Children's reading competence and well-being in the EU

An EU comparative analysis of the PIRLS results

European Commission

European Education Area

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Executive Summary

The Progress in International Reading Literacy Study (PIRLS) is an international assessment conducted every five years since 2001 by the International Association for the Evaluation of Educational Achievement (IEA). The primary focus of PIRLS is to measure and compare reading literacy achievement among fourth-grade students (typically aged between 9 and 11) across different countries. In addition to measuring reading literacy, the study collects data on various contextual factors that may influence reading achievement.

PIRLS 2021 is the first large-scale international assessment carried out during the Covid-19 pandemic and interpreting its results requires some caution. While the pandemic is likely to have negatively affected reading performance in 2021, the changes between the 2016 and the 2021 results cannot measure the impact of Covid-19 on reading achievement, because: i) they do not allow researchers to construct any counterfactual scenario (i.e. what the results would have been in the absence of the pandemic); ii) several other factors at play between 2016 and the outbreak of the pandemic could have influenced reading achievement in 2021. Children from 19 EU education systems took the PIRLS test at the end of the fourth grade, while five education systems delayed the assessment to the beginning of the fifth grade. This makes it impossible to compare: i) the two groups of education systems' results in 2021; ii) the second group of education systems' results with their own results in previous PIRLS studies. Therefore, the analysis in this report focuses on the 19 EU education systems which administered the PIRLS test to students at the end of the fourth grade. Estonia, Greece, Luxembourg and Romania did not participate in PIRLS 2021.

Reading competence deteriorated between 2016 and 2021. Although almost all EU education systems participating in PIRLS 2021 score above the international point of reference, none of them improved its performance between 2016 and 2021 and most of them experienced a significant decline. Looking at the distribution of students over different performance levels, one can observe an emerging trend of increasing low achievement across the EU education systems, and a slight decrease in top performance.

Gender gaps persist and socioeconomic status is a strong predictor of reading competence. In all EU education systems, girls outperform boys in reading competence. This was a consistent finding also across previous PIRLS editions. There are large differences in performance by socioeconomic status and overall, the best-performing education systems are not necessarily more equitable.

Child well-being at school is associated with PIRLS performance, while the spread of bullying and unhealthy situations gives room for concern. PIRLS 2021 adds to the existing evidence about the importance of well-being at school for child academic performance. However, exposure to bullying, including cyberbullying, is widespread. Between around 25% and 60% of children report having suffered from some form of bullying. In some education systems, more than 20% of children receive nasty or harmful messages online at least a few times a year. Moreover, sizeable shares of children (exceeding 30% in most education systems) often experience unhealthy situations, such as feeling tired or hungry when they arrive at school.

Addressing declining reading competence and threats to child well-being requires coordinated policy action to ensure the school success of all children. At EU level, the Pathways to School Success initiative aims to both ensure better educational outcomes for all learners and promote their well-being at school.

Introduction

The [Progress in International Reading Literacy Study](#) (PIRLS) is an international assessment conducted every five years since 2001 by the International Association for the Evaluation of Educational Achievement (IEA). The primary focus of PIRLS is to measure and compare reading literacy achievement among fourth-grade students (typically aged between 9 and 11) across different countries.

The study aims to provide insights into students' reading abilities, reading habits and the factors that influence reading performance. It assesses students' reading comprehension skills, their understanding of different types of texts and their ability to interpret and analyse information presented in written form.

In addition to measuring reading literacy, PIRLS collects data on various contextual factors that may influence reading achievement. Several questionnaires are administered alongside the reading assessments. These questionnaires gather information related to students, teachers, schools, and parents.

The student questionnaire collects information directly from fourth-grade students. It gathers data on their reading habits, attitudes toward reading, their reading engagement both in and outside of school, as well as their well-being at school. The teacher questionnaire collects information from the teachers of participating students. It includes questions about instructional practices, curriculum content, teaching strategies, and classroom resources related to reading instruction. The school questionnaire collects data about the participating schools. It covers such aspects as school policies, resources, leadership and the learning environment. The home questionnaire is administered to the parents or guardians of participating students. It gathers data on the home environment, including the availability of books, parental involvement in reading activities and the literacy-related practices at home.

PIRLS 2021 is the first large-scale international assessment carried out during the Covid-19 pandemic. While the pandemic is likely to have negatively affected reading performance in 2021 in many EU education systems (Koehler et al., 2022; De Witte and François, 2023), it is important to note that the changes between the 2016 and the 2021 results cannot measure the impact of Covid-19 on reading achievement, because i) they do not allow researchers to construct any counterfactual scenario (i.e., what the results would have been in the absence of the pandemic); ii) several other factors at play between 2016 and the outbreak of the pandemic could have influenced reading achievement in 2021.

However, the results of PIRLS 2021 can help policymakers, educators, and researchers identify areas of strength and areas for improvement in literacy education. The findings can promote the development of evidence-informed policies to support students' reading achievement at an early stage of their educational career.

Around 400 000 students and 13 000 schools from 57 education systems and eight benchmarking regions/cities throughout the world participated in PIRLS 2021. Children from 19 EU education systems (Austria, Belgium – Flemish Community, Belgium – French Community, Bulgaria, Cyprus, Czechia, Denmark, Finland, France, Germany, Italy, Malta, Netherlands, Poland, Portugal, Slovakia,

Slovenia, Spain and Sweden) took the PIRLS test at the end of the fourth grade (i.e., end of the 2020-2021 school year), while five education systems (Croatia, Hungary, Ireland, Latvia and Lithuania) delayed the assessment to the beginning of the fifth grade (i.e., beginning of the 2021-2022 school year). This makes it impossible to: i) compare the two groups of education systems' results in 2021; ii) compare the second group of education systems' results with their own results in previous PIRLS studies. Therefore, the analysis in this report will focus on the 19 EU education systems which administered the PIRLS test to students at the end of the fourth grade and all EU averages[1] will refer to that group. The 2021 results from the second group of education systems will be presented separately in each figure and not commented on. Estonia, Greece, Luxembourg and Romania did not participate in PIRLS 2021.

This report is composed of three main sections. Section 1 describes PIRLS 2021 main findings and breaks them down by performance level, gender, and socioeconomic background. Section 2 zooms in on child well-being at school and its association with reading performance. Section 3 concludes by discussing some policy implications about promoting reading competence and child well-being at school.[2] This report is a first attempt to assess PIRLS 2021 results in an EU perspective. Further to the present report, the European Commission's Joint Research Centre will perform econometric analyses of microdata from the various PIRLS 2021 questionnaires to improve the understanding of policy-relevant findings for EU education systems.

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[1]   All EU averages are weighted by the arithmetic average of the population aged 9-11 (corresponding to age of children taking the PIRLS test).

[2]   This report will not cover any topics from the teacher questionnaire, as further reflections are needed on its data.

Part 1

How do primary school children perform in reading?

1.1 Reading performance has worsened across EU education systems

Being able to read is a key competence and a key condition for balanced, healthy and successful life and participation in society (Box 1). Whether it is on the job, in personal relations, or when moving through the public sphere, basic reading abilities lay the foundations for further learning and are key to ensuring successful communication and engagement. For students, reading performance is also closely linked with other areas of academic performance and it has great influence on their educational paths,[3] as well as their future labour market and social outcomes (OECD, 2016).[4]

Box 1 – The PIRLS Achievement Scale

The PIRLS Achievement Scale is built on an understanding of reading literacy as '*the ability to understand and use those written language forms required by society and/or valued by the individual. Readers can construct meaning from texts in a variety of forms. They read to learn, to participate in communities of readers in school and everyday life, and for enjoyment*' (Mullis et al., 2023).

For the reading assessment, fourth-grade students are presented with both literary and informational texts, to cover different reading purposes. During the test four central processes of reading comprehension are being assessed:

1) Focus on and retrieve explicitly stated information;
2) Make straightforward inferences;
3) Interpret and integrate ideas and information;
4) Evaluate and critique content and textual elements.

The PIRLS Achievement Scale measures the average reading performance. The scale has a typical performance range between 300 and 700 score points. A centrepoint of 500 was established in 2001, corresponding to the mean of overall achievement in PIRLS 2001, with a standard deviation equal to 100 points. The centrepoint is a point of reference which remains constant throughout all PIRLS assessments.

Almost all EU education systems participating in PIRLS 2021 score above the scale centrepoint of 500, meaning that they perform above the international point of reference (Figure 1). Education systems whose students took the PIRLS test at the end of the fourth grade have scores ranging from 549 (Finland and Poland) to 494 points (Belgium – French Community), and they average 527 score points.

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[3]   For instance, poor reading competence is associated with a risk of early leaving from education and training (European Commission, 2022a).

[4]   The 2018 Council Recommendation on Key Competences for Lifelong Learning identifies literacy as one of the eight key competences needed for personal fulfilment, a healthy and sustainable lifestyle, employability, active citizenship and social inclusion.

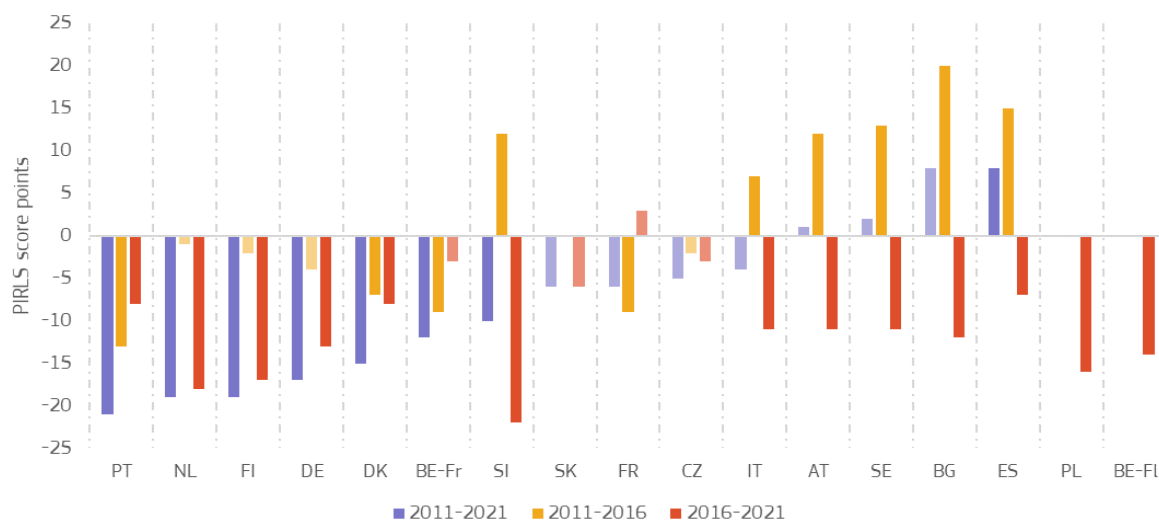## Figure 1 – Average reading performance (2021)
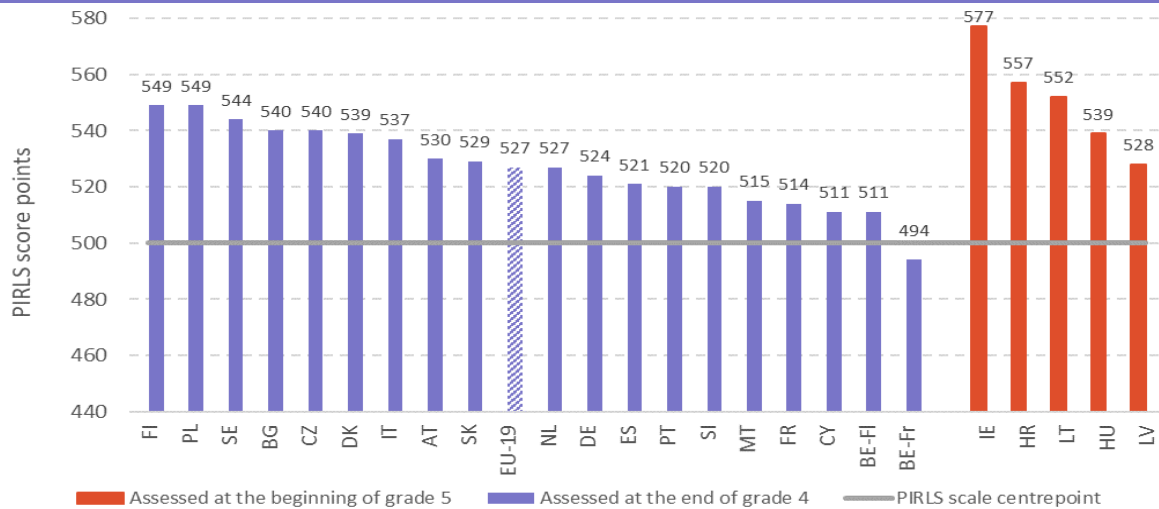
Source: DG EAC calculations based on PIRLS 2021 data.
Note: Only education systems with data collections at the end of the fourth grade are included in the weighted EU average. Countries are ranked in descending order of average score on the PIRLS Achievement Scale.

The PIRLS assessment is carried out every five years giving good opportunities for assessing developments in reading performance in the longer term. Figure 2 depicts differences in performance on the PIRLS Achievement Scale between PIRLS 2011, 2016 and 2021. During the 10-year period from 2011-2021, only four EU education systems (Austria, Sweden, Bulgaria and Spain) had a positive development in reading performance, and only one (Spain) was statistically significant.

Figure 2 – Developments in average reading performance (2011-2021)

Source: DG EAC calculations based on PIRLS 2021 data.
Note: Only education systems with data collections at the end of the fourth grade in 2021 are shown. Education systems are ranked in ascending order of difference in average reading performance from 2011-2021. Lighter columns indicate changes that are not statistically significant. As there were several changes in the number of EU education systems participating in PIRLS between 2011, 2016 and 2021, no EU average is calculated for 2011 and 2016. Data is not available for BE–Fl, CY, MT and PL in 2011; for CY and MT in 2016.

Taking a closer look at this development, between 2011 and 2016 almost half of the participating education systems experienced a positive development in reading performance (Slovenia, Italy, Austria, Sweden, Bulgaria and Spain). The remaining ones (Portugal, Netherlands, Finland, Germany, Denmark, Belgium – French Community, France and Czechia) had already started a decreasing trend, although the change in performance was not always statistically significant.

Moving to 2016–2021, only one education system (France) had an increase in reading performance, but this positive change was not statistically significant. The declining trend in reading performance thus existed for several participating EU education systems already in 2016, but the trend became more widespread in 2021. Moreover, the decreases in PIRLS score points were much larger in 2016–2021 than in the previous period, and the declining trend therefore not only affected more education systems, but also increased in size.

Box 2 – Moderate use of digital devices for schoolwork is correlated with higher reading performance

The EU education systems vary greatly when it comes to fourth graders' use of digital devices for schoolwork. Between 11% and 52% of children spend no time on finding and reading information on a digital device, while between 10% and 30% spend more than 30 minutes on a normal school day. This means that while the use of computers, tablets or smartphones is a regular occurrence in many education systems, in others not using digital devices is just as likely as using them. The high degree of divergence between EU education systems on this matter may hint at different approaches to the use of digital devices in education.[5]

Figure 3 – Daily time spent using a digital device for schoolwork and its association with reading performance (2021)

■ No time   ■ 30 minutes or less   ■ More than 30 minutes
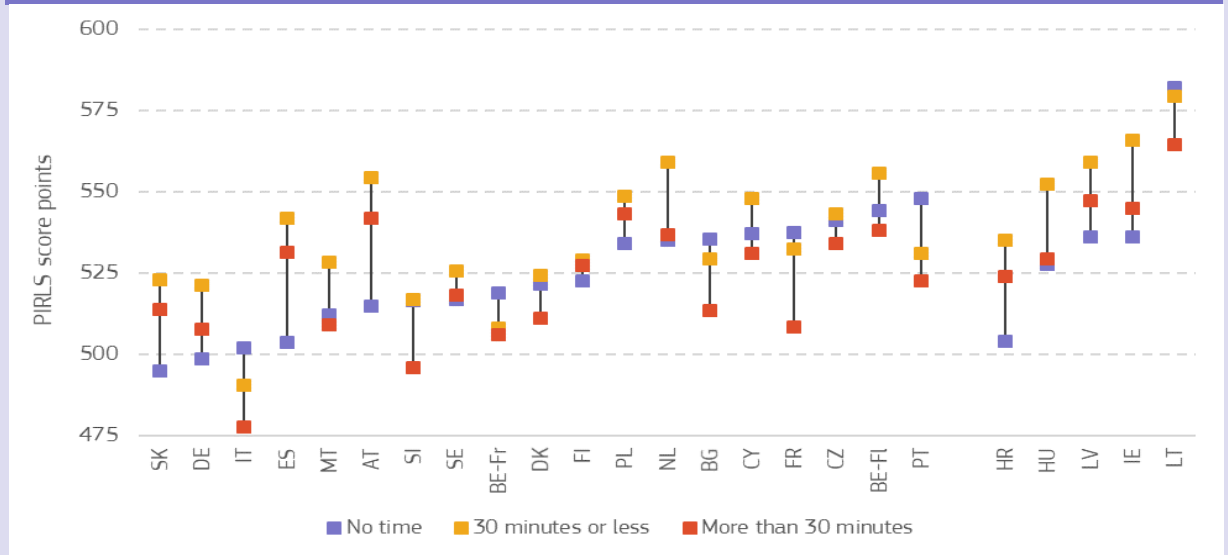
Source: DG EAC calculations based on PIRLS 2021 data

Note: The figure is based on students' answers to the following question: 'How much time do you spend using a computer, tablet, or smartphone to do these activities for your schoolwork on a normal school day? Finding and reading information'. Countries are ranked in descending order of the share of students spending no time on finding and reading information on a digital device.

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[5]   A further caveat in analysing these findings concerns the possible reasons to spend limited or no time on digital devices to find and read information. For instance, children might just copy-paste the first research item they find, or not know how to process info or not being asked to do any research in general.

At the same time, using digital devices is not linearly correlated with reading performance (Figure 3). For most education systems, using digital devices for 30 minutes or less is correlated with higher reading performance than not using digital devices at all or using them for more than 30 minutes on a regular school day (Finland, Poland, Sweden, Czechia, Denmark, Austria, Slovakia, Netherlands, Germany, Spain, Slovenia, Malta, Cyprus, Belgium – Flemish Community, Ireland, Croatia, Lithuania, Hungary and Latvia). This indicates that moderate use of digital devices can have advantages over excessive use or non-use. However, in a handful of education systems (Italy, Belgium – French Community, Bulgaria, France and Portugal), non-use of digital devices is associated with higher reading performance than any amount of use. In no EU education system, using digital devices for finding and reading information for more than 30 minutes on a regular school day is associated with the highest reading performance. This blurry picture underlines the importance of considering other factors when discussing the use of digital devices in education, as the link between the two seems highly irregular across education systems.

1.2   Low achievement is on the rise, while top performance is declining

This sub-section will take a closer look at the distribution of reading performance within the EU education systems participating in PIRLS 2021, focusing on low achievement and top performance. PIRLS identifies four reading competence levels, called "international benchmarks": low, intermediate, high and advanced.[6] This report defines the share of students reaching at most the low international benchmark as "low achievement rate" and the share of students reaching the advanced international benchmark as "top performance rate".

There are large differences in low achievement across EU education systems: the low achievement rate varies between 15% and 38%. At the other end of the scale, the top performance rate ranges from 3% to 16% (Figure 4).

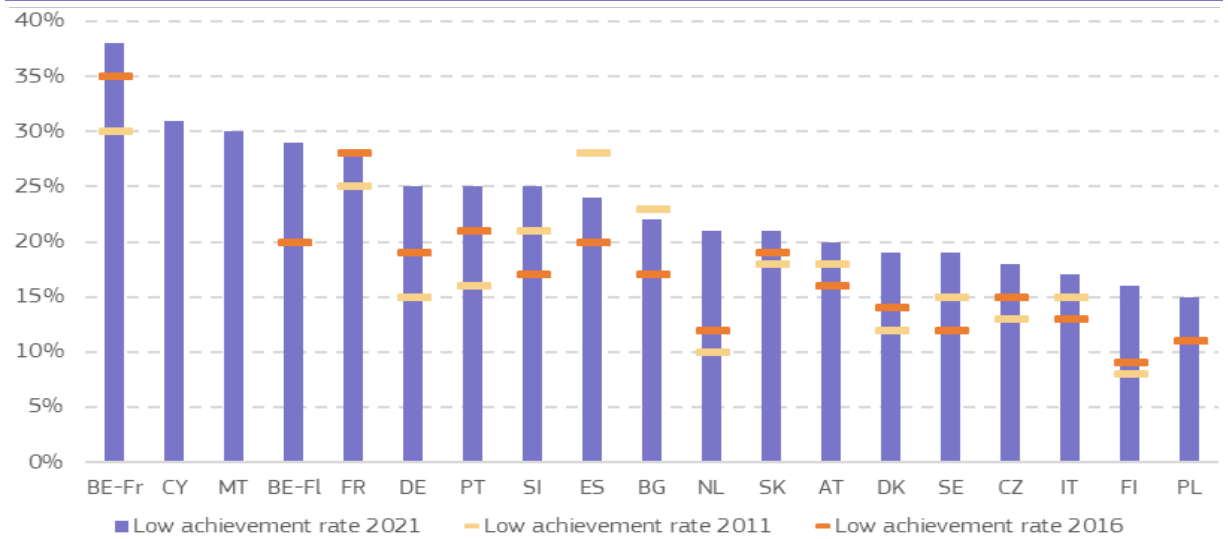**Figure 4 – Low achievement and top performance rates in reading (2021)**
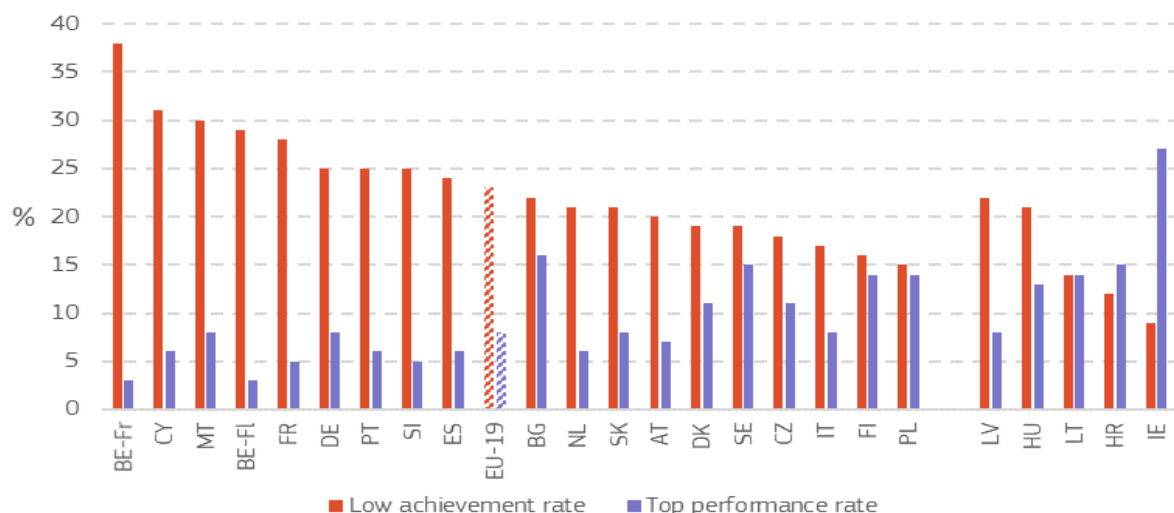
Source: DG EAC calculations based on PIRLS 2021 data.
Note: Only education systems with data collections at the end of the fourth grade are included in the weighted EU average. Countries are ranked in descending order of the low achievement rate.

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[6]   See Mullis et al. (2023) for a description of PIRLS international benchmarks.

No education system has a lower share of low-achieving students in 2021 than in 2016, and in most cases there has been a large increase (Figure 5). The top performance rate has decreased, although not as consistently across EU education systems as for the increase in the low achievement rate (Figure 6). Czechia, France and Sweden all have a slightly higher share of top performing students in 2021 than in 2016, while Belgium – French Community, Denmark and Spain that share remained at the same level as in 2016.

Figure 5 – Developments in the low achievement rate in reading (2011-2021)

■ Low achievement rate 2021   — Low achievement rate 2011   — Low achievement rate 2016

Source: DG EAC calculations based on PIRLS 2021 data.
Note: Only education systems with data collections at the end of the fourth grade in 2021 are included. Countries are ranked in descending order according to the share of low achievers in 2021. As there were several changes in the number of EU education systems participating in PIRLS between 2011, 2016 and 2021, no EU average is calculated for 2011 and 2016. Data is not available for BE–Fl, CY, MT and PL in 2011; for CY and MT in 2016.

Figure 6 – Developments in the top performing rate in reading (2011-2021)
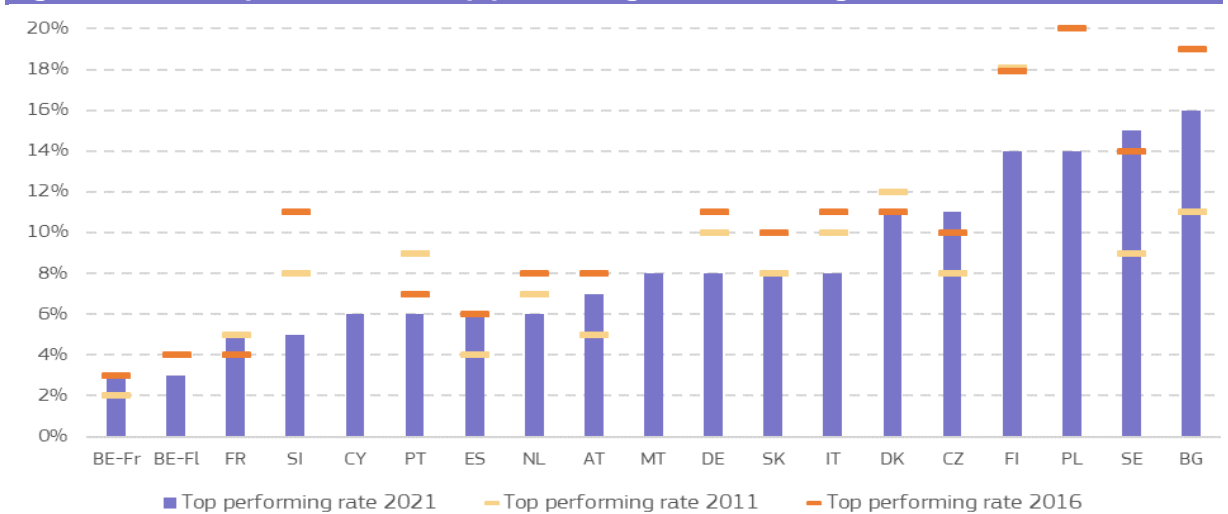
■ Top performing rate 2021   — Top performing rate 2011   — Top performing rate 2016

Source: DG EAC calculations based on PIRLS 2021 data.
Note: Only education systems with data collections at the end of the fourth grade in 2021 are included. Countries are ranked in ascending order of the top performance rate in 2021. As there were several changes in the number of EU education systems participating in PIRLS between 2011, 2016 and 2021, no EU average is calculated for 2011 and 2016. Data is not available for BE–Fl, CY, MT and PL in 2011; for CY and MT in 2016.

Taken all together, one can notice an emerging trend of increasing low achievement across the EU education systems, and a slight decrease in top performance. The decreasing average reading performance can thus mainly be attributed to larger shares of students performing at the lower end of the scale, and not just fewer students performing at top level.

1.3 Girls perform better than boys

In all 19 EU education systems, girls outperform boys in PIRLS 2021. The difference in performance in 2021 ranges from 2 score points in Spain to 20 score points in Poland (with an EU average of 11 score points) and is always statistically significant, except for Spain and Czechia (Figure 7).

Figure 7 – Reading performance by gender (2021)

Source: DG EAC calculations based on PIRLS 2021 data.
Note: All performance differences between girls and boys are statistically significant, except for CZ and ES. Only education systems with data collections at the end of the fourth grade are included in the weighted EU average. Countries are ranked in descending order of girls' performance.

A gender gap existed also in 2011 and 2016 in all education systems, although developments over time have been quite heterogeneous. For instance, the gender gap shrank between 2016 and 2021 in nine education systems, remained stable in two and increased in six. Previously, between 2011 and 2016, it had shrunk in three education systems, had remained stable in one and had increased in 11 (Figure 8). At first sight, the larger number of countries experiencing a falling gender gap in 2016-2021 compared with 2011-2016 seems a positive development. However, this finding has to be evaluated against a declining reading performance across the board between 2016 and 2021: a more marked decrease in girls' than in boys' performance drove the observed fall in the gender gap.

Gender gaps in reading performance tend to persist across educational cycles, as consistently shown by the results of the OECD Programme for International Student Assessment (PISA), which assesses the reading competence of 15-year-olds (European Commission, 2019). Previous research has shown that girls tend to be more interested and engaged in reading than boys. The reasons are complex, ranging from reading being seen as a 'female' activity, to boys being less encouraged by their parents (and fathers especially) to read, due to gender stereotypes (Staring et al., 2021).

Figure 8 – Difference in reading performance between girls and boys (2011–2021)

Source: DG EAC calculations based on PIRLS 2021 data.

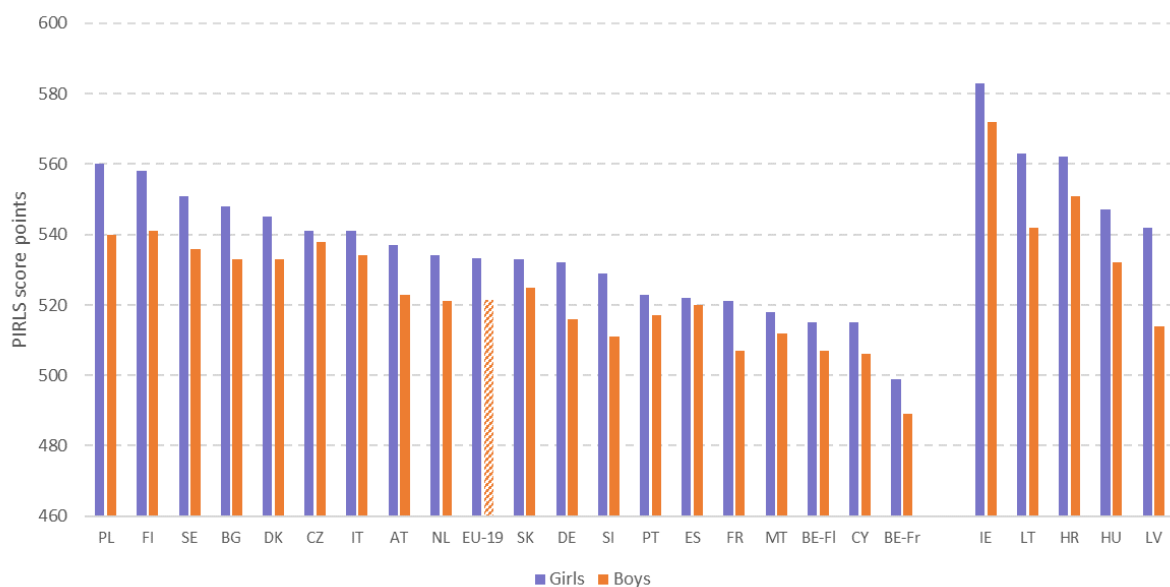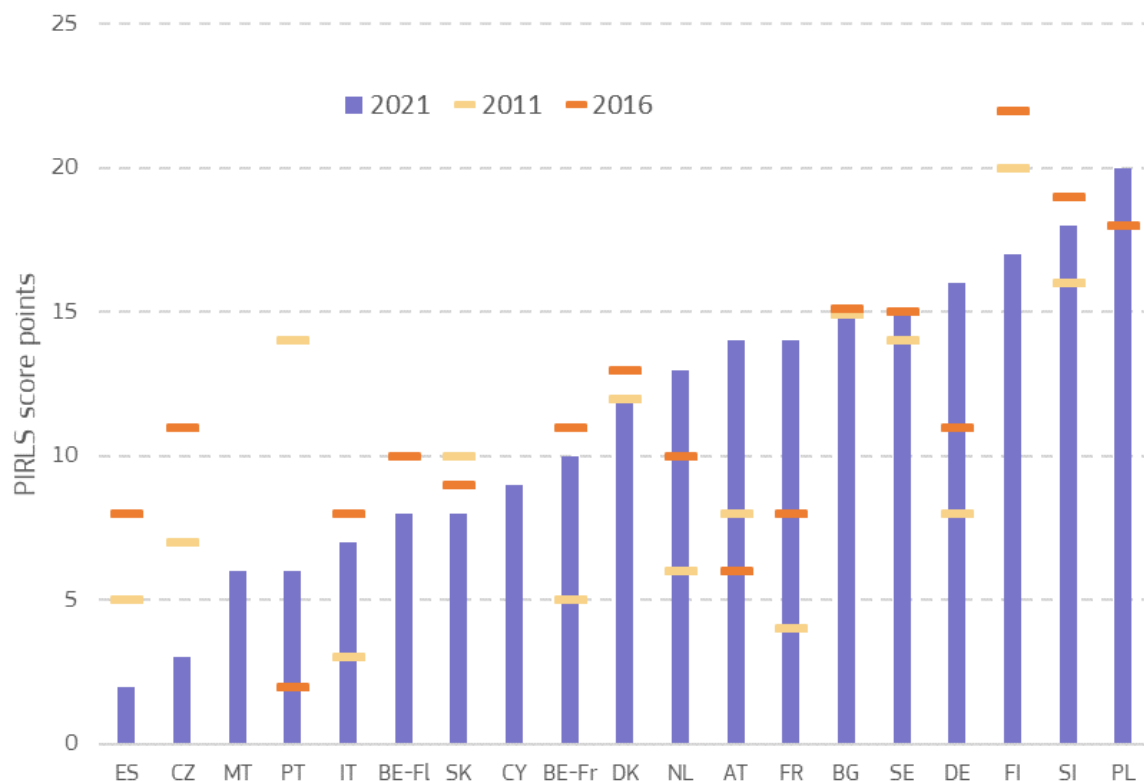*Note:* All gender differences are statistically significant, except for: CZ (2021), ES (2011, 2021), FR (2011), IT (2011), PT (2016). Only education systems with data collections at the end of the fourth grade in 2021 are included. Countries are ranked in ascending order of the gender difference in 2021. As there were several changes in the number of EU education systems participating in PIRLS between 2011, 2016 and 2021, no EU average is calculated for 2011 and 2016. Data is not available for BE–Fl, CY, MT and PL in 2011; for CY and MT in 2016.

1.4 Socioeconomic status is a strong predictor of reading performance

Research has consistently shown a strong positive association between students' socioeconomic status and their educational achievement at all ages. This represents a major challenge for the equity of education systems (European Commission, 2022b).

PIRLS 2021 measures students' socioeconomic status based on book possessions at home, parental education and parental occupation (Box 3) and supports the existing evidence. On average across the 19 EU education systems, the performance difference between children with a higher socioeconomic status and those with a lower one is 80 score points. It ranges from 62 score points in the Netherlands and Spain to 120 score points in Bulgaria. There is no correlation between education systems' average performance and performance differences by socioeconomic status (Figure 9). Overall, the best-performing systems are not necessarily more equitable,[7] contrary to what was observed in the OECD PISA surveys (OECD, 2019a).

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[7]   Equity requires that the variation in educational outcomes is relatively small between different social groups, such as students with high and low socioeconomic status (European Commission, 2022c).

Box 3 – Home socioeconomic status scale

In PIRLS 2021, a new scale was introduced to capture home socioeconomic status, based on responses from the assessed fourth-grade students' parents. Consequently, no comparison can be made with previous PIRLS editions.

The scale consists of four items:

1) Number of books in the home;
2) Number of children's books in the home;
3) Highest level of education of either parent;
4) Highest level of occupation of either parent.

The scale is divided into three categories. Students with higher socioeconomic status scored 11.1 or above on the scale, students with lower socioeconomic status scored 8.5 or below on the scale, while students scoring in between were placed in the middle category.

Figure 9 – Reading performance difference by socioeconomic status (2021)
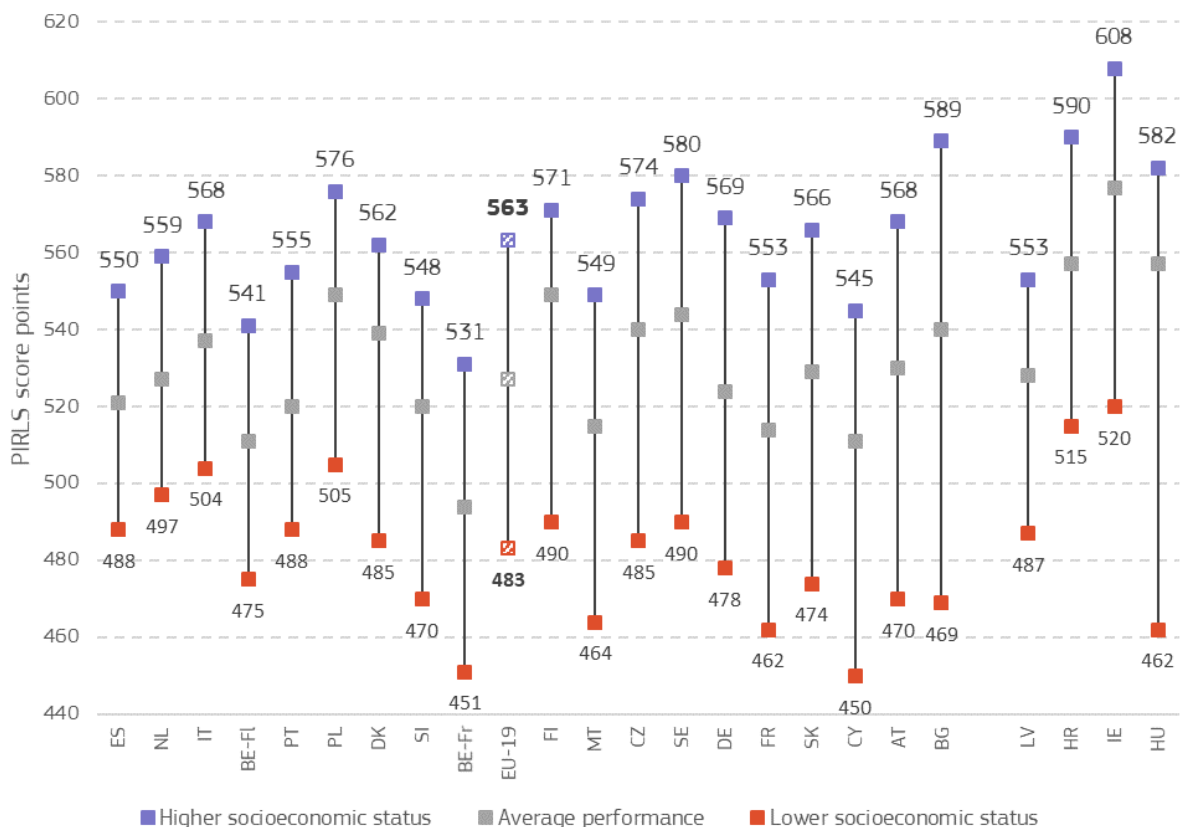
Source: DG EAC calculations based on PIRLS 2021 data.
Note: All differences are statistically significant. Only education systems with data collections at the end of the fourth grade in 2021 are included in the weighted EU average. Countries are ranked in ascending order of the performance difference by socioeconomic status. Data is not available for LT
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Part 2

Child well-being at school and reading performance: a strong association

Research has long indicated that student well-being at school, as well as good mental and physical health are fundamental factors to improve academic performance, as they are directly linked to learners' motivation at school, their focus, their capacity to learn, retain and apply knowledge, and other behavioural and cognitive aspects (European Commission, 2021).

The concept of well-being can be analysed in multiple ways (Box 4). While the literature shares a rather general starting point (Statham and Chase, 2010), i.e., that well-being is about quality of life and is multidimensional, the degree of consensus decreases as the definition attempts to become more precise and operational. The actual measurement of well-being is a challenge (Selwyn and Wood, 2015), given that indicators are usually self-reported and collected through surveys. The comparability of cross-country data requires not only international surveys asking the same question in several countries, but also selecting the most "unbiased" indicators, i.e., those that are more independent from country-specific cultural contexts (OECD, 2019b; European Commission, 2021).

Box 4 – Defining child well-being

According to World Health Organisation (WHO), child well-being can be defined as a dynamic state, where children realise their own abilities, learn to cope with common stresses of live, to develop a positive sense of identity and the ability to manage thoughts and emotions, to build social relationships, and to acquire an education that fosters active citizenship. The term is used interchangeably with positive mental health. Definitions of well-being refer to two dimensions: subjective and objective well-being. The former refers to children's overall sense of well-being, psychological functioning and affective states, i.e., what they think about life satisfaction as a whole and in specific areas (home, school, friends, etc) and how they feel (happy, sad, bored, etc.). The latter includes health, education, family, socioeconomic status, social relationships, safety and security, and civic participation/rights (European Commission, 2022a).

The student questionnaire of PIRLS 2021 includes several questions providing comparable data that sheds light on child well-being at school and its association with reading performance when the Covid-19 pandemic was still in its critical phase. Research conducted during the Covid-19 crisis has already shown that, besides learning losses due to physical school closures (De Witte and François, 2023), child well-being has been negatively impacted by the pandemic (OECD, 2021), due to increasing stress and anxiety resulting from school closure, social distancing from friends and relatives, increased exposure to domestic violence, decreased access to essential services, increased poverty and more exposure to online sexual exploitation and cyberbullying (Jiao et al., 2020; Lee, 2020). The following subsections explore the most relevant issues concerning child well-being at school identified by PIRLS 2021.

2.1 Most children feel they belong at school

A sense of belonging is a fundamental human need. It includes a desire for social approval and to be accepted, respected and liked by others. A sense of belonging helps people make sense of their lives and contributes to their overall well-being (Greenaway et al., 2015). This also applies in a school context (Osterman, 2000). Since students spend a considerable part of their lives in school, interactions with their peers and teachers affect their overall well-being as well as school motivation and performance at school.

Most children feel they belong at school. However, in half of the EU education systems, more than one in ten students do not feel like belonging at school, with a peak of around one-quarter of children in the Belgium – Flemish Community and Poland. The difference in reading performance between children who feel like they belong to their school and those who do not is sizeable in most education systems and exceeds 20 points in half of them (Figure 10).

Figure 10 – Children's agreement with the statement "I feel I belong at this school" and its association with reading performance (2021)
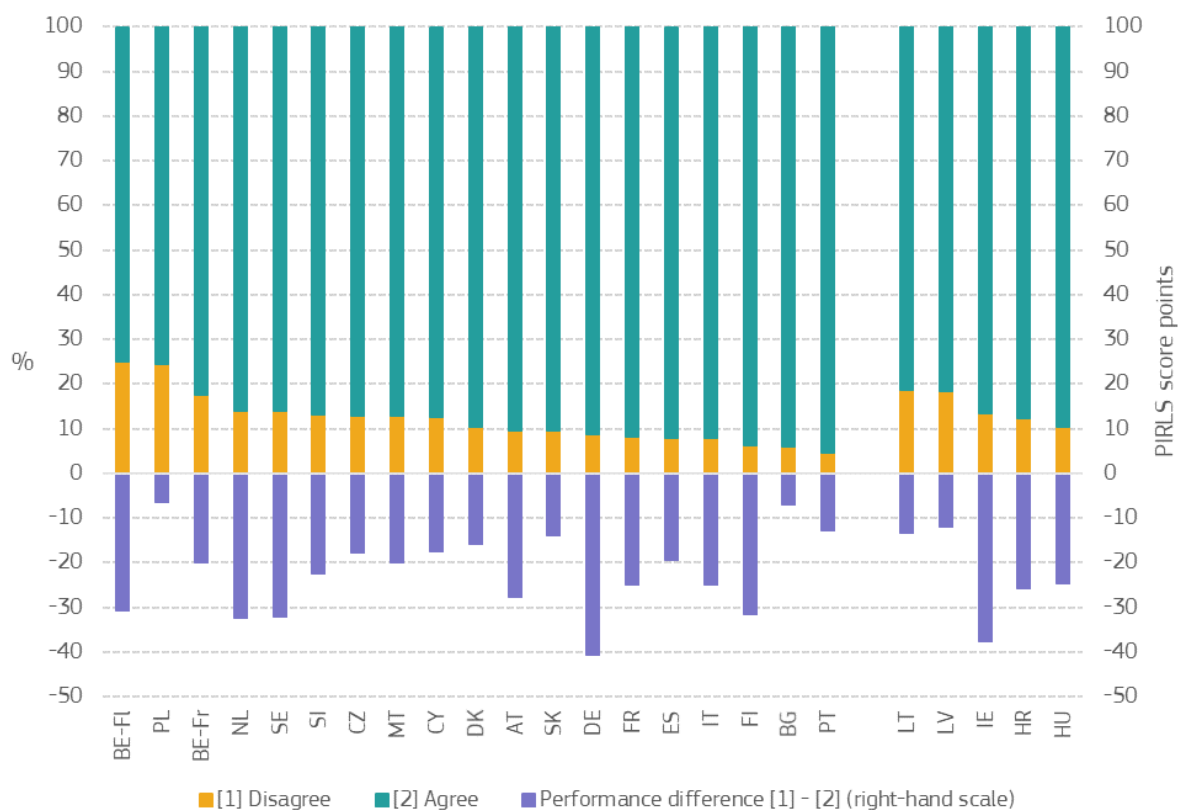
Source: DG EAC calculations based on PIRLS 2021 data.
Note: Countries are ranked in descending order of the share of students who disagree a lot or a little with the statement: *"I feel I belong to this school".*

2.2 Bullying is widespread

Bullying refers to physical, verbal and relational behaviours, which involve one party having the intention to repeatedly hurt or harm another, within an uneven power relationship where the victim is unable to defend him/herself. It is a repeated, aggressive behaviour intended to hurt another individual, physically, mentally, or emotionally. It usually involves the victim/s, perpetrator and bystanders, and the perpetrator may be one individual or a group. However, children and young people often define bullying differently from adults, for example, by omitting "power imbalance" and claiming that the behaviour was not intended to harm but was "fun" or "a joke" (European Commission, 2022a).

Research shows that bullying has a direct negative effect on the well-being of students (Oliveira et al., 2018). Bullying can take different forms[8], including: (1) direct bullying, which takes place in person and can either involve physical violence and/or verbal insults; (2) indirect bullying, spreading rumours or ignoring the victim, and characterised by psychological or social aggression; (3) discriminatory bullying aimed at, but not limited to, the ethnicity, gender identity, sexual orientation or religion of the individual; or (4) cyberbullying (see Box 5 below

Box 5 – The Student Bullying Index in PIRLS 2021

The PIRLS 2021 Student Bullying Index is a composite indicator summarising children's answers to the following ten questions:

"During this year, how often have other students from your school[9] done any of the following things to you, including through texting or the internet?

1) Made fun of me or called me names;
2) Left me out of their games or activities;
3) Spread lies about me;
4) Stole something from me;
5) Damaged something of mine on purpose;
6) Hit or hurt me (e.g., shoving, hitting, kicking);
7) Made me do things I didn't want to do;
8) Sent me nasty or hurtful messages online;
9) Shared nasty or hurtful information about me online;
*10) Threatened me."*

Students were then scored on a Student Bullying scale according to how many bullying behaviours they had suffered from and how often they had experienced them.

According to the PIRLS 2021 Student Bullying Index, between around 25% and 60% of children reported having experienced some form of bullying, although with different frequency. Most of them were bullied about every month, but a noteworthy share, ranging from 5% in Finland to 19% in the Belgium – French Community, even about every week. The negative association between the frequency of being bullied and reading performance is very strong. The average scores of children bullied about every week are between around 40 and 85 points lower than those of children never exposed to bullying (Figure 11). Obviously, this data is not sufficient to infer any direct causal impact of bullying of reading achievement. Causality could also work in the other direction, i.e., children might be bullied because they are weak performers, and/or other factors may affect both reading performance and the probability of being bullied, such as characteristics related to socioeconomic background. The message is however clear: weak performance and exposure to bullying tend to go hand in hand and should be addressed under a common policy approach.

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[8]   Some forms of bullying may be overlapping.
[9]   The findings may underestimate the overall incidence of bullying among children, because the questions only refer to bullying from students at the same school.

Figure 11 – Frequency of being bullied and its association with reading performance (2021)
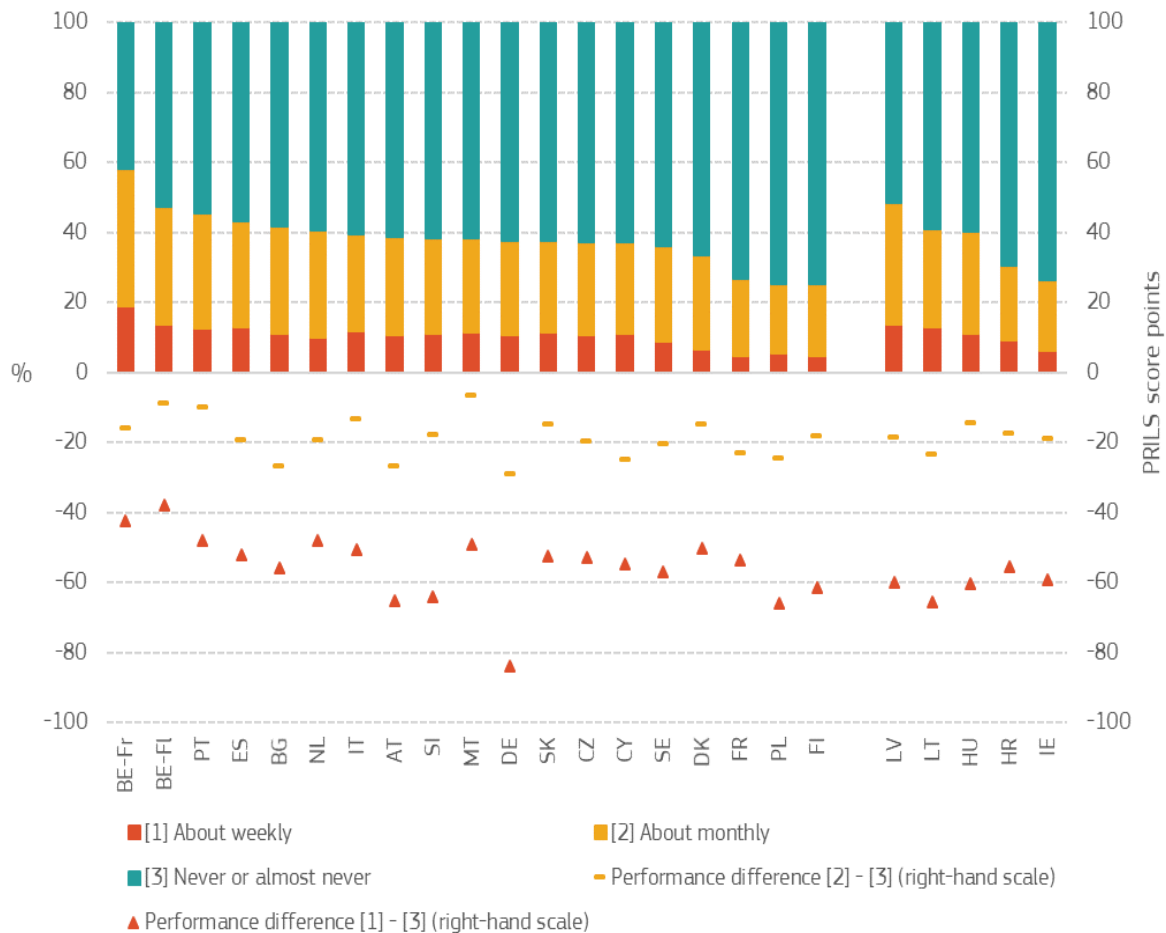
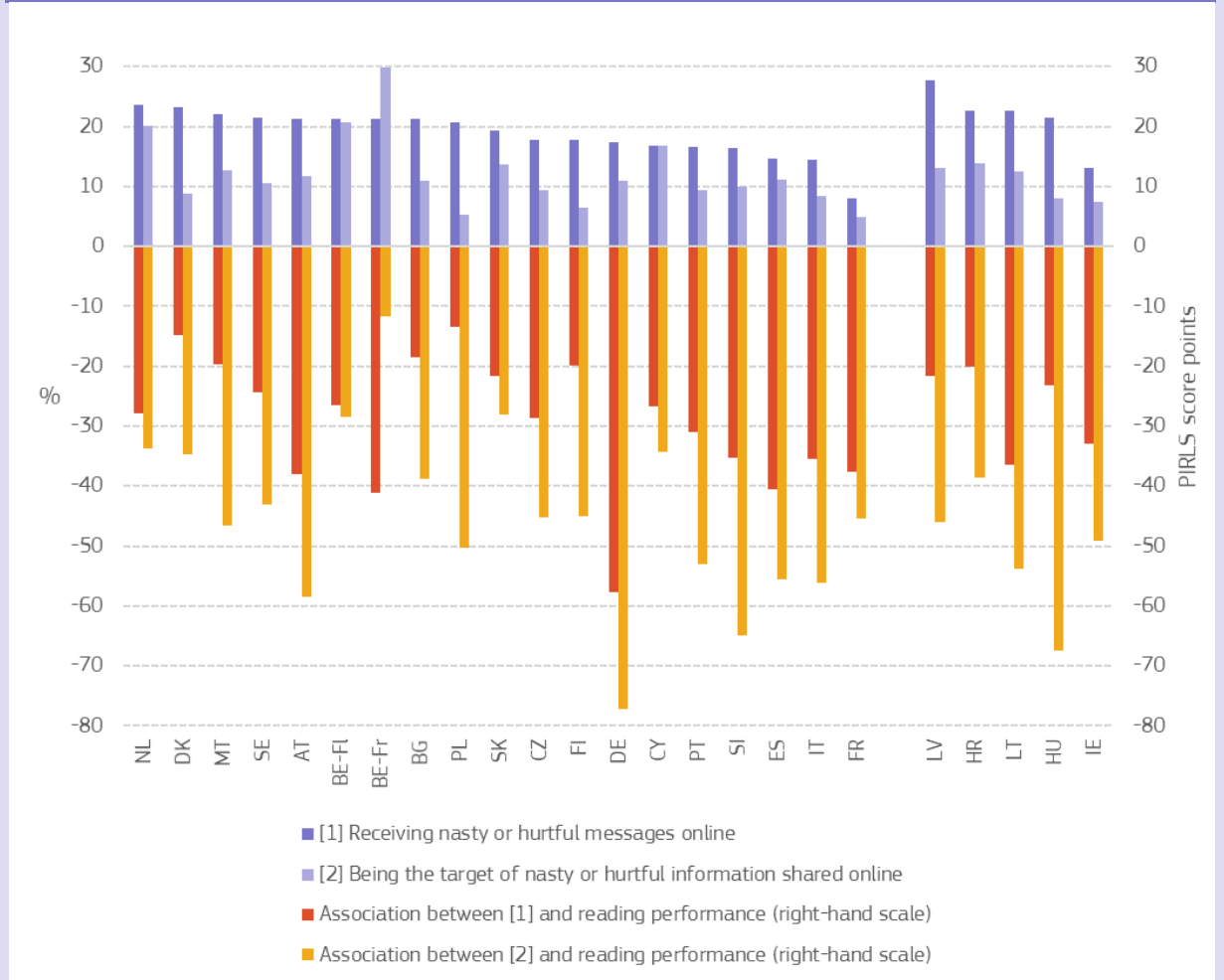*Source:* DG EAC calculations based on PIRLS 2021 data.
Note: Countries are ranked in descending order of the share of students who reported being bullied about weekly.

Box 6 – Spotlight on cyberbullying

Cyberbullying is the use of technology to bully (harass, threaten, embarrass, or target) another person. It takes four main forms: i) written/verbal though phone-calls, texts, email, chats, blogs, posts on social media; ii) visual through posting compromising or humiliating photos or videos; iii) exclusion by intentionally excluding a person from a group; iv) impersonation by using another person's account details to cause harm (European Commission, 2022a). Given the substantial amount of time during the pandemic spent using digital devices, an analysis of the occurrence of cyberbullying is called for. Earlier data from the Commission Joint Research Centre's KiDiCoTi survey showed that in Germany, Italy, Spain, France and Ireland around 50% of students aged 10-18 were more exposed to at least one form of cyberbullying during the spring 2020 lockdown than before (Lobe et al., 2021). Moreover, an average of 44% (across the 11 countries covered by the survey) reported a higher exposure to cyberbullying during the lockdown, whereas only 22% report a reduction during the same period.

PILRS 2021 asked children two specific questions about cyberbullying, i.e., how often in the previous year other students from the same school: 1) sent the child nasty or hurtful messages online; 2) shared nasty or harmful information about the child online. Considering that the surveyed children are very young, as most fourth-grade students are 9-11 years old, PIRLS findings appear worrying. In all EU education systems but France, more than one in ten students received nasty or harmful messages online at least a few times a year; in nine education systems this happened to more than one in five students. In 11 education systems, more than one in ten students were the target of nasty or harmful information shared online at least a few times a year. Consistently with the results shown for the overall Student Bullying Index, children being exposed to cyberbullying usually have a much weaker reading performance than those who are not (Figure 12).

Figure 12 – Exposure to cyberbullying at least a few times a year and its association with reading performance (2021)

Source: DG EAC calculations based on PIRLS 2021 data

Note: Countries are ranked in descending order of the share of students who reported receiving nasty or hurtful messages online at least a few times a year. The category "at least a few times a year" is the sum of the following frequencies: "a few times a year"; "once or twice a month"; "at least once a week".

2.3 A sizeable proportion of children arrive tired or hungry at school

A healthy lifestyle is a key element for child well-being. PIRLS 2021 asked children how often they feel tired or hungry when they arrive at school. Sleep disturbance can often be a symptom associated with mental health difficulties. Severe material deprivation and hunger can have serious consequences on concentration, performance, memory, motivation, behaviour and relation with peers (Downes et al., 2017). Due to the COVID-19 pandemic, the time spent online increased, both for school and non-school activities. This was inevitable, given the limitations to social activities during the periods of physical school closure, but it also signals a potential risk for the physical and mental well-being of students. Many students felt that they spent too much time on the internet or using digital devices, compared to the pre-pandemic period (Lobe et al. 2021), with potentially disruptive consequences on sleep and eating.

In all EU education systems participating in PIRLS 2021, a large share of children – exceeding 30% in most cases – reported they frequently feel tired or hungry when they arrive at school. PIRLS data cannot tell to what extent this is due to psychological and/or socioeconomic distress or rather to incorrect health habits.[10] However, this data signals that many children experience conditions which can have detrimental effects on their well-being. Those conditions are also negatively associated with reading performance, in particular feeling hungry (Figure 13 and Figure 14).

**Figure 13 – Frequency of feeling tired when arriving at school and its association with reading performance (2021)**

Source: DG EAC calculations based on PIRLS 2021 data

Note: Data not available for BE-Fr. Countries are ranked in descending order of the share of students who reported they frequently feel tired when they arrive at school. The category "frequently" is the sum of the answers "every day" and "almost every day" to the question *"How often do you feel this way when you arrive at school? I feel tired"*. The category "not frequently" is the sum of the answers "never" and "sometimes" to the same question.

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[10]   Moreover, tiredness and hunger are subjective feelings and children may experience them at different degrees of intensity. This calls for additional caution in interpreting the PIRLS results.

Figure 14 – Frequency of feeling hungry when arriving at school and its association with reading performance (2021)
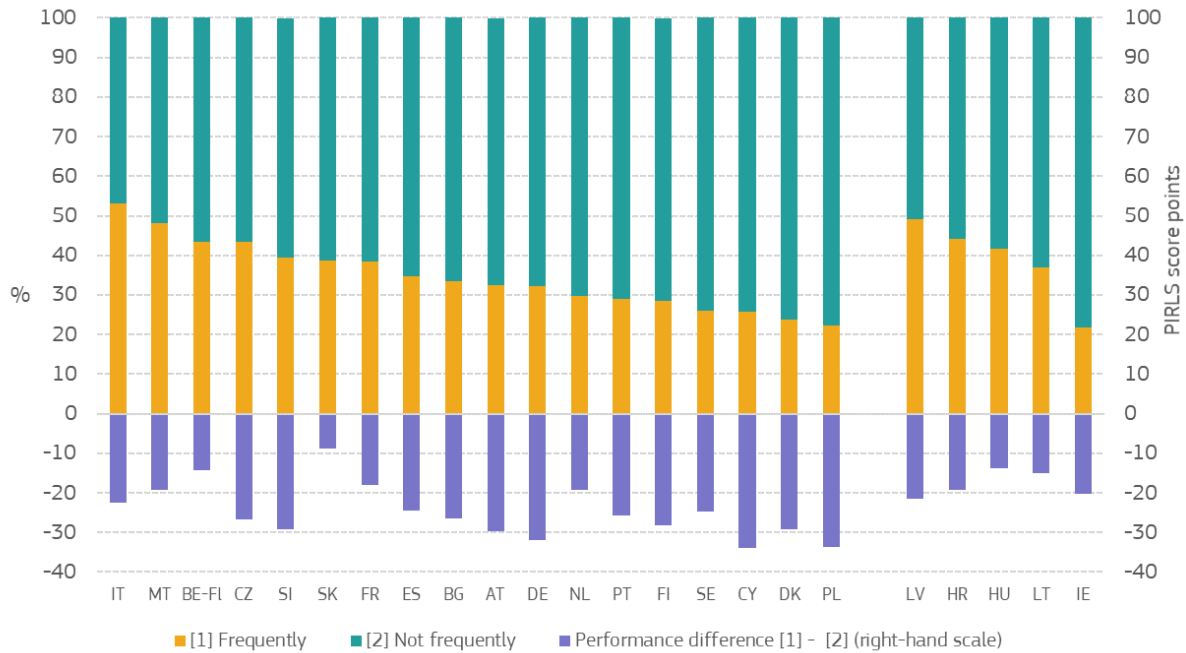
Source: DG EAC calculations based on PIRLS 2021 data

Note: Data not available for BE-Fr. Countries are ranked in descending order of the share of students who reported they frequently feel hungry when they arrive at school. The category "frequently" is the sum of the answers "every day" and "almost every day" to the question *"How often do you feel this way when you arrive at school? I feel hungry"*. The category "not frequently" is the sum of the answers "never" and "sometimes" to the same question.

Part 3

What measures can improve reading competence and child well-being at school?

The importance of reading for a child's successful educational outcomes and participation in society, together with the significant decline in performance between 2016 and 2021 in many EU education systems, including the emerging trend of increasing low achievement and decreasing top performance, calls for policy action. Reading, as one of the basic skills, is at the core of the policy debate at the EU level with the target for 2030 requiring that the share of low-achieving 15-year-olds in reading be less than 15% (Council of the European Union, 2021).

Of special concern are the growing performance gaps between children with advantaged and disadvantaged socioeconomic status (European Commission, 2022a). Enhancing reading achievement and closing these performance gaps requires not only a broader set of policies also addressing educational equity, but an overall comprehensive and systemic approach. This approach acknowledges that different levels of need require different actions and it should include differentiated measures.

This entails promoting school approaches to school success, in which the entire school community (school leaders, teachers, non-teaching staff, but also parents and families) feel responsible for each child's learning experience and outcomes and engage in a collaborative endeavour, working in close cooperation with services and professionals around the school. A supportive school environment should be established by enhancing dialogue and collaboration with and between relevant stakeholders and educational levels. To accommodate learners' needs and diversity, the first step comprises early detection, which should be followed by putting in place the appropriate support. Among various methods, also the use of artificial intelligence could support this process by helping detect reading difficulties. Subsequently the focus should lie on prevention and intervention, following the principles of differentiation, thereby distinguishing between general/universal measures (i.e., addressing all learners) and more targeted/individualised measures.

In all cases, the learner's needs should be at the centre of education and the school should be held accountable for providing an environment that accommodates learners' diversity (European Commission, 2022a). To this end, the curriculum should allow flexible approaches and more personalised forms of teaching and learning in combination with a learner-centred pedagogy. School leaders, teachers and other staff should be helped to develop appropriate knowledge, skills and competences, and to have adequate time, space and support to work effectively with all learners, including those more at risk of low achievement. On the broader level, educational experts recommend the implementation of quality assurance mechanisms focussing, among others, on addressing low achievement with clear targets and indicators as a key element to ensuring school success (European Commission, 2022a).

In addition to the role of schools, a significant body of research shows that reading to children daily (especially from an early age) has an overall positive impact (Hutton et al., 2015). A prerequisite for this is the enhancement of parental involvement in education (Alieva, 2021), as well as a supportive home environment more generally (Blaskó et al., 2021). One way to close the performance gap between students from different socioeconomic backgrounds is to establish book giveaway programmes, as research has found a positive impact for these programmes in promoting children's home literacy environment and generating interest in reading (Dickinson et al., 2019). Once more, it is important to note that a comprehensive approach, including various stakeholders and various levels seems to be most promising in countering the declining trends in reading competence.

Promoting child well-being at school requires a joint effort from the whole community. Coordination and consistency of measures with other policy areas, such as health, migration, social services and employment is key. This has become even clearer during the COVID-19 pandemic, which forced learners and teachers to adapt to new educational challenges, highlighted the importance of well-being and resilience and revealed the need of efforts across the EU to ensure that no one is left behind (European Commission, 2021). Investing in the mental health and well-being of children and young people has also large social and economic returns (Belfield et al., 2015; Chisholm et al., 2016).

Incorporating programmes of mental health and well-being promotion in schools has been found as one of the most effective strategies for children and young people, including vulnerable and marginalised children (Goldberg et al., 2019). Schools themselves are key contexts, as most of the children spend a considerable part of the day there, during a vital time as their personality and social emotional competences are still developing. The conceptualisation of mental health and well-being has moved away from the traditional model of mental ill health to a broader and more focused approach to positive mental health and well-being, with the school system itself operating as a health promoting context.

Mental health and well-being interventions in school are more likely to have an impact when they adopt a systemic whole school approach on building individual competences, developing school policies and improving social relationships (Cefai et al. 2018). A whole school approach to well-being includes three main interrelated pillars: curriculum, teaching, and learning; school ethos and environment; and family and community partnerships. Within a whole school approach, in addition to benefitting from universal interventions for all learners, students experiencing mental health issues are provided with additional targeted support in collaboration with mental health professionals. The approach also underlines the importance of addressing the mental health and well-being of teachers and staff and their training needs (European Commission, 2022a). Implementing this approach requires a comprehensive and coordinated effort across all levels of the education system – from policy and governance to individual schools, classrooms and students.

The development of a positive school climate has to go hand in hand with an effective prevention of bullying and violence in school (Downes and Cefai, 2016). Effective bullying prevention requires actions targeting all learners coupled with more targeted actions, addressing specific risk groups and individuals, to increase the effectiveness of interventions. The selection and implementation of the interventions and their components (e.g., peer education) need to be tailored to the specific needs of individuals (e.g., adolescents, minority groups), schools, community and geographical area. This process requires an assessment of the bullying phenomenon in the school/area, a constant monitoring of programme implementation and the work of a large network connecting the school to the experts, local policymakers and all members of the community. School staff and parents should be also targeted in the intervention and their roles strengthened in programmes. Students' voice also needs to be listened to, and their active involvement valued according to their age. Furthermore, since prejudices often result from a lack of direct contact with different groups and can lead to bullying and violence in and around schools, a school violence prevention and non-discrimination strategy should also promote contacts between groups from diverse backgrounds on structured cooperative tasks during and after school activities (Cefai et al., 2021; European Commission, 2022a).

Children's reading competence and well-being in the EU

28   3. What measures can improve reading competence and child well-being at school?

Box 7 – Examples of EU policy action on reading competence and child well-being

The 2022 Pathways to School Success initiative acknowledges the deteriorating trend in reading and other basic skills and aims to ensure better educational outcomes for all learners, including by enhancing reading performance. Going beyond a narrow definition of educational performance, it explores and addresses the inextricable links between early leaving from education and training, underachievement in basic skills at age 15 (as measured by the OECD PISA assessment), educational disadvantage and (lack of) well-being at school and proposes a broad definition of "success at school".

The related Council Recommendation on 'Pathways to School Success' outlines a new framework for action, which should inspire Member States when developing their strategies towards school success. It proposes the implementation of a systematic approach comprising overarching conditions for effective actions as well as a set of key measures. The Commission supports the implementation of the Recommendation through peer learning opportunities, cooperation and information exchange through a dedicated European Education Area Working Group on Schools (Pathways to School Success sub-group), funding, as well as sharing good practices and resources through the European School Education Platform.

The Pathways to School Success initiative and its related Council Recommendation consider well-being at school as a key dimension of school success and aim to promote the well-being of learners and educators at school. A dedicated Expert Group on strategies for creating supportive learning environments for groups at risk of underachievement and for supporting well-being at school started to work in March 2023 for a period of 15 months. It will present proposals for effective uptake of successful practices in schools and recommendations for awareness raising activities at EU and national levels. Two set of guidelines (one for policy makers and one for schools) are expected for March 2024.

The 2022 European strategy for a better internet for kids (BIK+), via the betterinternetforkids.eu platform and the Safer Internet Centres (SICs) network, can support the development of teacher modules for different age groups with lessons on several digital safety topics, including cyberbullying and mental well-being.

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