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A Summary of the Danish Results

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Photo: Ole Bo Jensen and Ricky John Molloy

Publisher: VIVE

e-ISBN: 978-87-7119-736-5

Project 11100
December 2019

What is PISA?

The ability to acquire and use knowledge is important for young people's possibilities in a globalised knowledge-based society, in which there is an increasing demand for analytical and professional proficiency. A person's ability to make the best possible use of their knowledge is crucial for that individual's possibilities in life – both with regard to education, job opportunities, earnings and quality of life, as well as when it comes to the continued growth and welfare of society. Therefore, knowledge about young people's analytical and professional proficiency and how these can be supported in the best possible way is central.

PISA (Programme for International Student Assessment) is a collaboration among the OECD countries. The aim is to measure how prepared students at the end of compulsory education are to meet the challenges of the future. Therefore, PISA covers 15-year-old students.

PISA does not assess the students' proficiency based on a specific syllabus and curriculum but assesses how well young people use their skills in the real world. Therefore, the focus of PISA is the students' ability to understand and reflect on their abilities, as well as how they can use these abilities in everyday life – also outside school. PISA focuses on the students' ability to analyse, argue and communicate while they assess, interpret and solve various tasks. Personal factors, such as motivation, persistence and reading strategies, are also assessed in PISA.

PISA has been carried out every three years since 2000. Thus, PISA 2018 is the seventh cycle of PISA, and this time round 79 countries and economies are participating. In every cycle of PISA, the three competency areas (called domains in PISA) reading, mathematics and science are assessed. Every cycle has a specific focus on one of the domains, which is the major domain of that cycle. In PISA 2018, reading is the major domain for the third time. The last time reading was the major domain was in 2009, and before that in 2000.

The test questions for the major domain are updated and further revised relative to the previous cycles of PISA. Furthermore, the students get more test questions in the major domain than they do in the two other domains, just as a share of the questions in the questionnaire specifically concern the major domain.

The PISA-results are summed up on scales – one scale per domain. The average for every scale is set to 500 points with a standard deviation of 100 points for the students in the OECD countries. The average of each domain was set to 500 points the first time the domain was the major domain, which for reading was in 2000, for mathematics was 2003 and for science 2006. This means that approximately two out of three students in the OECD countries will score between 400 and 600 points in each domain. The scale of each domain scale can be ranked in six to seven proficiency levels. Students at the lowest levels have the most basic proficiency for the domain, while students at the highest levels have the best proficiency in the domain.

The students' results are weighed against different circumstances about their background as well as their opinions on and experiences with learning, teaching and the school environment. The information is collected through questionnaires for students and principals.

PISA can provide a status on the Danish education system and the students' schooling both on a national level and from an international perspective. Furthermore, the tests can provide knowledge about which countries' education systems can serve as inspiration for further development of the Danish education system. Since PISA is a recurring event, it is also possible to analyse the development over time – both in terms of the test results, the motivation of the students, learning strategies, opinions and academic experiences.

In 2018, 7,657 Danish youths participated in PISA. They were distributed over 344 different educational institutions, which include both primary and secondary schools and public and private institutions. The participating students were in the 7th grade or higher.

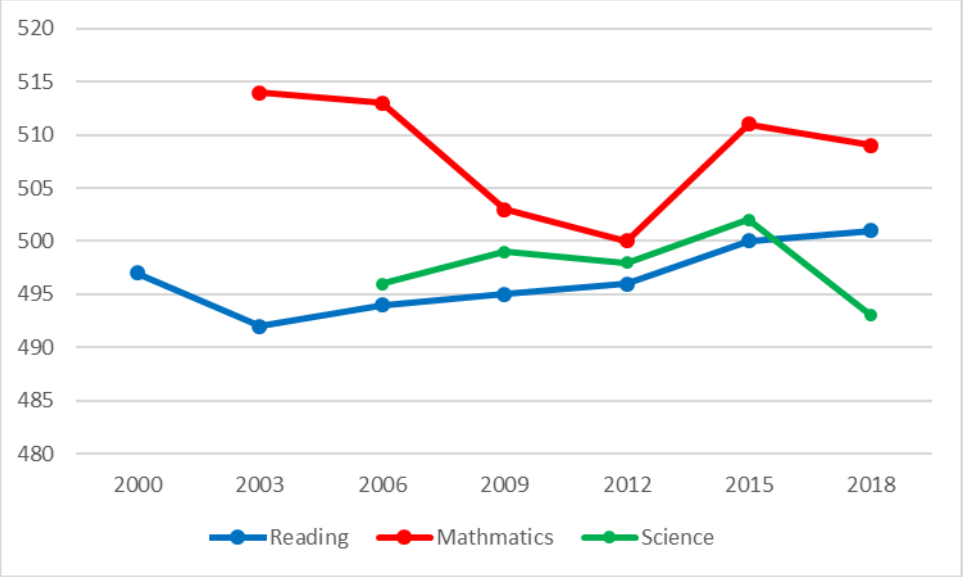
You can read more about the research design, data, method and selection of schools in the final part of the summary.

Results from PISA 2018

As in PISA 2015, the Danish students rank higher than the OECD average in all domains in PISA 2018. In PISA 2018, Danish students score 501 points in average in reading, 509 points in mathematics and 493 points in science. The average for OECD as a whole is 487 points in reading, 489 points in mathematics and 489 points in science.

The Danish results for PISA 2018, including a comparison with PISA in 2000, 2003, 2006, 2009, 2012 and 2015, can be seen in Figure 1. The results are shown for each domain, starting with the year in which the domain was the major domain for the first time.

Figure 1. The Danish students' results in PISA for each domain, 2000-2018



In reading, Danish students rank number 18 out of the 79 participating countries and economies in PISA 2018. In reading, students in 10 countries and economies achieve significantly better results than the Danish students. In the next 10 countries and economies on the list on which Denmark is included, the students' results are not significantly different from the Danish.

In mathematics, Danish students rank number 13 out of the 79 countries and economies in PISA 2018. Students in 10 other countries and economies achieve significantly better results than the Danish students. In the nearly 6 countries and economies on the list that Denmark is included in, the students' results are not significantly different from the Danish.

In science, Denmark ranks number 25 out of the 79 countries and economies in PISA 2018. In the 20 countries at the top of the list, the students achieve significantly better results than the Danish students. In

the next 8 countries on the list, on which Denmark is included, the students' results are not significantly different from those of the Danish students.

The average results from each country in the three domains can be seen in Table 1, Table 2 and Table 3 at the end of this summary.

In the following paragraphs, we will go through the results for each domain starting with the year in which the domain was the major domain. After that, the summary will concentrate on reading and the factors that interplay with reading proficiency.

Mathematics

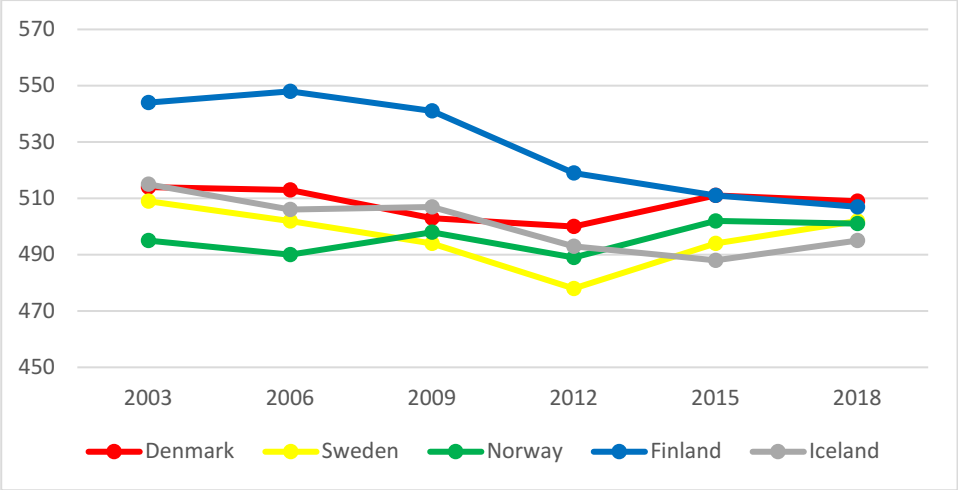
In PISA 2018, the students' mathematical literacy is assessed. Mathematics literacy is defined as students' capacity to formulate, employ and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. Mathematics literacy is described and measured in PISA in a way that corresponds well with the goals of mathematics teaching in Denmark, albeit without the oral dimension, which is tested in the final exams in Danish schools.

The average for Danish students is 509 points in PISA 2018, which is significantly above the OECD average of 489 points. In all cycles of PISA, Danish students have achieved a higher average than OECD students in general.

The average for Danish students in mathematics was highest in the first cycles of PISA. After that, it dipped in 2009 and 2012, after which the average has increased, though without reaching the level of 2003. In PISA 2018, there is significant increase relative to 2012, the last year in which mathematics was the major domain, and where the Danish students' average was 500 points. Relative to 2003, where mathematics was the major domain for the first time, there has been an insignificant decline from 514 points.

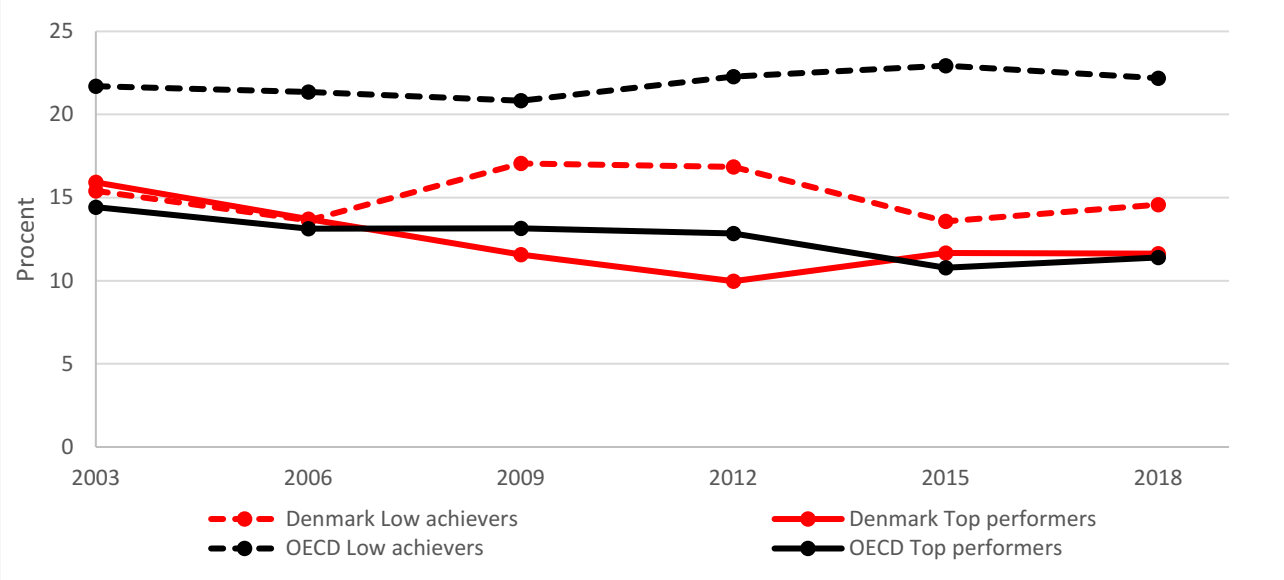
The Danish students' average of 509 points in PISA 2018 is the highest among Nordic students for the first time. Whereas both Danish and Finnish students achieved 511 points in PISA 2015, the Finnish students' average dropped to 507 in PISA 2018. However, the difference between Danish and Finnish students is not significant. Finland has seen a major decline since 2006. Norwegian and Swedish students have both seen a significant increase in their mathematical proficiency since PISA 2012 – Iceland since PISA 2015.

Figure 2. The development in mathematics results in the Nordic countries, 2003-2018



14.6% of the Danish students perform below Level 2 (corresponding to a maximum of 419 points in mathematics) in PISA 2018 and are classified as low-achievers, while 11.6% are on Level 5 and 6 (corresponding to at least 607 points in mathematics) and are classified as top-performers. These shares do not differ significantly from the shares that are seen in earlier cycles of PISA, except for PISA 2003, where there were 15.9% top-performing students.

Figure 3. The development of top-performers and low-achievers in mathematics in Denmark and OECD, 2003-2018



On a Nordic and an international scale, relatively few Danish students perform below Level 2, while the share of students at Level 5 and 6 is on par with the rest of OECD and the other Nordic countries. On a Danish scale, it still has to be said that there are too many students who do not have sufficient mathematics skills relative to the demands of today. Although there has been a focus on the top-performing and lowest achieving students in Denmark in recent years, there is reason to continue endeavours to get both fewer low-achievers and more top-performers.

In previous PISAs, a number of Asian countries, in which the students also ranked high in 2018, were highlighted. They were highlighted because, didactically, they use special approaches, principals and tools for mathematics that can generally be recommended, some of which are already used in Denmark in an adapted form. It could be both relevant and possible to spread these procedures and principals even further, in a form that is even more adapted to the Danish school system. This concerns the use of specific types of teacher questions and teacher feedback for the students as well as concept oriented, point driven teaching and collective work forms among teachers. Similar considerations may pertain to Estonia and The Netherlands, that stand out as European countries with relatively good student achievements.

Even though the girls' average at 507 points is slightly lower than the boys' at 511 points in PISA 2018, the difference between the two averages is not significant. So, for the first time in Denmark, Danish girls do not achieve a significantly lower score in mathematics than Danish boys.

Science

In PISA, Science literacy is defined as the ability to engage with science-related issues, and with the ideas of science, as a reflective citizen. A scientifically literate person is willing to engage in reasoned discourse about science and technology, which requires the competencies to explain phenomena scientifically,

evaluate and design scientific enquiry, and interpret data and evidence scientifically. In PISA, students do not encounter questions about basic scientific conditions that they have not been able to learn through science classes in Denmark. Since 2015, a larger share of science classes in school have been interdisciplinary, in the same way that the science questions in PISA aim to be. Thus, PISA measures a large subset of the goals set out for science teaching in Denmark.

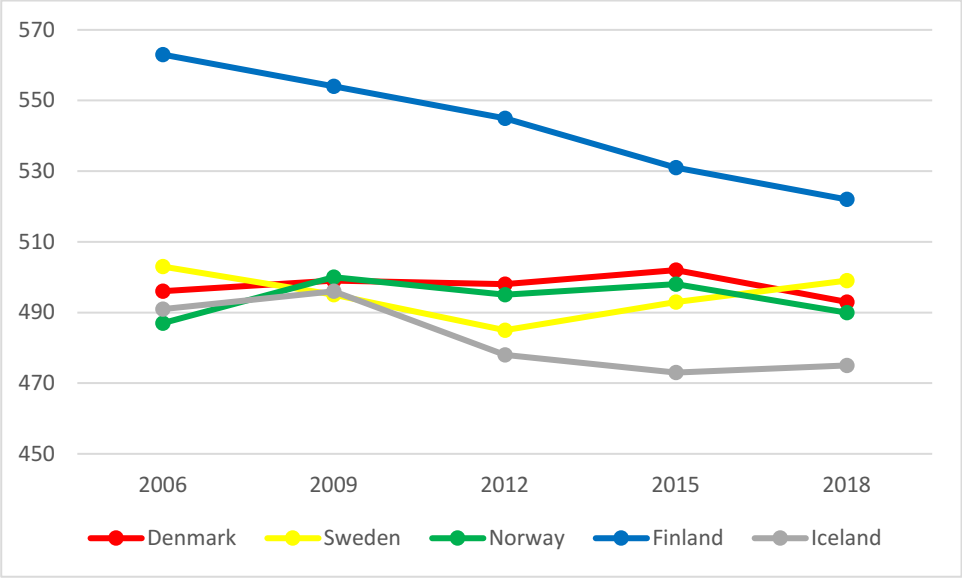
The Danish students' science average in PISA 2018 is 493 points, which represents a significant decline since 2015, where the average was at a record high in Denmark with 502 points. Danish students' average is higher than the OECD average of 489 points. Thus, Danish students perform significantly better statistically than students in OECD as a whole.

With regard to the overall decline in points in science in PISA 2018, it must be emphasised that PISA does not say anything about the reasons for the decline in the students' results. In the period 2015 to 2018, the average marks of the digital final exams in Biology, Physics/Chemistry and Geography have also decreased. However, in this period several changes have been to the framework conditions, which might have influenced science teaching. For instance, an oral/practical interdisciplinary final exam has been introduced as well as a digital self-correcting exam in Physics/Chemistry for the public schools' final exams in science subjects.

Between PISA 2006 and PISA 2015, the Danish students' average in Science subjects has increased slightly for every cycle, without the changes being statistically significant for any of the increases. The decline in the average for science between PISA 2015 and PISA 2018, on the other hand, is significant. Now the average for science subjects is on par with PISA 2006.

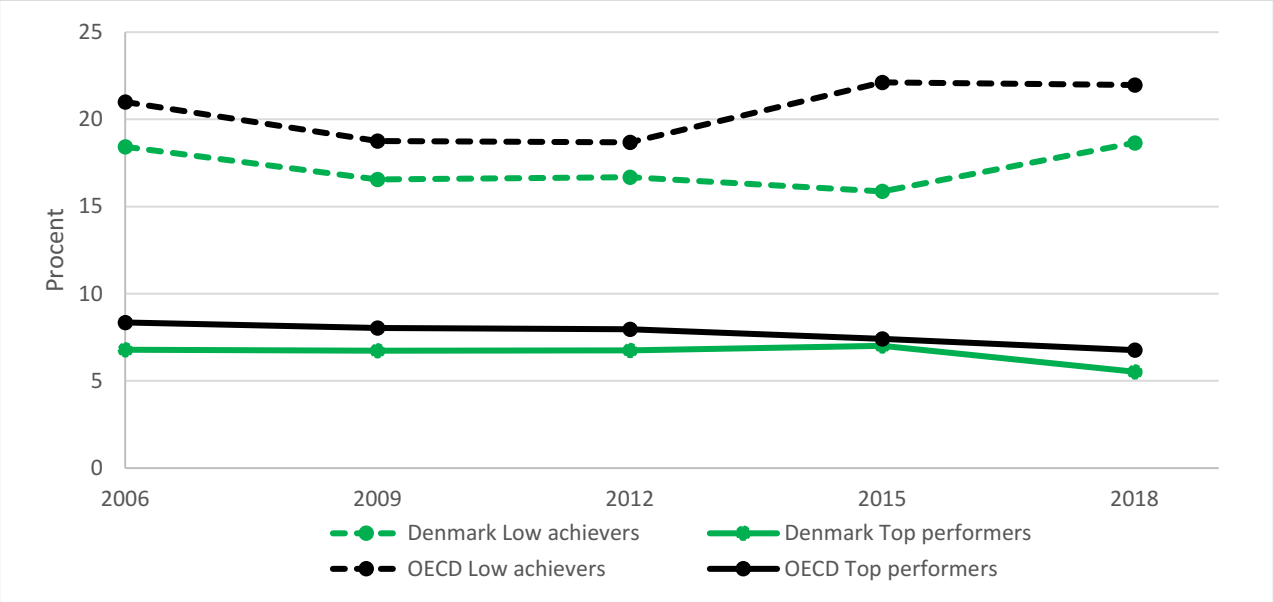
The Finnish students' average in science is above the averages of the other Nordic countries. However, the average for Finland has been steadily declining since 2006. Swedish students have achieved the second-highest average, but it is not significantly above the Danish average. The average in Norway is not significantly different from the average in Denmark either. The Swedish and Danish students' averages, however, are significantly higher than the OECD average, while the Norwegian students' average is not. The average of Icelandic students is significantly lower than the averages of the other Nordic countries and the OECD countries as a whole.

Figure 4. The development in science subject results in the Nordic countries, 2006-2018



In Denmark – with a share of 5.5% – fewer students perform at proficiency Levels 5 and 6 (corresponding to at least 633 points in science) compared to students in OECD as a whole. This means that there are fewer students who are top-performers. With a share of 18.7%, there are also fewer students in Denmark who perform below Level 2 (corresponding to a maximum of 409 points in science) than there are on average in OECD. Thus, there are fewer students in the middle group in Denmark than there are on average in the OECD countries. in PISA 2018, there are fewer in the top-performing group in PISA 2018 and more in the low-achieving group compared to PISA 2015. However, only the increase of the share of low-achieving students between PISA 2015 and 2018 is statistically significant.

Figure 5. The development in top-performing and low-achieving students in science for Denmark and OECD, 2006-2018



For the first time in PISA, Danish girls have achieved a higher average in science than Danish boys. The difference of 2 points is not statistically significant, however. Since PISA 2015, the difference in Danish girls' and boys' science scores has not been significant. In early cycles, boys scored higher than girls in Denmark. In PISA 2018, there are significantly more boys than girls in the low-achieving group below Level 2.

The girls' average in science in the Nordic countries is now above the boys' average in all countries. The difference is not statistically significant in Denmark, but it is in the other Nordic countries. From 2000 to 2015, the boys' average in science has been the same or higher than the girls' average, for OECD as a whole. For 2018, the girls' average is 2 points higher than the boys' average in OECD, and the difference is statistically significant. The girls' average in science is higher than the boys' average in 33 countries in PISA, and the difference is statistically significant, and the boys' average is above the girls' average in only 6 countries.

Reading

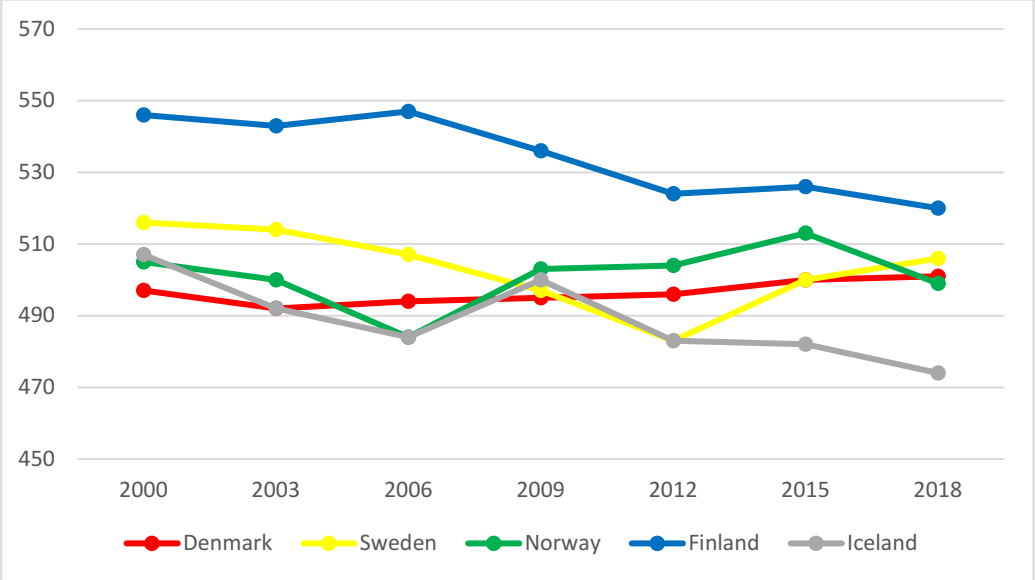
Reading and reading literacy in PISA concern more than elementary mental proficiency in decoding written text into sounds and words and converting these sounds and words into meaning. PISA is based on a broader understanding of reading literacy as the ability to use reading in concrete situations. Reading literacy

is defined in PISA 2018 as following: ”The students’ capacity to understand, use, evaluate, reflect on and engage with texts in order to achieve one’s goals, to develop one’s knowledge and potential, and participate in society”.

In PISA 2018, the Danish students achieved an average score of 501 points in reading, which is the highest average result for Danish students since the first PISA in 2000. This places Denmark above the OECD average of 487 points. In 2000 and 2009, when reading was also the major domain, Danish students achieved results of 497 and 495 points, respectively. However, the progress in 2018 is not statistically significant in compared with the earlier cycles. This means that level of reading proficiency measured by PISA for Danish students has been highly stable since the year 2000, albeit with a positive tendency.

In a comparison with the other Nordic countries, the Finnish students’ average is higher than the Danish students’ average. There is no significant difference between the Danish, Swedish and Norwegian students’ average, while the Icelandic students’ average is lower than the averages of the other Nordic countries. In the latest cycles, there has been a decline in the results for reading in Finland and Iceland. The reading results for Norway, which had otherwise had a stable progress, has also declined in 2018 compared to 2015 (a decline of 14 points). The Swedish results have improved since 2012 and are now on the same level as in 2006.

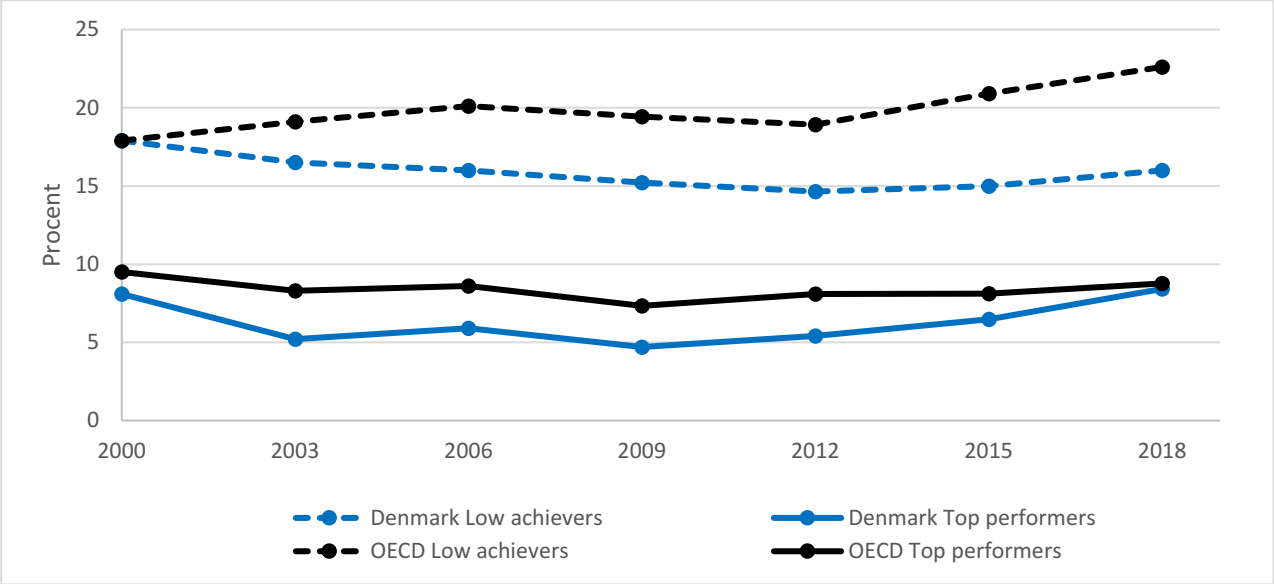
Figure 6. The development in reading results in the Nordic countries, 2000-2018



The share of Danish students’ with a very poor reading proficiency (below Level 2, corresponding to a maximum of 406 points in reading) is 16.0% for Denmark in PISA 2018, which is lower than in OECD as a whole. The share of poor readers has been around 15% in the latest cycles. Thus, the share of very poor readers in Denmark has not been reduced.

In the share of top-performing readers, on the other hand, there has been a significant increase since 2009. The share of very proficient readers (Level 5 and 6, corresponding to at least 626 points in reading) is 8.4% in 2018, while it was 4.7% in 2009. The share is now on par with that in 2000 (8.6%). With the increase in 2018, the share of top-performing Danish students is now on par with the share in OECD as a whole.

Figure 7. The development in top-performing and low-achieving students in reading in Denmark and OECD, 2000-2018



The particular challenges related to increasing the young people's reading competencies are not limited to the group of very weak readers (below Level 2), however. There is also reason to focus on the relatively large group of students on Level 2 (23.9%). PISA's reading experts are thus questioning whether reading proficiency at Level 2 is actually sufficient today. This is due to requirements as to reading proficiency increasing, in a society where reading plays an increasingly greater role in both everyday life and work life, and where the digital (online) text environments are becoming increasingly complex and challenging. This tells us that there is also a special need to improve the reading proficiency of this group of students.

Both in PISA 2018 and all previous cycles of PISA, girls perform better in reading overall than do boys, which is the case for all the participating countries. The gender difference for Danish students is 29 points and is on par with the difference in OECD countries as a whole. The gender difference is greater in the Nordic countries, however. Here it is not to overinterpret the significance of the difference between boys' and girls' reading proficiency. The average difference between boys' and girls' reading results covers very large variations within both groups. The difference is most apparent in a certain degree of overrepresentation of boys relative to girls in the group of very poor readers, while, conversely, there is some overrepresentation of girls in the group of very competent readers.

If one looks at the significance of socio-economic background, there are considerably larger differences between the students' reading proficiency levels. Here, the difference is 78 points between students from the lower and upper socio-economic quarter of the students.

How reading is assessed in PISA 2018

Reading literacy is defined in PISA 2018 as follows: ”The students’ capacity to understand, use, evaluate, reflect on and engage with texts in order to achieve one’s goals, to develop one’s knowledge and potential, and participate in society”.

Reading literacy can be described as the interplay between four central factors: *the reader, the text, the purpose of reading* and *the context*. Based on these four factors, the test questions are structured using with the use of three basic components:

- *Scenarios* (purpose of reading and *context*). Scenarios make up the framework around the test tasks that the students have to solve in PISA’s reading test. Scenarios are described situations, to which various types of texts and specific purposes of reading are linked.
- *Texts*. *The texts* in the test questions comprise a broad range of text formats and types of texts, to reflect the diverse world of texts that a 15-year old today has to be able to cope with.
- *Cognitive processes* (the reader). Cognitive processes are the mental skills that a reader has to be able to activate in the process of reading.

The test questions in PISA 2018 test the students’ literacy in relation to the three overall cognitive processes, each of which consists of several sub-processes: 1) Locating information (to access and retrieve information in a single piece of text *and* search for and select relevant information in several texts), 2) understanding (paraphrasing the literal meaning of a text and establishing understanding by making inferences and creating connections across sentences and passages), 3) evaluating and reflecting (judging the credibility and quality of the texts *and* reflecting on the content and form of the texts and detecting and dealing with contradictions between different texts).

Factors such as the students' desire and motivation to read, their reading habits and their perception of themselves as readers are uncovered in PISA through the questionnaire survey.

The 7 proficiency levels for reading

One of the central elements in PISA 2018 is the scale with 7 proficiency levels for reading. The scale contains a description of what a reader in their teens can and cannot do at different levels of reading proficiency. For example, it describes what 15-year olds that are very competent readers can do (Level 5 and 6), just as it describes what very poor readers (below Level 2) can and cannot do.

Traditionally, Level 2 is set as the minimum level of proficiency a reader needs to have to be able to cope with the reading challenges one is faced with as a student, an employee and a citizen. Students that rank below Level 2 do not possess the necessary reading proficiency. For a closer description of the content of the proficiency levels, see *”PISA 2018 Assessment and Analytical Framework”, OECD 2019).*

From a didactic point of view, the 7 proficiency levels for reading is one of the most important results of PISA, as they have a number of possible applications in teaching contexts. They provide valuable knowledge about which typical development levels there are for readers in their teens. For instance, this knowledge can be used to plan and differentiate classes, to evaluate whether subject-oriented texts are too difficult or too easy for the students’ level, and whether there is a need for support for text reading, as well as organising teaching materials that allow teachers to adjust the classes for students at different proficiency levels.

Reading in PISA and reading in the Danish School (Common Objectives)

Reading literacy, as it is understood and tested in PISA 2018, corresponds largely to what we wish students to be capable of in terms of reading in Danish schools. This becomes apparent when you compare reading in PISA with the understanding of reading that can be found in *The Aims of the Folkeskole* (the Danish public primary and lower secondary school), in the aim for Danish classes in primary school and lower secondary school and in the description of reading proficiency in *Common objectives* for Danish (lower secondary school). In a few areas, the objectives of PISA and *Common Objectives* differ slightly. Thus, in *Common Objectives* there is a greater emphasis on technical

and skill-oriented aspects of reading than in PISA, while in PISA there is greater emphasis on the critical and reflective aspects of reading than in *Common Objectives*.

The most common reading tests in lower secondary school in Denmark are the Danish National Tests and School-Leaving Examinations of the Folkeskole. If these two tests are compared to the reading test in PISA 2018, pronounced differences are seen in terms of both method and content. Danish National Tests and School-Leaving Examinations of the Folkeskole both cover of the technical and basic skill-oriented components of reading, while PISA focuses on the cognitively demanding reading processes, such as understanding complex text connections as well as critical and reflective reading. The PISA test also includes a broad range of text types and (dynamic) text formats.

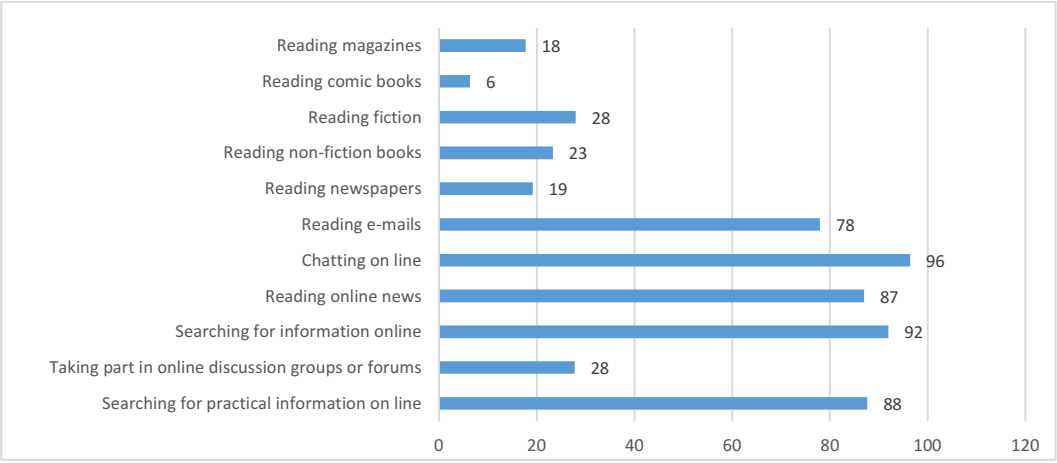
Overall, there must be said to be is a high degree of similarity between *Common Objectives* and PISA's reading test.

Reading in leisure time, in school and in Danish classes

The Danish students' enjoyment of reading is considerably lower than the average for students in OECD. At the same time, there is a pronounced difference between girls' and boys' enjoyment of reading, with the boys being far below the OECD average. The same applies for students in all the other Nordic countries. When it comes to the students' enjoyment of reading, the Nordic countries rank the lowest among all the countries in PISA 2018.

When it comes to the students' reading habits, 'traditional' reading is something that a large share of Danish students do not prioritise or spend time in their free time. Only between a fifth and a fourth of students answer that they read books, newspapers or magazines regularly or often. The situation is the opposite when it comes to digital reading. The students use almost all the digital reading activities often or regularly. Online chat is the most common digital reading activities among Danish students. More than 75% of the students answer that they chat online several times a day. These results confirm, as has also has been observed and documented before, that the Danish students live in a digital world, where digital text forms are the natural first choice for most students.

Figure 8. The percentage of Danish students that carry out the following activities several times a week or more often



With regard to reading instruction in Danish, PISA 2018 shows that Danish classes – according to the students – are good at enhancing the students' devotion to reading. Both Danish girls and boys regard

Danish classes as more enhancing for their reading devotion than the average in OECD and the other Nordic countries. The results also show that, according to the students, a broad range of activities supporting understanding are used in Danish classes in connection with reading of text, but also that more challenging activities are used less than more traditional activities.

According to the students, the results in PISA 2018 draw a rather positive picture of the general learning environment in Danish classes. To a great extent, Danish students perceive the Danish classes as a supporting and promoting learning space with good classroom behaviour (i.e. that the classes are not plagued by noise and disturbing behaviour). Both with regard to the behaviour in the classroom and the supportive learning environment, Danish students achieve above the OECD average and achieve above or are on par with students in the other Nordic countries. The Danish students thus experience better classroom behaviour in Danish classes than students in other Nordic countries.

Reading proficiency and IT

IT and digital technologies are massively present and a fully integrated part of lower secondary school in Denmark. Danish schools are thus one of the countries in OECD where IT is used most in classes.

The results of PISA 2018 indicate that Danish teachers in lower secondary school, across subjects, are able to didactically include and use IT in their subjects' classes in ways that support the students' academic learning to a greater extent than the countries to which Denmark is compared. On the other hand, the results show that there is a negative relationship between students general use of IT in school – in the form of online chat and browsing, for instance – and their reading proficiency.

This result should, therefore, serve as a reminder that it can actually be an obstacle to the students' academic pay-off from the classes if IT is not used with didactic care and is academically meaningful. Moreover, it can also be seen that for the Danish students there is a negative relationship between their use of IT and their schoolwork outside classes (e.g. homework and assignment work) and their reading proficiency.

The Danish 15-year-old boys have a high level of confidence in their IT proficiency. At the same time, there is a positive connection between the boys' confidence in their own IT proficiency and their reading proficiency. This also applies for all the countries with which we compare ourselves.

Common for all the countries is that girls have a much lower confidence in their own IT proficiency than boys, and for some of the countries, including Denmark, there is actually a negative relationship between the girls' confidence in their IT proficiency and their reading proficiency. In Iceland, Estonia and New Zealand however, there is a positive relationship between girls' confidence in their IT proficiency and their reading proficiency. In this respect, the results from PISA 2018 tell us that we in Denmark have a great task ahead of us in working towards giving girls a more positive perception of themselves as digitally competent.

Reading proficiency, socio-economic background and student characteristics

It is widely known that family background and socio-economic background affect the students' academic results. Family background, family resources, access to learning and educational tradition are of importance for the students' ability to acquire skills and the way they approach school. Socio-economic background, therefore, has a clear relationship with the student's reading scores. Students in Denmark and the rest of the Nordic countries generally have a better socio-economic background than students in OECD as a whole and in most of the other countries that participate in PISA. The students in the bottom quarter of the ESCS-index in Denmark achieve 462 points in reading on average, while the students in the top quarter of the index achieve 540 points in reading.

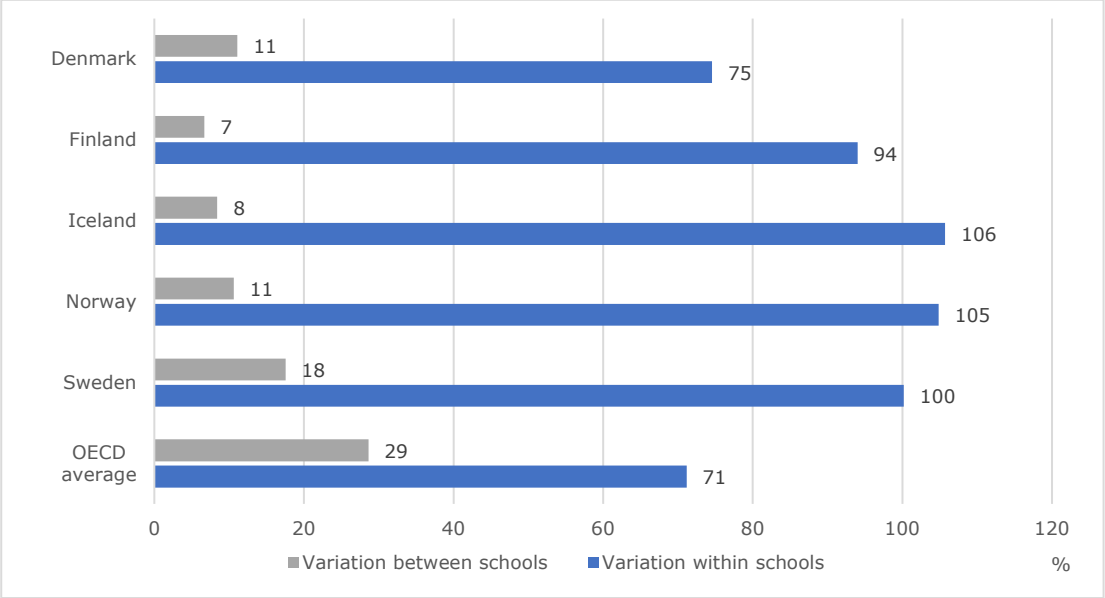
In Denmark, 9.9% of the variation of Danish students' reading proficiency is explained by their socio-economic background. The socio-economic background has a relatively larger importance for the results for reading in Denmark than for example in Iceland and Norway. Compared to OECD students, however, the selected background factors explain a smaller share of the variation in the reading score in Denmark. The Danish students thus distinguish themselves by getting reading scores above the average in OECD, while the relationship between socio-economic background and reading score is relatively weak.

The importance of the students' socio-economic background for their reading results in Denmark has not changed between 2009 and 2018.

School characteristics and reading proficiency

The students' own background, opinions, motivation etc. have a bigger importance for how well they perform in reading than which school they attend. In an international perspective, a relatively large share of the variation in Danish students' reading results can be ascribed to individual differences between the students (74.6%) and a smaller share to differences between the schools that the students attend (11.1%). In spite of this, Denmark has – of the Nordic countries – the second-highest difference between schools, only surpassed by Sweden. A total variation below 100% means that the spread in results is less than the average for OECD countries.

Figure 9. The variation in reading scores that can be explained by variation within and between schools



The schools' student composition is not without connection to the students' reading proficiency levels, however. Students who attend schools that mainly have students with weak socio-economic backgrounds perform poorer than students in schools that mainly have students with strong socio-economic backgrounds. It should be noted that there is not necessarily a causal relationship here, since there may be a system underlying which schools low-achieving students and top-performing students attend.

Expectations to the future and growth mind-set

More students with a weaker socio-economic background expect to complete a vocational education compared to students with a stronger socio-economic background. The opposite tendency is seen in the expectation of completing further education. 25.3% of Danish students do not expect to complete an education or do not answer the question. This is a relatively high share compared to the shares in the other countries.

Students with stronger socio-economic backgrounds show a significantly higher degree of self-efficacy (belief in own capabilities) and degree of having a growth mind-set, than students with a lower socio-economic background. Having a growth mind-set has to with having an understanding of how a person's intelligence can be developed over time and under the right circumstances. With a growth mind-set, one will pursue new challenges more often, keep on going, learn from criticism and find the success of others inspiring. Conversely, students who believe that intelligence is more fixed, will try to avoid challenges and negative feedback to a greater extent.

A clear relationship is seen between self-efficacy and reading score as well as growth mind-set and reading score, even after controlling for the students' socio-economic background. The Danish students have greater confidence in their abilities than students in OECD as a whole and also have a little less fear of failure. In Denmark, 75% of the students have a growth mind-set. This is the second-highest score among all the participating countries in PISA, only surpassed by Estonia.

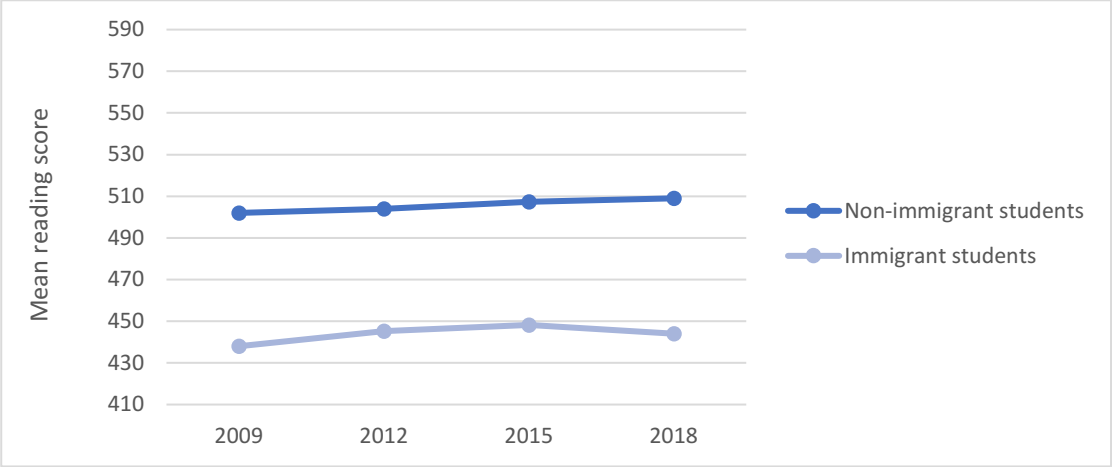
Danish boys have a higher average confidence in their own capabilities and less fear of failure than Danish girls. Denmark has the second-largest gender difference in relation to the fear of failing, out of all the PISA countries. With regard to self-efficacy, only 4 countries have a fairly large gender difference to the advantage of the boys. More Danish girls than Danish boys show a growth mind-set, however.

Reading proficiency and immigrant background

In Denmark, students with an immigrant background score 444 points on average in reading in PISA 2018. Students with a first-generation immigrant background score 435 points on average, and second-generation score a little higher, with an average of 447 points. The difference between the two student groups is not significant, however. Students without an immigrant background score 509 points in reading, on average, which is significantly higher. This means that there is a considerable gap in reading proficiency between students with and without an immigrant background. The difference in the average reading score between students with and without immigrant background is 65 points in Denmark. This difference declines to 34 points, when the students' gender, socio-economic background and the schools' average socio-economic background are taken into account.

The difference in reading proficiency between students with and without an immigrant background is of the same size as the difference between students with a weak and a strong socio-economic status. Since almost 3 out of 5 students with an immigrant background belong to the group of students' with a relatively weak socio-economic background, the majority of this student group also have their socio-economic background as a disadvantage, in addition to having Danish as a second language

Figure 10. The development in the average reading score for students with or without an immigrant background, 2009-2018



In the following, the focus will be the development over time, and certain country comparisons will be made in relation to the results for students with an immigrant background. In this context, though, it is important to consider the share and composition of students with an immigrant background. The characteristics and composition of students with an immigrant background can change in the individual countries between the cycles of PISA, which means that the results are not necessarily directly comparable.

In all the Nordic countries, there is a relatively large difference the reading results of students with and without immigrant backgrounds: Norway (a difference of 52 points), Iceland (a difference of 74 points), Sweden (a difference of 82 points) and Finland (a difference of 92 points). In Denmark, the difference was 65 points. These numbers are not corrected for the students' socio-economic background.

In Denmark, the total share of students with an immigrant background is 10.7%. About 80% of these students are second-generation (the student is born in Denmark but both parents are born outside Denmark) and 20% are first-generation immigrants (both the student and both parents are born outside Denmark). Around half of the students with a first-generation immigrant background are born in a non-European country. A little over half the students with a second-generation immigrant background state that they mainly speak Danish at home, and the same applies for 1 out of 4 students with a first-generation immigrant background.

Converted to proficiency levels for reading, the results in reading correspond to students with an immigrant background on average being on proficiency Level 2 in reading. Students with a non-immigrant background achieve proficiency Level 3 in reading on average. A little more than a third of students with an immigrant background perform below proficiency Level 2 in reading and are evaluated as being be low-achievers in reading. This means that it is assessed that these students would find it relatively difficult to complete an upper secondary education. The corresponding share of students with a non-immigrant background is 13%.

Students that mainly speak Danish at home do better in reading than the students that mainly speak another language at home. The share of students with an immigrant background who mainly speak Danish at home has been stable in the period from PISA 2009-2018. However, there may be many factors that have an importance for whether someone speaks Danish at home and how well they do in school, and therefore it is not possible based on PISA to draw a direct causal relationship between how much Danish is spoken at home and reading results. For example, the relationship may be an indicator of low reading proficiency and/or Danish proficiency in the family generally.

Gender difference in reading proficiency is 29 points for students with a non-immigrant background and 24 points for students with an immigrant background. There is a difference in boys' reading proficiency between students with first- and second-generation immigrant backgrounds. Such a difference is not seen for the girls.

Development over time

In the overall period from PISA 2009-2018, no substantial increase or decrease is seen in the average reading proficiency among students with an immigrant background. The same pattern is seen for students with a non-immigrant background. Therefore, there is no considerable change in the gap in reading results for students with or without an immigrant background – it has neither reduced nor increased significantly during the period. The reading scores of both student groups are apparently relatively stable.

In PISA 2015, the difference in the scores achieved by students with a non-immigrant background and students with a first-generation immigrant background in Denmark had reduced significantly in reading. This difference has now increased again and is at the same level as earlier. Part of the explanation may be differences in the composition and background of the immigrant group, including new groups of immigrants and refugees that have arrived in Denmark in connection with the increased refugee influx in 2015.

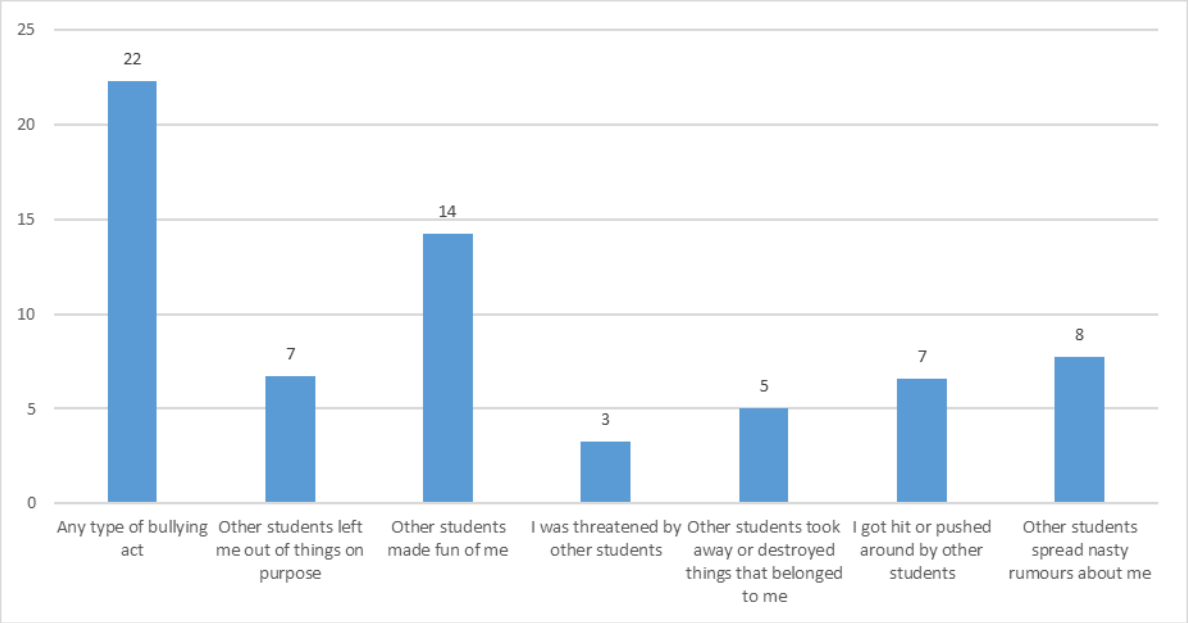
The group of first-generation immigrants especially can changed in a few years and have other economic, educational and health conditions than previous immigrant groups. Therefore, the development in this student groups' reading results cannot readily be interpreted as being due to a school intervention or the educational system. The fact is that we cannot know how the student group with an immigrant background would have performed this year if it had had the same student composition as in PISA 2009.

Reading proficiency and school environment

About 22% of Danish students are exposed to some kind of bullying at least once a month. Danish students experience bullying more often than students in the other Nordic countries and OECD than the average. Boys are bullied more often than girls. Students with fewer socio-economic resources are more often threatened, have their things stolen or broken and excluded on purpose, more often than students with better resources. The most common kind of bullying for Danish students is being made fun of. A total of 14% of Danish students have experienced this at least a couple of times a month. There is a negative relationship between being bullied and students reading proficiency, even after taking socio-economic background into account.

Generally, Danish students feel that the school environment in Danish classes is more co-operative than it is competitive. Only in 6 other participating countries do a higher share of students than in Denmark feel that their school environment is more cooperative than competitive. Denmark is thus also the country with the second-highest difference in the shares of students who feel the environment is cooperative as opposed competitive. The degree varies with gender and socio-economic background. There is a positive relationship between reading proficiency and student cooperation and a negative relationship between reading proficiency and student competition.

Figure 11. The share of Danish students that experience the following at least a few times a month



Among Danish students, almost half of them have been late at least once; one out of four has cut classes, and one out of five has skipped an entire day of school within the past two weeks. Boys and girls have been late to an equal degree, but more boys have skipped an entire day. At the same time, students with a lower socio-economic background cut classes more often than students with higher socio-economic backgrounds. There is often a clear connection between absence from classes and reading proficiency.

Almost 90% of the students agree that their parents support them with their school work and encourage them to be self-confident. There is a positive relationship between parent support and reading proficiency. Girls and students with a stronger socio-economic background feel they get more support from their parents than boys and students with a relatively weak socio-economic background. Especially the latter experience less support.

A total analysis of the various goals for school environment, the background characteristics of students and schools, and the students' understanding of learning shows that the other factors included play a central role for the students reading proficiency, in addition to the school environment. Therefore, it is important to take the students' background and other factors into consideration, such as their self-efficacy, when the goals for school environment are viewed together with the students' results. But the goals for school environment alone can still shed light on central school political problems, for example the goals regarding absence, where a socio-economic difference is seen. Also, the results point to some gender differences, which would be relevant to investigate further.

Overview of the participating countries' average results

There is one figure for each domain tested in PISA. The average values for the countries are shown with a background colour. Countries in which students have an average score significantly above the OECD average are highlighted with a grey background. Countries in which students have an average score within the OECD average are highlighted with a dark blue background, and countries in which the students have an average score significantly lower than the OECD average are highlighted with a medium blue background (OECD 2019, PISA 2018 Results, Volume I).

Figure 12. Comparing countries' and economies' performance in mathematics in PISA 2018

Statistically significanlt above the OECD average

Not statistically significanly different from the OECD average

Statistically significantly below the OECD average

Mean score	Comparison country/economy	Countries and economies whose mean score is not statistically significantly different from the comparison country's/economy's score
591	B-S-J-G (China)	
569	Singapore	
558	Macao(China)	Hong Kong (China)
551	Hong Kong (China)	Macao(China)
531	Taipei (China)	Japan, Korea
527	Japan	Taipei (China), Korea, Estonia
526	Korea	Taipei (China), Japan, Estonia, Netherlands
523	Estonia	Japan, Korea, Netherlands
519	Netherlands	Korea, Estonia, Poland, Switzerland
516	Poland	Netherlands, Switzerland, Canada
515	Switzerland	Netherlands, Poland, Canada, Denmark
512	Canada	Poland, Switzerland, Denmark, Slovenia, Belgium, Finland
509	***Denmark***	Switzerland, Canada, Slovenia, Belgium, Finland
509	Slovenia	Canada, Denmark, Belgium, Finland
508	Belgium	Canada, Denmark, Slovenia, Finland, Sweden, United Kingdom
507	Finland	Canada, Denmark, Slovenia, Belgium, Sweden, United Kingdom
502	Sweden	Belgium, Finland, United Kingdom, Norway, Germany, Ireland, Czech Republic, Austria, Latvia
502	United Kingdom	Belgium, Finland, Sweden, Norway, Germany, Ireland, Czech Republic, Austria, Latvia, France
501	Norway	Sweden, United Kingdom, Germany, Ireland, Czech Republic, Austria, Latvia, France, Iceland
500	Germany	Sweden, United Kingdom, Norway, Ireland, Czech Republic, Austria, Latvia, France, Iceland, New Zealand
500	Ireland	Sweden, United Kingdom, Norway, Germany, Czech Republic, Austria, Latvia, France, Iceland, New Zealand
499	Czech Republic	Sweden, United Kingdom, Norway, Germany, Ireland, Austria, Latvia, France, Iceland, New Zealand, Portugal
499	Austria	Sweden, United Kingdom, Norway, Germany, Ireland, Czech Republic, Latvia, France, Iceland, New Zealand, Portugal
496	Latvia	Sweden, United Kingdom, Norway, Germany, Ireland, Czech Republic, Austria, France, Iceland, New Zealand, Portugal, Australia
495	France	United Kingdom, Norway, Germany, Ireland, Czech Republic, Austria, Latvia, Iceland, New Zealand, Portugal, Australia
495	Iceland	Norway, Germany, Ireland, Czech Republic, Austria, Latvia, France, New Zealand, Portugal, Australia
494	New Zealand	Germany, Ireland, Czech Republic, Austria, Latvia, France, Iceland, Portugal, Australia
492	Portugal	Czech Republic, Austria, Latvia, France, Iceland, New Zealand, Australia, Russia, Italy, Slovak Republic
491	Australia	Latvia, France, Iceland, New Zealand, Portugal, Russia, Italy, Slovak Republic
488	Russia	Portugal, Australia, Italy, Slovak Republic, Luxembourg, Spain, Lithuania, Hungary
487	Italy	Portugal, Australia, Russia, Slovak Republic, Luxembourg, Spain, Lithuania, Hungary, United States
486	Slovak Republic	Portugal, Australia, Russia, Italy, Luxembourg, Spain, Lithuania, Hungary, United States
483	Luxembourg	Russia, Italy, Slovak Republic, Spain, Lithuania, Hungary, United States
481	Spain	Russia, Italy, Slovak Republic, Luxembourg, Lithuania, Hungary, United States
481	Lithuania	Russia, Italy, Slovak Republic, Luxembourg, Spain, Hungary, United States
481	Hungary	Russia, Italy, Slovak Republic, Luxembourg, Spain, Lithuania, United States
478	United States	Italy, Slovak Republic, Luxembourg, Spain, Lithuania, Hungary, Belarus, Malta
472	Belarus	United States, Malta
472	Malta	United States, Belarus
464	Croatia	Israel
463	Israel	Croatia
454	Turkey	Ukraine, Greece, Cyprus, Serbia
453	Ukraine	Turkey, Greece, Cyprus, Serbia
451	Greece	Turkey, Ukraine, Cyprus, Serbia
451	Cyprus	Turkey, Ukraine, Greece, Serbia
448	Serbia	Turkey, Ukraine, Greece, Cyprus, Malaysia
440	Malaysia	Serbia, Albania, Bulgaria, United Arab Emirates, Romania
437	Albania	Malaysia, Bulgaria, United Arab Emirates, Romania
436	Bulgaria	Malaysia, Albania, United Arab Emirates, Brunei Darussalem Darussalam, Romania, Montenegro
435	United Arab Emirates	Malaysia, Albania, Bulgaria, Romania
430	Brunei Darussalem D	Bulgaria, Romania, Montenegro
430	Romania	Malaysia, Albania, Bulgaria, United Arab Emirates, Brunei Darussalem Darussalam, Montenegro, Kazakhstan, Moldova, Baku (Azerbaijan), Thailand
430	Montenegro	Bulgaria, Brunei Darussalem Darussalam, Romania
423	Kazakhstan	Romania, Moldova, Baku (Azerbaijan), Thailand, Uruguay, Chile
421	Moldova	Romania, Kazakhstan, Baku (Azerbaijan), Thailand, Uruguay, Chile
420	Baku (Azerbaijan)	Romania, Kazakhstan, Moldova, Thailand, Uruguay, Chile, Qatar
419	Thailand	Romania, Kazakhstan, Moldova, Baku (Azerbaijan), Uruguay, Chile, Qatar
418	Uruguay	Kazakhstan, Moldova, Baku (Azerbaijan), Thailand, Chile, Qatar
417	Chile	Kazakhstan, Moldova, Baku (Azerbaijan), Thailand, Uruguay, Qatar
414	Qatar	Baku (Azerbaijan), Thailand, Uruguay, Chile, Mexico
409	Mexico	Qatar, Bosnien-Hercegovina, Costa Rica
406	Bosnien-Hercegovina	Mexico, Costa Rica, Peru, Jordan
402	Costa Rica	Mexico, Bosnien-Hercegovina, Peru, Jordan, Georgia, Lebanon
400	Peru	Bosnien-Hercegovina, Costa Rica, Jordan, Georgia, North Macedonia, Lebanon
400	Jordan	Bosnien-Hercegovina, Costa Rica, Peru, Georgia, North Macedonia, Lebanon
398	Georgia	Costa Rica, Peru, Jordan, North Macedonia, Lebanon, Colombia
394	North Macedonia	Peru, Jordan, Georgia, Lebanon, Colombia
393	Lebanon	Costa Rica, Peru, Jordan, Georgia, North Macedonia, Colombia
391	Colombia	Georgia, North Macedonia, Lebanon
384	Brazil	Argentina, Indonesia
379	Argentina	Brazil, Indonesia, Saudi Arabia
379	Indonesia	Brazil, Argentina, Saudi Arabia
373	Saudi Arabia	Argentina, Indonesia, Morocco
368	Morocco	Saudi Arabia, Kosovo
366	Kosovo	Morocco
353	Panama	Philippines
353	Philippines	Panama
325	Dominican Republic	

Figure 13. Comparing countries' and economies' performance in science in PISA 2018

Statistically significanlt above the OECD average

Not statistically significanly different from the OECD average

Statistically significantly below the OECD average

Mean score	Comparison country/economy	Countries and economies whose mean score is not statistically significantly different from the comparison country's/economy's score
590	B-S-J-G (China)	
551	Singapore	
544	Macao(China)	
530	Estonia	Japan
529	Japan	Estonia
522	Finland	Korea, Canada, Hong Kong (China), Taipei (China)
519	Korea	Finland, Canada, Hong Kong (China), Taipei (China)
518	Canada	Finland, Korea, Hong Kong (China), Taipei (China)
517	Hong Kong (China)	Finland, Korea, Canada, Taipei (China), Poland
516	Taipei (China)	Finland, Korea, Canada, Hong Kong (China), Poland
511	Poland	Hong Kong (China), Taipei (China), New Zealand, Slovenia, United Kingdom
508	New Zealand	Poland, Slovenia, United Kingdom, Netherlands, Germany, United States
507	Slovenia	Poland, New Zealand, United Kingdom, Netherlands, Germany, Australia, United States
505	United Kingdom	Poland, New Zealand, Slovenia, Netherlands, Germany, Australia, United States, Sweden, Belgium
503	Netherlands	New Zealand, Slovenia, United Kingdom, Germany, Australia, United States, Sweden, Belgium, Czech Republic
503	Germany	New Zealand, Slovenia, United Kingdom, Netherlands, Australia, United States, Sweden, Belgium, Czech Republic, Ireland, Switzerland
503	Australia	Slovenia, United Kingdom, Netherlands, Germany, United States, Sweden, Belgium
502	United States	New Zealand, Slovenia, United Kingdom, Netherlands, Germany, Australia, Sweden, Belgium, Czech Republic, Ireland, Switzerland
499	Sweden	United Kingdom, Netherlands, Germany, Australia, United States, Belgium, Czech Republic, Ireland, Switzerland, Frankrig, Denmark,
499	Belgium	United Kingdom, Netherlands, Germany, Australia, United States, Sweden, Czech Republic, Ireland, Switzerland, Frankrig
497	Czech Republic	Netherlands, Germany, United States, Sweden, Belgium, Ireland, Switzerland, Frankrig, Denmark, Portugal, Norway, Austria
496	Ireland	Germany, United States, Sweden, Belgium, Czech Republic, Switzerland, Frankrig, Denmark, Portugal, Norway, Austria
495	Switzerland	Germany, United States, Sweden, Belgium, Czech Republic, Ireland, Frankrig, Denmark, Portugal, Norway, Austria
493	Frankrig	Sweden, Belgium, Czech Republic, Ireland, Switzerland, Denmark, Portugal, Norway, Austria
493	Denmark	Sweden, Czech Republic, Ireland, Switzerland, Frankrig, Portugal, Norway, Austria
492	Portugal	Sweden, Czech Republic, Ireland, Switzerland, Frankrig, Denmark, Norway, Austria, Latvia
490	Norway	Czech Republic, Ireland, Switzerland, Frankrig, Denmark, Portugal, Austria, Latvia
490	Austria	Czech Republic, Ireland, Switzerland, Frankrig, Denmark, Portugal, Norway, Latvia
487	Latvia	Portugal, Norway, Austria, Spain
483	Spain	Latvia, Lithuania, Hungary, Russia
482	Lithuania	Spain, Hungary, Russia
481	Hungary	Spain, Lithuania, Russia, Luxembourg
478	Russia	Spain, Lithuania, Hungary, Luxembourg, Iceland, Croatia , Belarus
477	Luxembourg	Hungary, Russia, Iceland, Croatia
475	Iceland	Russia, Luxembourg, Croatia , Belarus, Ukraine
472	Croatia	Russia, Luxembourg, Iceland, Belarus, Ukraine, Turkey, Italy
471	Belarus	Russia, Iceland, Croatia , Ukraine, Turkey, Italy
469	Ukraine	Iceland, Croatia , Belarus, Turkey, Italy, Slovak Republic, Israel
468	Turkey	Croatia , Belarus, Ukraine, Italy, Slovak Republic, Israel
468	Italy	Croatia , Belarus, Ukraine, Turkey, Slovak Republic, Israel
464	Slovak Republic	Ukraine, Turkey, Italy, Israel
462	Israel	Ukraine, Turkey, Italy, Slovak Republic, Malta
457	Malta	Israel, Greece
452	Greece	Malta
444	Chile	Serbia, Cyprus, Malaysia
440	Serbia	Chile, Cyprus, Malaysia, United Arab Emirates
439	Cyprus	Chile, Serbia, Malaysia
438	Malaysia	Chile, Serbia, Cyprus, United Arab Emirates
434	United Arab Emirates	Serbia, Malaysia, Brunei Darussalem, Jordan, Moldova, Romania
431	Brunei Darussalem	United Arab Emirates, Jordan, Moldova, Thailand, Uruguay, Romania, Bulgaria
429	Jordan	United Arab Emirates, Brunei Darussalem, Moldova, Thailand, Uruguay, Romania, Bulgaria
428	Moldova	United Arab Emirates, Brunei Darussalem, Jordan, Thailand, Uruguay, Romania, Bulgaria
426	Thailand	Brunei Darussalem, Jordan, Moldova, Uruguay, Romania, Bulgaria, Mexico
426	Uruguay	Brunei Darussalem, Jordan, Moldova, Thailand, Romania, Bulgaria, Mexico
426	Romania	United Arab Emirates, Brunei Darussalem, Jordan, Moldova, Thailand, Uruguay, Bulgaria, Mexico, Qatar, Albania, Costa Rica
424	Bulgaria	Brunei Darussalem, Jordan, Moldova, Thailand, Uruguay, Romania, Mexico, Qatar, Albania, Costa Rica
419	Mexico	Thailand, Uruguay, Romania, Bulgaria, Qatar, Albania, Costa Rica, Montenegro, Colombia
419	Qatar	Romania, Bulgaria, Mexico, Albania, Costa Rica, Colombia
417	Albania	Romania, Bulgaria, Mexico, Qatar, Costa Rica, Montenegro, Colombia, North Macedonia
416	Costa Rica	Romania, Bulgaria, Mexico, Qatar, Albania, Montenegro, Colombia, North Macedonia
415	Montenegro	Mexico, Albania, Costa Rica, Colombia, North Macedonia
413	Colombia	Mexico, Qatar, Albania, Costa Rica, Montenegro, North Macedonia
413	North Macedonia	Albania, Costa Rica, Montenegro, Colombia
404	Peru	Argentina, Brazil, Bosnien-Hercegovina, Baku (Azerbaijan)
404	Argentina	Peru, Brazil, Bosnien-Hercegovina, Baku (Azerbaijan)
404	Brazil	Peru, Argentina, Bosnien-Hercegovina, Baku (Azerbaijan)
398	Bosnien-Hercegovina	Peru, Argentina, Brazil, Baku (Azerbaijan), Kazakhstan, Indonesia
398	Baku (Azerbaijan)	Peru, Argentina, Brazil, Bosnien-Hercegovina, Kazakhstan, Indonesia
397	Kazakhstan	Bosnien-Hercegovina, Baku (Azerbaijan), Indonesia
396	Indonesia	Bosnien-Hercegovina, Baku (Azerbaijan), Kazakhstan
386	Saudi Arabia	Lebanon, Georgia
384	Lebanon	Saudi Arabia , Georgia, Morocco
383	Georgia	Saudi Arabia , Lebanon, Morocco
377	Morocco	Lebanon, Georgia
365	Kosovo	Panama
365	Panama	Kosovo, Philippines
357	Philippines	Panama
336	Dominican Republic	

Figure 14. Comparing countries' and economies' performance in reading in PISA 2018

Statistically significanlt above the OECD average

Not statistically significanly different from the OECD average

Statistically significantly below the OECD average

Mean score	Comparison country/economy	Countries and economies whose mean score is not statistically significantly different from the comparison country's/economy's score
555	B-S-J-G (China)	Singapore
549	Singapore	B-S-J-G (China)
525	Macao (China)	Hong Kong (China), Estonia, Finland
524	Hong Kong (China)	Macao (China), Estonia, Canada, Finland, Ireland
523	Estonia	Macao (China), Hong Kong (China), Canada, Finland, Ireland
520	Canada	Hong Kong (China), Estonia, Finland, Ireland, Korea
520	Finland	Macao (China), Hong Kong (China), Estonia, Canada, Ireland, Korea
518	Ireland	Hong Kong (China), Estonia, Canada, Finland, Korea, Poland
514	Korea	Canada, Finland, Ireland, Poland, Sweden, United States
512	Poland	Ireland, Korea, Sweden, New Zealand, United States
506	Sweden	Korea, Poland, New Zealand, United States, United Kingdom, Japan, Australia, Taipei (China), Denmark, Norway, Germany
506	New Zealand	Poland, Sweden, United States, United Kingdom, Japan, Australia, Taipei (China), Denmark
505	United States	Korea, Poland, Sweden, New Zealand, United Kingdom, Japan, Australia, Taipei (China), Denmark, Norway, Germany
504	United Kingdom	Sweden, New Zealand, United States, Japan, Australia, Taipei (China), Denmark, Norway, Germany
504	Japan	Sweden, New Zealand, United States, United Kingdom, Australia, Taipei (China), Denmark, Norway, Germany
503	Australia	Sweden, New Zealand, United States, United Kingdom, Japan, Taipei (China), Denmark, Norway, Germany
503	Taipei (China)	Sweden, New Zealand, United States, United Kingdom, Japan, Australia, Denmark, Norway, Germany
501	Denmark	Sweden, New Zealand, United States, United Kingdom, Japan, Australia, Taipei (China), Norway, Germany
499	Norway	Sweden, United States, United Kingdom, Japan, Australia, Taipei (China), Denmark, Germany, Slovenia
498	Germany	Sweden, United States, United Kingdom, Japan, Australia, Taipei (China), Denmark, Norway, Slovenia, Belgium, Frankrig, Portugal
495	Slovenia	Norway, Germany, Belgium, Frankrig, Portugal, Czech Republic
493	Belgium	Germany, Slovenia, Frankrig, Portugal, Czech Republic
493	Frankrig	Germany, Slovenia, Belgium, Portugal, Czech Republic
492	Portugal	Germany, Slovenia, Belgium, Frankrig, Czech Republic, Netherlands
490	Czech Republic	Slovenia, Belgium, Frankrig, Portugal, Netherlands, Austria, Switzerland
485	Netherlands	Portugal, Czech Republic, Austria, Switzerland, Croatia, Latvia, Russia
484	Austria	Czech Republic, Netherlands, Switzerland, Croatia, Latvia, Russia
484	Switzerland	Czech Republic, Netherlands, Austria, Croatia, Latvia, Russia, Italy
479	Croatia	Netherlands, Austria, Switzerland, Latvia, Russia, Italy, Hungary, Lithuania, Iceland, Belarus, Israel
479	Latvia	Netherlands, Austria, Switzerland, Croatia, Russia, Italy, Hungary, Lithuania, Belarus
479	Russia	Netherlands, Austria, Switzerland, Croatia, Latvia, Italy, Hungary, Lithuania, Iceland, Belarus, Israel
476	Italy	Switzerland, Croatia, Latvia, Russia, Hungary, Lithuania, Iceland, Belarus, Israel
476	Hungary	Croatia, Latvia, Russia, Italy, Lithuania, Iceland, Belarus, Israel
476	Lithuania	Croatia, Latvia, Russia, Italy, Hungary, Iceland, Belarus, Israel
474	Iceland	Croatia, Russia, Italy, Hungary, Lithuania, Belarus, Israel, Luxembourg
474	Belarus	Croatia, Latvia, Russia, Italy, Hungary, Lithuania, Iceland, Israel, Luxembourg, Ukraine
470	Israel	Croatia, Russia, Italy, Hungary, Lithuania, Iceland, Belarus, Luxembourg, Ukraine, Turkey
470	Luxembourg	Iceland, Belarus, Israel, Ukraine, Turkey
466	Ukraine	Belarus, Israel, Luxembourg, Turkey, Slovak Republic, Greece
466	Turkey	Israel, Luxembourg, Ukraine, Greece
458	Slovak Republic	Ukraine, Greece, Chile
457	Greece	Ukraine, Turkey, Slovak Republic, Chile
452	Chile	Slovak Republic, Greece, Malta
448	Malta	Chile
439	Serbia	United Arab Emirates, Romania
432	United Arab Emirates	Serbia, Romania, Uruguay, Costa Rica
428	Romania	Serbia, United Arab Emirates, Uruguay, Costa Rica, Cyprus, Moldova, Montenegro, Mexico, Bulgaria, Jordan
427	Uruguay	United Arab Emirates, Romania, Costa Rica, Cyprus, Moldova, Mexico, Bulgaria
426	Costa Rica	United Arab Emirates, Romania, Uruguay, Cyprus, Moldova, Montenegro, Mexico, Bulgaria, Jordan
424	Cyprus	Romania, Uruguay, Costa Rica, Moldova, Montenegro, Mexico, Bulgaria, Jordan
424	Moldova	Romania, Uruguay, Costa Rica, Cyprus, Montenegro, Mexico, Bulgaria, Jordan
421	Montenegro	Romania, Costa Rica, Cyprus, Moldova, Mexico, Bulgaria, Jordan
420	Mexico	Romania, Uruguay, Costa Rica, Cyprus, Moldova, Montenegro, Bulgaria, Jordan, Malaysia, Colombia
420	Bulgaria	Romania, Uruguay, Costa Rica, Cyprus, Moldova, Montenegro, Mexico, Jordan, Malaysia, Brazil, Colombia
419	Jordan	Romania, Costa Rica, Cyprus, Moldova, Montenegro, Mexico, Bulgaria, Malaysia, Brazil, Colombia
415	Malaysia	Mexico, Bulgaria, Jordan, Brazil, Colombia
413	Brazil	Bulgaria, Jordan, Malaysia, Colombia
412	Colombia	Mexico, Bulgaria, Jordan, Malaysia, Brazil, Brunei Darussalem, Qatar, Albania
408	Brunei Darussalem	Colombia, Qatar, Albania, Bosnien-Hercegovina
407	Qatar	Colombia, Brunei Darussalem, Albania, Bosnien-Hercegovina, Argentina
405	Albania	Colombia, Brunei Darussalem, Qatar, Bosnien-Hercegovina, Argentina, Peru, Saudi Arabia
403	Bosnien-Hercegovina	Brunei Darussalem, Qatar, Albania, Argentina, Peru, Saudi Arabia
402	Argentina	Qatar, Albania, Bosnien-Hercegovina, Peru, Saudi Arabia
401	Peru	Albania, Bosnien-Hercegovina, Argentina, Saudi Arabia, Thailand
399	Saudi Arabia	Albania, Bosnien-Hercegovina, Argentina, Peru, Thailand
393	Thailand	Peru, Saudi Arabia, North Macedonia, Baku (Azerbaijan), Kazakhstan
393	North Macedonia	Thailand, Baku (Azerbaijan)
389	Baku (Azerbaijan)	Thailand, North Macedonia, Kazakhstan
387	Kazakhstan	Thailand, Baku (Azerbaijan)
380	Georgia	Panama
377	Panama	Georgia, Indonesia
371	Indonesia	Panama
359	Morocco	Lebanon, Kosovo
353	Lebanon	Morocco, Kosovo
353	Kosovo	Morocco, Lebanon
342	Dominican Republic	Philippines
340	Philippines	Dominican Republic

How PISA is designed

PISA attaches importance to an assessment of the students' ability to reflect on their own knowledge and to treat subjects in relation to their own lives. The focus is the students' ability to analyse, present arguments and communicate while they assess, investigate, interpret and solve assignments. Personal factors, such as motivation, persistence and learning strategies, are also assessed.

Many people think that PISA only tests fingertip knowledge and acquired skills. As described, this is not the case. The PISA tests include both multiple-choice questions and “open” questions, where the student has to evaluate and describe in their own words and also often give reasons for their answers. The questions are centred around a text and often contain pictures, graphs and tables, that describe situations in ‘the real world’ that are relevant for a 15-year-old. With the transition to a fully computer-based digital test in PISA 2015, and now in PISA 2018, there is ample opportunity for creative assignment types, where answers have to be tried out or illustrated, for example, and where there are dynamic and interactive texts that are part of the test assignments.

Every PISA cycle consists of material for approximately a 7-hour test. Every student answers approximately 2 hours of material. Thus, not all students answer the same tasks but different combinations of the 7-hour material. The test in reading is adaptive for the first time in PISA 2018. The design is step-by-step (multistage adaptive testing) and is based on a design that has been used successfully in the OECD Programme for International Assessment of Adult Competencies (PIAAC). On OECD’s PISA website, you can find examples of tasks developed for PISA: http://www.oecd.org/pisa/test/.

In addition to tests of the students’ proficiency in the three domains, the students answer questionnaires about their opinions on and experiences with learning, teaching and school environment. Information about the students’ home conditions, IT proficiency and expectations to their career is also elicited.

School principals also answer a number of questions about their schools as well as the learning- and school environment at the school. The coupling of questionnaires and test results provides a deeper understanding of the circumstances surrounding learning, school and background that the students are subject to and that can influence their skills and their future lives.

All in all, PISA is designed as a strong tool to obtain a status over the Danish education system in an international perspective and to obtain knowledge about which other countries’ education systems can inspire further development of the Danish education system. As the test is repeated every three years, it is possible to analyse the development over time – not only in the results but also in the students' motivation, learning strategies, opinions and academic experiences.

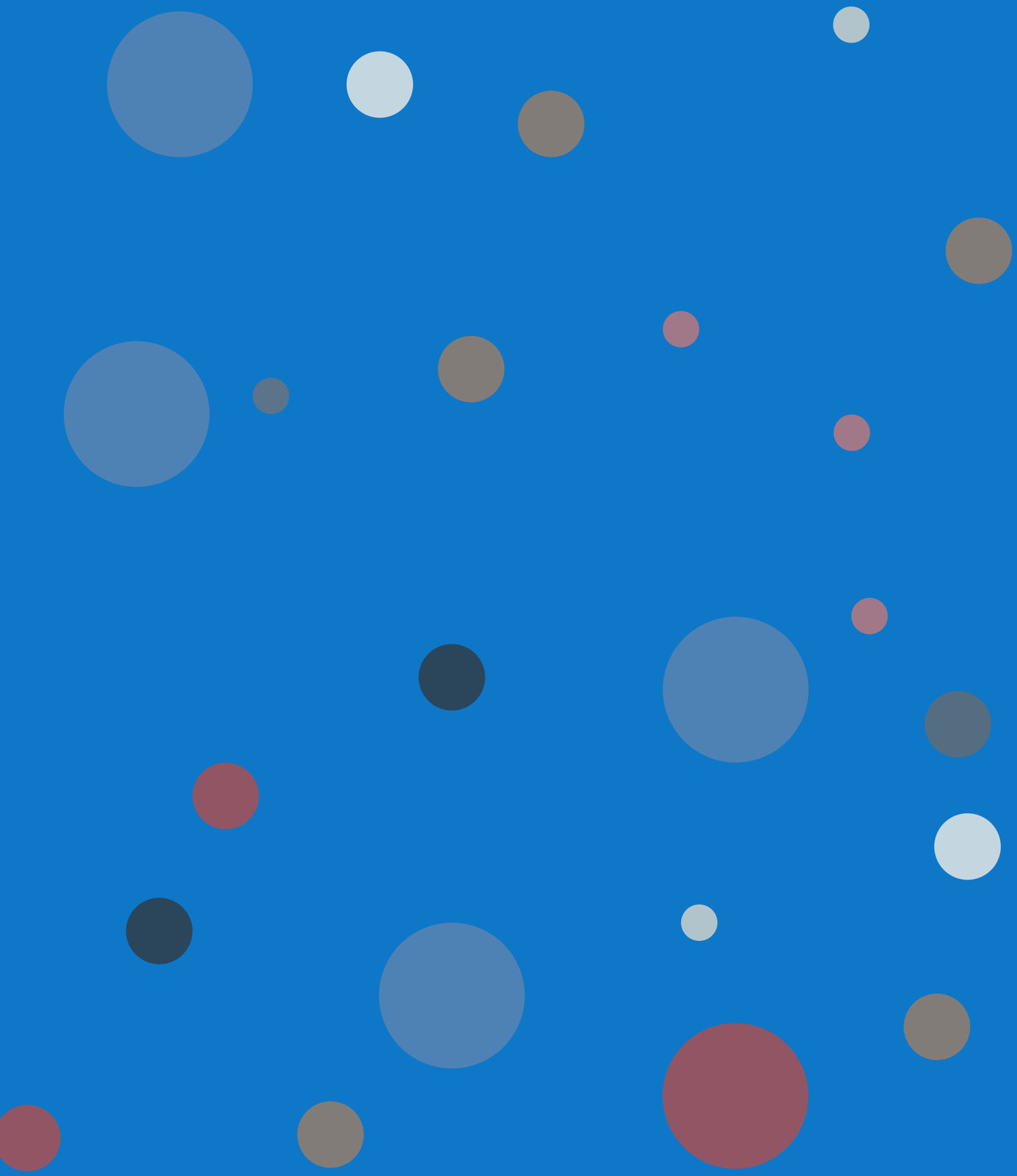
Data and method

PISA-results for every domain are measured as points on a scale developed for each subject area and designed to show the general proficiencies that are tested in PISA. The average for each of these scales is 500 points and with a standard deviation of +/- 100 points as an average for the OECD countries the first time the specific domain was the major domain. This means that about 2 out of 3 students in OECD countries will achieve between 400 and 600 points. The scales can then be divided into different levels from below Level 1 to Level 6, where Level 1 requires only the most basic skills and Level 6 includes the highest skill levels. Subsequently , the students’ results and points can be held against background conditions at country-, school- and student-levels.

The schools in every country are drawn to participate in PISA at random. In Denmark, students that are born in 2002 participate, which means that they are between the ages of 15 years and 3 months and 16 years and 2 months at the time of the test. The PISA population is thus picked on the basis of age, not grade. The average age of 15 years was chosen because it is the age where most of the young people in OECD countries are approaching the end of compulsory education.

To obtain the most representative section of the school youth in the participating countries, there are very clear rules the selection of schools and students for PISA. In most countries, it is voluntary for schools to participate, but if more than 15% of the chosen schools decline, the results must not be included in the international report. Every country should exempt no more than 5% of the students because of physical, mental or social handicaps. However, a total of 5.7% of Danish students have been exempted from the test. This represents an increase from PISA 2015, where 5.04% were exempted but a decrease from PISA 2012, where the share was 6.18% and PISA 2009 where it was 8.57%. The Danish data have been approved with no remarks.

With regard to the data collection, both a particularly large number of *schools* with students' of a different ethnic origin than Danish and a particularly large number of *students* with a different ethnic origin than Danish have been included. This was done to achieve a greater coverage of these students' background and competencies. By the subsequent weighting of data, it was ensured that the PISA-population comprises a representative section of the Danish students in the age group. In spring of 2020, PISA Ethnic will come out, which is a separate report that focuses on the results analysed in relation to immigrant background.



DANMARKS STATISTIK

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