46	50	50	50	50
Netherlands	8	13	5	4	12	9	7	10	6	7	5	9	7
New Zealand	5	4	7	5	4	4	3	6	8	4	6	5	6
Norway	33	34	35	34	31	33	26	31	35	31	31	31	31
Poland	24	27	31	25	32	23	23	23	23	24	23	23	24
Portugal	37	31	37	35	28	36	37	36	37	36	36	36	30
Qatar	56	56	57	56	56	56	56	56	56	56	56	56	56
Romania	47	45	48	48	50	48	49	48	44	48	48	48	48
Russian Federation	25	22	28	26	35	32	34	30	22	34	32	30	34
Serbia	41	41	40	41	42	41	42	42	40	42	42	42	41
Slovak Republic	31	19	32	32	34	25	30	25	26	29	28	28	26
Slovenia	14	7	11	9	15	10	16	9	15	13	13	12	10
Spain	35	30	34	28	27	31	29	28	31	32	27	27	28
Sweden	20	14	22	20	22	20	19	21	24	20	16	22	22
Switzerland	18	25	16	14	19	19	17	17	18	18	19	13	19
Thailand	45	48	47	46	46	46	44	46	48	46	47	47	46
Tunisia	54	55	52	54	53	54	53	54	53	53	53	54	53
Turkey	44	46	45	45	44	44	45	45	45	45	45	44	45
United Kingdom	12	10	21	16	8	11	8	16	14	10	15	17	13
United States	29	28	33	31	24	26	27	32	33	27	33	34	32
Uruguay	43	43	41	42	40	42	41	43	43	41	41	40	42

Table A3 [Part 2/4]. Country rankings according to other countries' most preferred new PISA 2006 items

Country	Other countries' ranking positions according to the set of preferred new PISA 2006 items of:												
	Germany	Greece	Hong Kong-China	Hungary	Iceland	Indonesia	Ireland	Israel	Italy	Japan	Jordan	Korea	Lithuania
Argentina	50	50	48	50	46	50	49	51	51	49	49	49	49
Australia	4	13	9	7	12	7	7	7	12	5	9	8	8
Austria	9	9	15	13	17	14	14	16	20	19	14	14	18
Azerbaijan	54	53	55	57	55	55	55	55	45	55	55	55	55
Belgium	14	22	21	16	15	15	16	15	19	13	15	17	15
Brazil	53	51	53	51	52	53	52	52	55	51	52	52	52
Bulgaria	43	42	43	42	42	42	44	43	42	43	43	43	43
Canada	3	4	3	4	3	2	3	4	3	2	5	3	3
Chile	42	44	40	39	43	40	40	40	41	40	42	40	41
Chinese Taipei	33	6	8	9	6	6	15	12	7	11	11	7	5
Colombia	52	54	50	49	51	51	50	48	53	47	51	51	51
Croatia	22	11	26	31	27	26	24	34	24	27	26	29	30
Czech Republic	7	14	13	17	5	12	17	17	5	17	13	19	11
Denmark	25	28	23	30	30	24	28	25	26	28	24	22	24
Estonia	6	5	6	6	4	5	6	3	4	9	3	4	6
Finland	1	1	1	1	1	1	1	1	1	1	1	1	1
France	20	36	27	24	21	31	27	24	21	22	27	32	29
Germany	11	7	10	11	14	13	9	10	16	15	10	11	13
Greece	40	37	38	38	38	38	38	38	38	38	38	39	38
Hong Kong-China	10	2	2	5	2	4	2	2	2	4	2	2	2
Hungary	30	26	18	20	22	20	22	23	30	24	21	23	16
Iceland	34	25	28	23	28	25	32	30	22	29	28	24	25
Indonesia	51	55	54	53	53	52	53	54	52	53	54	54	54
Ireland	12	15	17	19	26	21	13	20	23	18	22	20	22
Israel	39	39	39	40	39	39	39	39	39	37	39	38	39
Italy	35	34	35	37	29	37	37	37	34	39	36	36	36
Japan	29	20	7	3	10	11	12	9	10	7	8	10	9
Jordan	47	43	44	48	44	45	43	45	44	48	44	47	44
Korea	36	24	22	12	19	16	20	14	18	12	20	13	14
Kyrgyzstan	57	57	57	56	57	57	57	57	57	57	57	57	57
Latvia	31	35	34	22	37	28	33	28	37	31	25	27	26
Liechtenstein	17	10	11	10	8	10	8	8	11	14	7	9	10
Lithuania	37	38	36	28	33	35	34	35	35	35	34	30	31
Luxembourg	32	23	29	35	31	34	26	27	33	33	31	28	32
Macao-China	21	19	16	21	13	22	19	19	14	20	19	21	19
Mexico	46	48	45	47	45	49	46	50	48	46	48	50	47
Montenegro	45	46	51	52	49	48	51	49	49	52	50	48	50
Netherlands	8	3	4	8	7	3	5	6	6	6	4	6	4
New Zealand	2	12	5	2	11	8	4	5	9	3	6	5	7
Norway	19	29	24	34	34	33	30	29	27	36	30	26	28
Poland	13	21	25	27	20	23	23	22	28	26	23	25	23
Portugal	28	33	37	36	35	36	36	36	36	32	37	37	37
Qatar	56	56	56	55	56	56	56	56	56	56	56	56	56
Romania	49	45	47	46	50	47	48	46	46	50	47	46	48
Russian Federation	26	32	33	25	32	29	35	26	29	34	32	34	35
Serbia	38	41	42	44	41	41	42	42	40	42	40	42	42
Slovak Republic	23	27	31	29	25	27	29	33	25	30	29	33	27
Slovenia	16	17	20	14	9	9	11	13	13	8	12	16	12
Spain	27	30	32	33	23	30	25	31	31	25	33	35	33
Sweden	24	18	14	26	24	19	21	21	8	21	18	18	21
Switzerland	15	16	19	18	16	17	18	18	17	16	17	15	20
Thailand	44	49	49	43	47	46	45	47	47	45	46	45	46
Tunisia	55	52	52	54	54	54	54	53	54	54	53	53	53
Turkey	48	47	46	45	48	44	47	44	50	44	45	44	45
United Kingdom	5	8	12	15	18	18	10	11	15	10	16	12	17
United States	18	31	30	32	36	32	31	32	32	23	35	31	34
Uruguay	41	40	41	41	40	43	41	41	43	41	41	41	40

Table A3 [Part 3/4]. Country rankings according to other countries' most preferred new PISA 2006 items

Country	Other countries' ranking positions according to the set of preferred new PISA 2006 items of:										
	Luxembourg	Macao-China	Mexico	Montenegro	Netherlands	New Zealand	Norway	Poland	Portugal	Qatar	Romania
Argentina	50	48	50	50	48	49	45	51	49	49	50
Australia	6	6	5	8	15	9	5	5	5	16	6
Austria	19	11	16	19	13	15	24	17	18	15	19
Azerbaijan	55	55	55	53	55	54	51	55	55	44	55
Belgium	15	20	17	15	17	20	12	14	15	27	15
Brazil	53	52	53	51	51	52	53	52	52	54	53
Bulgaria	42	43	43	41	41	43	43	43	43	41	42
Canada	2	3	2	5	4	4	2	2	3	3	2
Chile	40	40	40	40	40	40	42	40	40	40	40
Chinese Taipei	8	7	12	2	5	6	17	11	6	31	8
Colombia	51	51	51	52	52	51	52	50	51	47	51
Croatia	28	35	32	18	26	25	31	25	27	29	28
Czech Republic	12	9	13	17	8	12	16	15	13	5	12
Denmark	24	21	23	29	29	23	35	27	23	20	24
Estonia	4	5	7	3	3	2	7	8	9	6	4
Finland	1	1	1	1	1	1	1	1	1	1	1
France	35	27	34	23	25	35	6	24	25	38	35
Germany	14	10	14	14	9	13	19	13	12	17	14
Greece	36	37	38	37	38	38	33	38	38	35	36
Hong Kong-China	3	2	3	6	2	3	4	6	2	2	3
Hungary	20	18	10	24	23	21	21	20	22	14	20
Iceland	25	32	25	31	31	26	28	23	26	9	25
Indonesia	52	54	52	55	53	53	50	53	53	53	52
Ireland	18	23	20	27	20	22	22	22	21	19	18
Israel	39	38	39	39	39	39	39	39	39	46	39
Italy	38	34	36	38	37	36	26	37	37	37	38
Japan	10	22	9	11	6	7	14	3	8	21	10
Jordan	45	45	48	43	44	44	44	45	44	39	45
Korea	11	36	19	10	22	16	15	10	16	26	11
Kyrgyzstan	56	57	56	56	57	57	57	57	57	57	56
Latvia	29	33	26	26	32	28	38	30	33	33	29
Liechtenstein	16	15	15	22	12	11	20	12	10	4	16
Lithuania	31	24	31	25	28	34	36	36	34	36	31
Luxembourg	34	31	28	34	34	33	37	34	32	34	34
Macao-China	21	12	22	9	16	19	9	21	20	11	21
Mexico	49	50	49	49	47	50	47	47	47	43	49
Montenegro	48	47	47	48	50	47	49	49	50	51	48
Netherlands	5	16	4	16	11	8	13	7	7	12	5
New Zealand	7	4	6	4	7	5	3	4	4	8	7
Norway	32	17	27	33	30	27	29	29	28	22	32
Poland	23	26	24	28	21	24	27	26	24	18	23
Portugal	37	39	37	35	36	37	32	35	36	28	37
Qatar	57	56	57	57	56	56	56	56	56	56	57
Romania	47	49	46	47	45	48	54	48	48	50	47
Russian Federation	33	29	35	20	27	29	34	31	35	32	33
Serbia	41	41	41	42	43	41	41	41	42	42	41
Slovak Republic	26	25	30	30	24	30	30	32	30	25	26
Slovenia	9	13	11	7	10	10	10	9	11	7	9
Spain	30	30	33	36	33	31	18	33	31	24	30
Sweden	17	14	21	12	19	17	11	19	19	13	17
Switzerland	22	19	18	21	18	18	23	16	17	23	22
Thailand	46	44	45	46	46	46	46	46	46	52	46
Tunisia	54	53	54	54	54	55	55	54	54	55	54
Turkey	44	46	44	45	49	45	48	44	45	48	44
United Kingdom	13	8	8	13	14	14	8	18	14	10	13
United States	27	28	29	32	35	32	25	28	29	30	27
Uruguay	43	42	42	44	42	42	40	42	41	45	43

Table A3 [Part 4/4]. Country rankings according to other countries' most preferred new PISA 2006 items

Country	Other countries' ranking positions according to the set of preferred new PISA 2006 items of:							
	Serbia	Slovak Republic	Slovenia	Sweden	Tunisia	Turkey	United Kingdom	Uruguay
Argentina	50	48	50	48	50	49	49	48
Australia	6	4	5	6	13	5	3	8
Austria	16	14	15	13	14	15	21	15
Azerbaijan	53	55	53	50	55	55	54	55
Belgium	19	15	18	23	17	17	9	14
Brazil	52	52	52	54	52	52	47	52
Bulgaria	42	41	43	41	46	43	42	42
Canada	2	2	3	3	5	2	4	3
Chile	40	39	39	42	40	40	41	40
Chinese Taipei	8	3	10	8	2	8	25	4
Colombia	51	47	51	49	53	51	50	51
Croatia	28	36	25	15	30	26	6	25
Czech Republic	12	18	9	5	9	14	12	11
Denmark	26	21	24	33	32	24	33	27
Estonia	5	7	6	7	4	6	17	6
Finland	1	1	1	1	1	1	1	1
France	32	31	26	28	28	25	15	20
Germany	14	12	14	11	10	10	22	10
Greece	38	38	38	46	37	38	39	38
Hong Kong-China	3	6	2	2	6	3	23	2
Hungary	22	20	19	32	19	20	10	22
Iceland	27	25	29	34	29	27	29	33
Indonesia	54	53	54	53	51	53	53	53
Ireland	17	23	17	19	25	19	14	23
Israel	39	40	40	37	39	39	38	39
Italy	37	37	35	27	36	36	30	36
Japan	7	8	8	4	3	9	8	7
Jordan	44	46	44	43	43	45	48	44
Korea	15	10	16	16	12	16	18	19
Kyrgyzstan	57	56	57	57	57	57	57	57
Latvia	30	24	33	35	27	30	35	32
Liechtenstein	10	9	12	17	8	11	16	13
Lithuania	35	29	37	36	26	35	37	29
Luxembourg	34	33	32	21	33	33	36	35
Macao-China	20	17	20	24	16	21	34	17
Mexico	49	51	47	52	47	47	51	47
Montenegro	48	50	49	44	48	50	46	49
Netherlands	11	11	7	9	7	7	7	9
New Zealand	4	5	4	12	11	4	2	5
Norway	31	26	31	38	31	32	31	34
Poland	23	27	23	18	21	23	11	24
Portugal	36	35	34	31	38	37	26	37
Qatar	56	57	56	56	56	56	56	56
Romania	47	49	48	47	49	48	52	50
Russian Federation	24	30	36	22	24	34	32	31
Serbia	41	45	42	39	41	42	40	43
Slovak Republic	25	34	27	25	23	28	27	28
Slovenia	9	22	11	20	15	12	5	12
Spain	33	32	30	26	34	31	28	26
Sweden	21	19	21	30	22	22	24	21
Switzerland	18	13	22	14	18	18	20	18
Thailand	46	42	46	51	44	46	45	46
Tunisia	55	54	55	55	54	54	55	54
Turkey	45	43	45	45	45	44	43	45
United Kingdom	13	16	13	10	20	13	13	16
United States	29	28	28	29	35	29	19	30
Uruguay	43	44	41	40	42	41	44	41

Table A4. Rankings using all PISA 2006 items (items from previous cycles and new PISA 2006 items)

Country	Initial report science literacy rank	Percent correct ranking based on all PISA 2006 items	Rankings based on countries' preferred items and previous PISA cycles items			Rank on own preferred new PISA 2006 items and previous PISA cycles items	Difference between initial report rank and preferred items rank	Difference between percent-correct rank based on all items and rank based on preferred new PISA 2006 items
			Median rank	Range: lower rank	Range: upper rank			
Finland	1	1	1	1	1	1	0	0
Hong Kong-China	2	2	2	2	2	2	0	0
Canada	3	3	4	3	7	4	-1	-1
Chinese Taipei	4	6	6	3	10	7	-3	-1
Estonia	5	4	5	3	7	5	0	-1
Japan	6	5	4	3	7	4	2	1
New Zealand	7	7	10	6	13	10	-3	-3
Australia	8	8	8	6	11	7	1	1
Netherlands	9	9	9	6	11	8	1	1
Liechtenstein	10	10	9	6	11			
Korea	11	11	9	5	13	10	1	1
Slovenia	12	13	16	13	19	15	-3	-2
Germany	13	12	12	10	13	12	1	0
United Kingdom	14	14	14	12	17	14	0	0
Czech Republic	15	15	16	14	18	17	-2	-2
Switzerland	16	16	16	14	18	15	1	1
Macao-China	17	18	14	12	19	11	6	7
Austria	18	19	20	18	22	22	-4	-3
Belgium	19	17	16	14	18	14	5	3
Ireland	20	20	20	18	22	18	2	2
Hungary	21	22	22	20	24	21	0	1
Sweden	22	21	21	19	22	21	1	0
Poland	23	23	23	22	25	24	-1	-1
Denmark	24	24	25	23	27	24	0	0
France	25	25	24	20	27	25	0	0
Croatia	26	27	27	25	30	28	-2	-1
Iceland	27	26	28	25	31	29	-2	-3
Latvia	28	29	32	29	35			
United States	29	32	33	30	35			
Slovak Republic	30	31	34	30	36	35	-5	-4
Spain	31	28	28	25	32	29	2	-1
Lithuania	32	34	30	25	34	28	4	6
Norway	33	30	29	26	32	28	5	2
Luxembourg	34	35	34	31	35	35	-1	0
Russian Federation	35	33	31	26	35			
Italy	36	36	37	35	38	37	-1	-1
Portugal	37	37	38	37	39	37	0	0
Greece	38	38	36	31	38	33	5	5
Israel	39	39	39	38	39	39	0	0
Chile	40	40	41	40	42	41	-1	-1
Serbia	41	43	43	43	44	43	-2	0
Bulgaria	42	42	41	40	42			
Uruguay	43	41	41	40	42	41	2	0
Turkey	44	45	45	44	47	45	-1	0
Jordan	45	44	44	43	45	44	1	0
Thailand	46	46	47	46	49			
Romania	47	48	46	45	48	46	1	2
Montenegro	48	50	50	48	51	49	-1	1
Mexico	49	47	47	45	49	48	1	-1
Indonesia	50	53	53	52	54	52	-2	1
Argentina	51	49	50	49	51			
Brazil	52	52	52	52	54			
Colombia	53	51	49	47	51	49	4	2
Tunisia	54	54	53	52	54	54	0	0
Azerbaijan	55	55	55	55	55			
Qatar	56	56	56	56	56	56	0	0
Kyrgyzstan	57	57	57	57	57			

Table A5. Rankings based on new science items introduced in PISA 2006

Country	Initial report science literacy rank	Percent correct ranking based on new PISA 2006 items	Rankings based solely on countries' preferred items			Rank on own preferred new PISA 2006 items	Difference between initial report rank and preferred items rank	Difference between percent-correct rank based on all items and preferred items rank
			Median rank	Range: lower rank	Range: upper rank			
Finland	1	1	1	1	1	1	0	0
Hong Kong-China	2	2	3	2	11	2	0	0
Canada	3	3	3	2	5	2	1	1
Chinese Taipei	4	6	8	2	25	8	-4	-2
Estonia	5	4	6	3	14	4	1	0
Japan	6	5	8	3	22	7	-1	-2
New Zealand	7	7	5	2	12	7	0	0
Australia	8	8	7	4	15	6	2	2
Netherlands	9	9	7	4	16	9	0	0
Liechtenstein	10	10	11	7	18			
Korea	11	11	15	8	26	13	-2	-2
Slovenia	12	13	11	7	20	11	1	2
Germany	13	12	12	9	19	11	2	1
United Kingdom	14	14	13	8	18	13	1	1
Czech Republic	15	15	13	5	18	13	2	2
Switzerland	16	16	18	14	23			
Macao-China	17	18	20	11	23	12	5	6
Austria	18	19	16	9	21	17	1	2
Belgium	19	17	17	12	23	13	6	4
Ireland	20	20	20	13	25	13	7	7
Hungary	21	22	21	14	30	20	1	2
Sweden	22	21	20	12	24	30	-8	-9
Poland	23	23	23	18	28	27	-4	-4
Denmark	24	24	26	20	33	23	1	1
France	25	25	27	20	36	33	-8	-8
Croatia	26	27	26	15	34	29	-3	-2
Iceland	27	26	27	21	33	28	-1	-2
Latvia	28	29	30	24	37			
United States	29	32	30	19	35			
Slovak Republic	30	31	28	23	33	34	-4	-3
Spain	31	28	31	24	35			
Lithuania	32	34	35	25	37	31	1	3
Norway	33	30	31	22	35	27	6	3
Luxembourg	34	35	33	25	36	34	0	1
Russian Federation	35	33	31	22	35			
Italy	36	36	36	29	38	34	2	2
Portugal	37	37	36	28	38	35	2	2
Greece	38	38	38	34	39	37	1	1
Israel	39	39	39	37	40	39	0	0
Chile	40	40	40	39	44	41	-1	-1
Serbia	41	43	41	39	44	41	0	2
Bulgaria	42	42	43	41	43			
Uruguay	43	41	41	40	45	41	2	0
Turkey	44	45	45	43	48	44	0	1
Jordan	45	44	44	43	48	44	1	0
Thailand	46	46	46	42	49			
Romania	47	48	48	45	50	50	-3	-2
Montenegro	48	50	49	46	51	48	0	2
Mexico	49	47	47	45	52	49	0	-2
Indonesia	50	53	53	50	54	52	-2	1
Argentina	51	49	49	48	51			
Brazil	52	52	52	51	54			
Colombia	53	51	51	47	53	50	3	1
Tunisia	54	54	54	52	55	54	0	0
Azerbaijan	55	55	55	45	55			
Qatar	56	56	56	56	57	56	0	0
Kyrgyzstan	57	57	57	56	57			