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Results of PISA 2000 : the case of Germany

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DICE REPORTS*

RESULTS OF PISA 2000: THE CASE OF GERMANY

PISA stands for “Programme for International Student Assessment”, an international study of educational performance. It is part of the indicator programme INES, “Indicators of Educational Systems”, of the OECD. The following details the findings by category tested.

Reading proficiency

The PISA 2000 study emphasised reading proficiency which comprised approximately two thirds of the required tasks.

- In reading proficiency Finland finished in first place whereas Germany only placed 21st out of

31 countries. Only three other western European countries scored below the OECD average: Liechtenstein, Switzerland and Luxembourg (see Table).

- German adolescents did particularly poorly in comprehension and appraisal.
- The gap between top performers and weak performers is the widest in Germany, and the mean variation is the greatest. The average performance at the upper secondary schools (Gymnasium) stood at 582, much higher than the OECD mean of 500 points; at intermediate secondary schools it was slightly below at 494 points. At lower secondary schools it was only 394 points and at integrated comprehensive schools it was 459.

* DICE = Database of Institutional Comparison in Europe (www.cesifo.de).

International comparison of educational performance

Reading		Mathematics		Natural Sciences	
Country	A	Country	A	Country	A
Finland	546	Japan	557	Korea	552
Canada	534	Korea	547	Japan	550
New Zealand	529	New Zealand	537	Finland	538
Australia	528	Finland	536	United Kingdom	532
Ireland	527	Australia	533	Canada	529
Korea	525	Canada	533	New Zealand	528
United Kingdom	523	Switzerland	529	Australia	528
Japan	522	United Kingdom	529	Austria	519
Sweden	516	Belgium	520	Ireland	513
Austria	507	France	517	Sweden	512
Belgium	507	Austria	515	Czech Republic	511
Iceland	507	Denmark	514	France	500
Norway	505	Iceland	514	Norway	500
France	505	Liechtenstein	514	OECD Average	500
United States	504	Sweden	510	United States	499
OECD Average	500	Ireland	503	Hungary	496
Denmark	497	OECD Average	500	Iceland	496
Switzerland	494	Norway	499	Belgium	496
Spain	493	Czech Republic	498	Switzerland	496
Czech Republic	492	United States	493	Spain	491
Italy	487	Germany	490	Germany	487
Germany	484	Hungary	488	Poland	483
Liechtenstein	483	Russian Federation	478	Denmark	481
Hungary	480	Spain	476	Mexico	478
Poland	479	Poland	470	Italy	476
Greece	474	Latvia	463	Liechtenstein	461
Portugal	470	Italy	457	Greece	460
Russian Federation	462	Portugal	454	Russian Federation	460
Latvia	458	Greece	447	Latvia	459
Luxembourg	441	Luxembourg	446	Portugal	443
Mexico	422	Mexico	387	Luxembourg	422
Brazil	396	Brazil	334	Brazil	375

A = Average.

Source: OECD, PISA 2000.

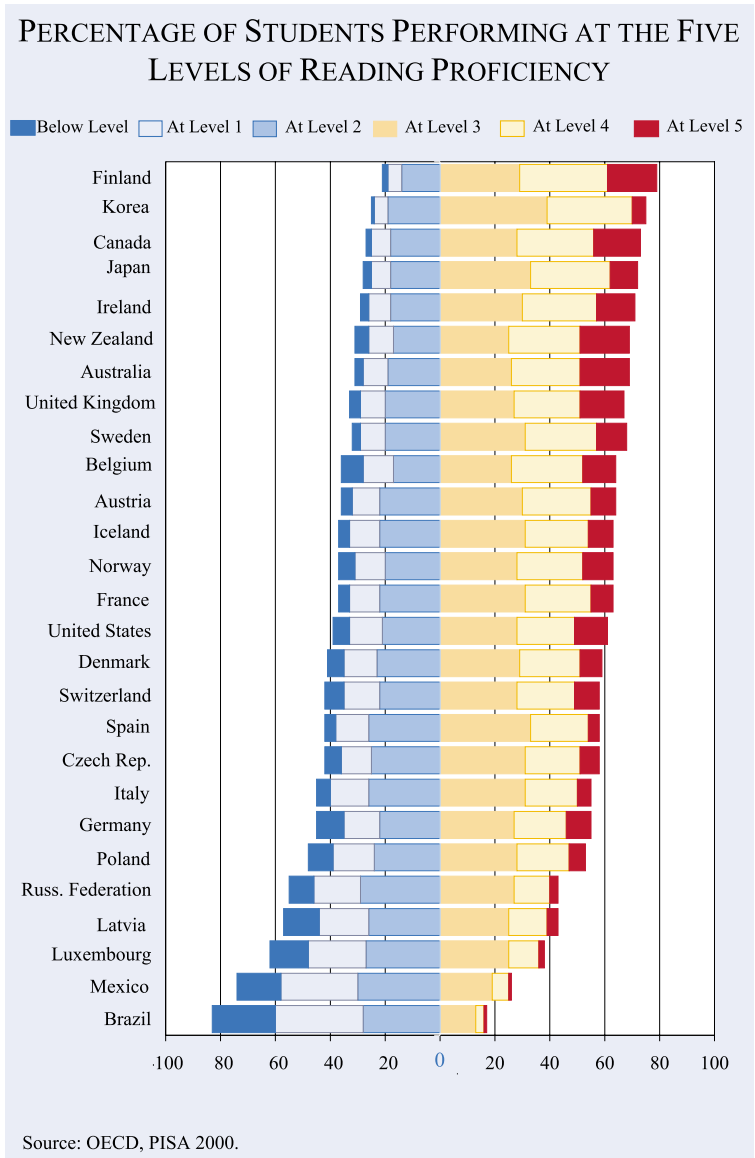
- The percentage of adolescents that were at proficiency stage 1 (i.e., grasping simple information and recognising the main topic of simple texts) was 13% in Germany. Almost 10% of the German pupils did not even reach this stage. This means that 23% can only read at an elementary level (see Figure 1).
- Of the adolescents that did not reach proficiency stage 1, nearly half (47%) were born in Germany, as were their parents, and speak German at home.
- There were no clear reasons for good or poor reading performance. It was striking, however, that 42% of the 15 year-olds indicated that they did not read for pleasure.
- The teachers were asked before the test to identify particularly weak readers. The adolescents they mentioned were only a small portion of the risk group. This means that most of the pupils with reading problems were not identified. A targeted and early identification and promotion of weak readers might lead – as the study indicates – to a considerable reduction of the risk group.
- Intermediate and lower secondary schools that have class libraries show higher medium performance levels.

Basic mathematical skills

In the PISA test of 2000, mathematics and natural sciences were secondary fields.

- In mathematical skills the top position went to Japan. Germany ranked 20th out of 31 countries, behind the Czech Republic and the United States but before Hungary and the Russian Federation (see Table).

Figure 1



- Very few German adolescents placed in the top group, and a quarter of the 15 year-olds only reached proficiency stage 1 (primary school level) or below. This was an unusually high share by international comparison.
- Causes: On the one hand, mathematical proficiency is closely associated with reading proficiency. On the other hand, there is a connection between mathematical capabilities and self-esteem; special support should therefore be given to girls and to adolescents with weaker abilities.

Basic scientific skills

- Here Korea occupies first place. Germany placed 20th among 31 countries and again was

below the OECD average. Its immediate neighbours were Spain and Poland (see Table).

- About a quarter of German adolescents did not get beyond proficiency level 1 (expressing simple factual knowledge, drawing conclusions from everyday knowledge). The portion that reached the highest proficiency level 5 was relatively small (3.4%).
- Again, the range is comparably wide in Germany and performance is concentrated at the lower level. The example of other countries shows that pupils can be helped so that they perform at a uniform, high level (Korea) or in spite of a wider range their performance is concentrated at higher levels than in Germany (England, U.S., Austria).
- Causes and conclusions: The performance of the adolescents reflects the value placed on the natural sciences. The difficulties of the pupils indicate that instruction is not sufficiently problem and application oriented. Scientific thinking and procedures are not practiced enough.

Children from immigrant families

- Adolescents from nationally mixed families do not differ in their reading proficiency from adolescents whose parents were both born in Germany. However, if both parents are immigrants, almost 50% of the pupils did not get beyond proficiency level 1, although most of them (about 70%) have only attended German schools.
- Migrant families live in all countries. With regard to immigration rates, Germany is most comparable to Sweden. If there is a language barrier, i.e. the language spoken in the family is not the language of the country, the social situation of the immigrants is, as a rule, more unfavourable than that of the local families. It is striking that this difference is relatively small in Denmark, Norway and Sweden. The adolescents from these families performed at a clearly higher proficiency level.

Social origin and education

- The connection between social origin and education has loosened, but is still fairly close. Upper secondary schools are full of upper class children. Children of unskilled and semi-skilled

workers primarily attend lower secondary schools. In intermediate secondary schools, the social classes are fairly evenly distributed. On the whole, the chances of a working-class child attending an upper secondary school are four times smaller than those of a child from the upper classes. The social separation of the schools is greater in Germany than in the United States.

- The study demonstrated a close relationship on the whole between social origin and acquired competencies. Adolescents with low reading proficiency (level 1 or below) come primarily from the lower social strata, a phenomenon that seems to be supported by the educational system. This is presumably also related to the early differentiation of school types: since the decision of what secondary school to attend is made in the 5th grade, the period for distribution-relevant intervention is relatively short.
- Germany and Switzerland belong to the countries with the greatest differences in the reading proficiency of adolescents from higher and lower social strata. Even the United States has significantly lower socially determined performance differences. Countries such as Finland, Iceland, Korea and Japan have managed to limit the effects of social origin and to achieve a high level of proficiency at the same time (see Figure 2).

Family structure

- The great majority of pupils in Germany live with their biological parents – a little more so at upper and lower secondary schools than in other school types. They have one or more siblings. Adolescents from single-parent households (16%) usually also have siblings. If we control for school type and social strata, children of single-parent households perform just as well at school as children from “complete” families.

Boys and girls

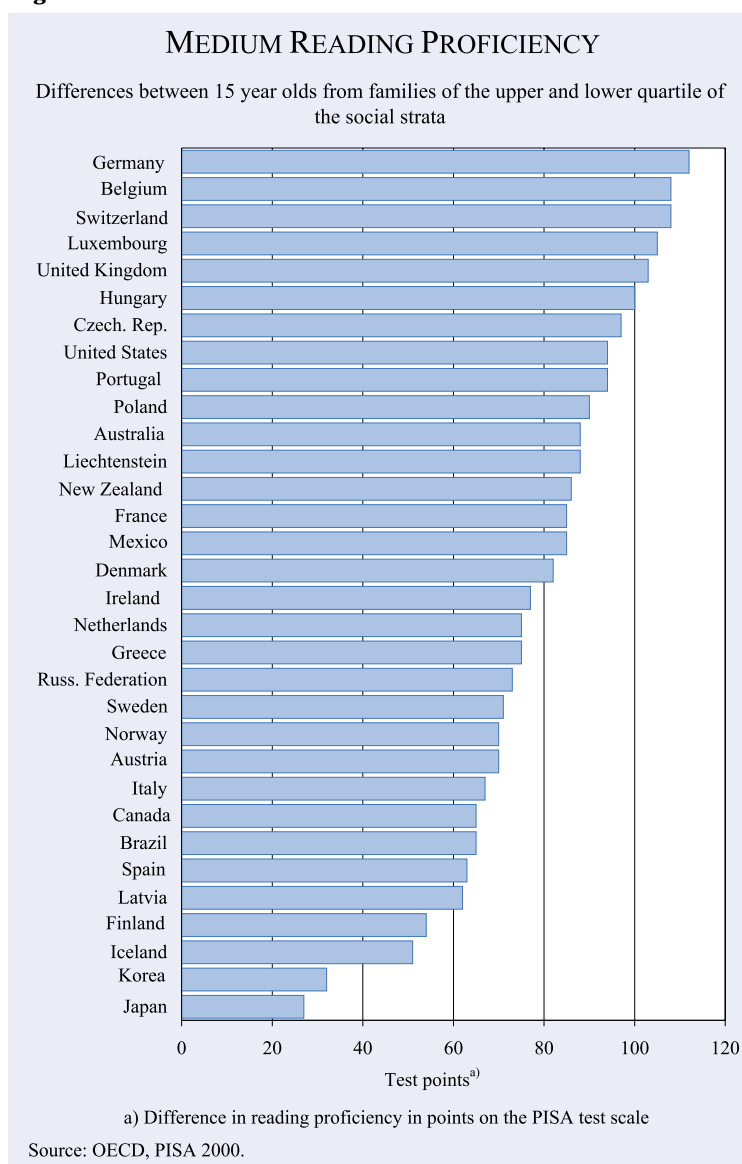
In all PISA countries girls have higher reading proficiency than boys, amounting on average to half a proficiency level. In mathematics boys do better, but by a much smaller margin. The gender differences vary greatly among countries; some coun-

tries have managed to achieve good total performance and to balance the differences in the performance between boys and girls.

General educational conditions

- The individual countries have very different models. In some countries nearly all 3 or 4 year-olds attend kindergartens or pre-schools; sometimes compulsory schooling begins at 4 or 5 years of age, in part as late as 7. In some countries the 15 year-olds are distributed among six grades (Germany, France), in other countries advancement is automatic so that 15 year-olds are only found in two grades (England). If schools offering compulsory education have different levels of requirements, the division is usually not made until the 7th, 8th or 9th grades. Countries without these different school types usually have different curricula or flexible course systems adapted to individual learning speeds.
- Approximately 60% of the 15 year-olds in Germany attend the 9th grade. At least a third of the pupils tested had a school career that was marked by failure (not including pupils that were demoted to a lower grade). The study reveals that demotion or repeating a grade does not necessarily lead to greater educational success. The pedagogical effect is most often negative: repeaters usually do not achieve the medium level of the classes they join. Those demoted to the next lowest school type, however, are usually among the better performers in their new schools.
- Pupil assessment of instruction: regardless of type of school, German pupils assessed instruction and school atmosphere positively on the whole. A striking difference: pupils at upper secondary schools feel they receive less support

Figure 2



from their teachers in German and mathematics than students in other school types.

Compilation by Wolfgang Ochel.
Source: Max Planck Institute for Educational Research, Berlin.