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The gender gap in educational outcomes in Norway

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THE GENDER GAP IN EDUCATIONAL OUTCOMES IN NORWAY

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Abstract

As is the case in most OECD countries, boys in Norway are more likely to have lower levels of academic achievement and attainment than girls. While this phenomenon is not recent, it has become increasingly pronounced in recent years and, as a result, is attracting considerable attention from policy-makers in many countries. This paper develops evidence of gender gaps in educational outcomes in Norway and selected OECD countries and identifies examples of policies and practices that could help close existing gender gaps in Norway. The first part of the paper describes gender gaps in school achievement, attainment, attitudes, beliefs and behaviours using an international comparative analysis. Evidence from PIRLS, TIMSS, PISA and the OECD Survey of Adult Skills (PIAAC) is used to identify gender gaps during primary and secondary schooling as well as young adulthood. The second part of the paper summarises evidence on policies and practices that were implemented in other countries and that could support efforts in Norway to mitigate, prevent and reduce gender gaps in achievement and attainment. Most of the evidence on policies and practices reviewed in the report comes from the peer countries Finland, the Netherlands and the United States that were identified of particular relevance for Norway, given the policy challenge Norway faces.

Résumé

Comme dans la plupart des pays de l'OCDE, les garçons en Norvège sont plus susceptibles d'avoir des niveaux de performance académique et d'achèvement des études secondaires plus faibles que les filles. Si ce phénomène n'est pas récent, il s'est amplifié lors de ces dernières années et, par conséquent, a attiré une plus grande attention de la part des décideurs politiques dans beaucoup de pays. Ce rapport souligne les différences de résultats éducatifs des filles et des garçons en Norvège et dans les pays de l'OCDE, et identifie des exemples de politiques publiques et pratiques éducatives qui peuvent aider à résorber ces différences de genre dans le système éducatif norvégien. La première partie du rapport décrit, en se basant sur une analyse comparative internationale, les disparités de performance en termes de résultats scolaires, de taux de décrochage et des attitudes, croyances et comportements des élèves entre les sexes. Les données de PIRLS, TIMMS, PISA et de l'Évaluation de l'OCDE sur les compétences des adultes (PIAAC) sont utilisées afin d'identifier ces disparités dans l'enseignement primaire et secondaire et parmi les jeunes adultes. La deuxième partie du rapport fait une synthèse des politiques publiques et pratiques éducatives mises en œuvre dans d'autres pays de l'OCDE et dont la Norvège peut s'inspirer pour atténuer, prévenir et réduire les écarts de performance entre les filles et les garçons. La plupart des données sur les politiques et les pratiques examinées dans le rapport proviennent des États-Unis, de la Finlande et des Pays-Bas, considérés comme particulièrement pertinents pour la Norvège, compte tenu du défi politique auquel la Norvège est confrontée.

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1. Introduction

As is the case in most OECD countries, boys in Norway are more likely to have lower levels of academic achievement and attainment than girls. While this phenomenon is not recent, it has become increasingly pronounced in recent years and, as a result, is attracting considerable attention from policy-makers in many countries. In particular, policy-makers in several Northern European countries have promoted the work of research groups or *ad hoc* commissions to better understand gender gaps in school achievement and identify policies and practices that could help close such gaps. In 2018, Norway convened the National Commission on Gender Equity in Education.

This report aims to support the work of the Norwegian Commission on Gender Equity in Education by 1) reviewing evidence on gender gaps in education in Norway and other selected OECD countries and 2) identifying policies and practices that could help close existing gender gaps in Norway and that were implemented in other countries. The report is structured as follows. The first part (*Gender gaps in educational outcomes in Norway and how they compare with outcomes in selected OECD countries*) describes gender gaps in school achievement and attainment using an international comparative analysis. The second part of this report (*Policies and practices to mitigate or prevent the gender gap in school achievement: learnings from OECD countries*) summarises evidence on policies and practices that were implemented in other countries and that could support efforts in Norway to mitigate, prevent and reduce gender gaps in achievement and attainment. Most of the evidence on policies and practices reviewed in the report comes from one of the three peer countries that were identified of particular relevance for Norway, given the policy challenge Norway faces of closing gender gaps in achievement and attainment. The three peer learners are Finland, the Netherlands and the United States. Additional evidence from other countries is reviewed whenever such countries implemented important policies or practices that could help Norway close gender gaps in education.

An important limitation of the study is that although virtually all features of an education system and their interaction with other institutional and organisational characteristics of a society influence the relative achievement, motivation and attainment of boys and girls, a full review of the Norwegian school system is beyond the scope of this report.

2. Gender gaps in educational outcomes in Norway and how they compare with outcomes in selected OECD countries

2.1. Introduction

Historically, and in many countries across the world, gender gaps have been favouring boys. Over the past century many countries have made significant progress in narrowing, and even closing, long-standing gender gaps in educational attainment and today boys on average have lower attainment and achievement than girls. In Norway, this issue has become a focus of public concern, and a search for explanations and policy options has begun.

This section examines factors that are considered to restrict the chances that boys and girls will equally make the most of the educational opportunities that are available to them. It adopts a comparative and developmental approach, reviewing evidence from different life stages and cognitive, behavioural and affective domains with the aim of identifying critical junctures in which boys appear to be at a particular disadvantage in Norway. It attempts to identify policies and practices in other countries in which such developmental phases are not accompanied by a disadvantage for boys. Crucially, the paper considers whether and how dimensions of disadvantage for educational attainment and achievement, most notably socio-economic status and migration background, represent a particular risk factor for the educational outcomes of boys.

The analysis reported in this section examines gender gaps at different levels of education and factors that are associated with gender gaps in Norway and in a set of key comparison countries. The analysis of evidence from large-scale assessments and Norwegian national data are informed and interpreted through a review of relevant studies from psychology, sociology, demography and economics. The aim is to consider factors at the individual, school and system level that can explain the existence of gender gaps in educationally relevant outcomes in Norway, but also try to explain if, how and why such gaps may differ from gaps observed in other countries. In doing so this section paves the way for section 3 of this report, where the report details a set of policies and practices that could form the basis of policy reform discussions in Norway, should targeted efforts be developed and implemented with the specific aim of reducing gender gaps in education while also promoting overall educational improvements.

Although the section adopts a developmental approach and recognises that differences in affect and behaviours that can importantly shape gender gaps in educational attainment and achievement emerge in early childhood, our empirical analysis predominantly draws upon evidence from large-scale international assessments (such as the Progress in International Reading Literacy Study – PIRLS, the Programme for International Student Assessment – PISA, the Trends in International Mathematics and Science Study – TIMSS, and the OECD Survey of Adult Skills – PIAAC). A detailed description of the data sources used in the analyses is presented in Box 2.1. Inevitably, the analyses presented centre on the age cohorts on which these assessments focus: primary and

secondary school students as well as young adults who just transitioned into further education, training or the labour market. No cross-country comparable information is therefore presented on the outcomes of children during the pre-primary school years because of data limitations.

The section begins by documenting the gap in educational attainment, illustrating the percentage of males and females who obtain tertiary and upper secondary qualifications in Norway and comparator countries and noting current and potential future consequences of such disparities, both economic and social. This analysis helps to map the "size" of the problem, both overall and in comparison with the situation faced by other countries. Illustrating that the size of the gender gap in educational attainment is particularly large in Norway compared to other countries and that gender gaps can have negative consequences, represents a call for action for policy-makers and educators in Norway.

The section aims to identify important antecedents that contribute to shape gender gaps in educational attainment. The section adopts a holistic approach and assesses a wealth of educationally relevant indicators that can help identify if, when and how males end up lagging behind females in education. In particular, the section considers achievement, attitudes, self-beliefs and behaviours in primary, lower secondary and young adulthood. Throughout the section, analyses are carried out using large-scale international assessments in order to again allow for comparisons between Norway and other countries. While these analyses do not allow explaining the size of gender gaps in educational attainment in Norway and why this differs compared to other countries, the evidence provided can help identify in which dimensions and according to which indicators Norwegian boys and girls appear to be outliers. As such, it provides useful pointers for the design and implementation of education policies and initiatives that could help close gender gaps in education in Norway.

Since gender is only one of the dimensions that shape academic attainment and achievement, and education policies aimed at raising performance standards are often targeted at specific population groups, detailed analyses illustrate the extent to which gender gaps vary across different groups of the population defined according to socio-economic status and migration background. The section concludes by evaluating how the analysis of the relevant literature and evidence from international large-scale assessments could provide useful policy pointers for Norway.

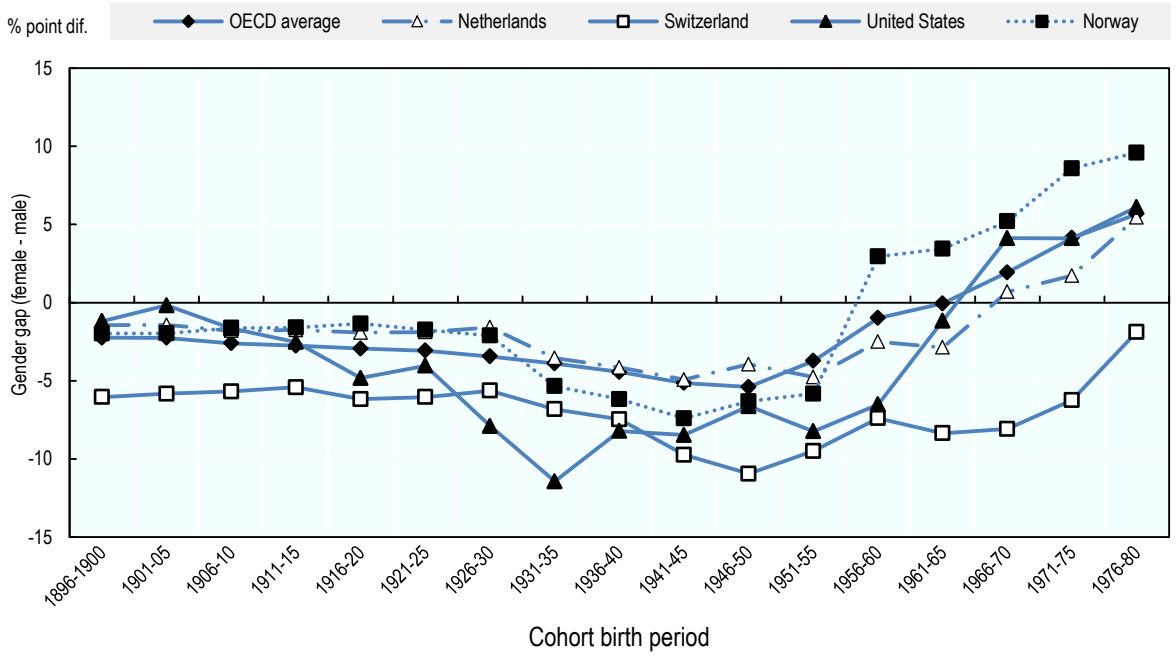
2.2. Reducing and reversing gender gaps in tertiary attainment

2.2.1. *In Norway women overcame men in tertiary attainment earlier than in most other countries*

On average across OECD countries the percentage of working-age adults who completed tertiary education increased from 3% to 22.5% among men and from 1% to 28% among the cohorts that were born at the beginning of the 20th century and those born in the 1980s (Barro and Lee, 2013[1]). Across OECD countries the gender gap in females' tertiary education attainment changed from a male to a female advantage starting among cohorts who were born after 1966. In Norway the reversal occurred a decade earlier, starting for cohorts who were born after 1956. Figure 2.1 illustrates long-term trends in the gender gap in tertiary education attainment for a selected number of OECD countries (detailed data on males' and females' attainment rates and data for all OECD countries are available in Table 1 in Annex A). Figure 2.1 shows the percentage point difference, for cohorts born from 1876 to 1980 in the percentage of males and females who obtained

a tertiary degree. The figure indicates that in most countries a relative male advantage turned progressively into a female advantage. In Norway the advantage in males' participation was comparatively small, grew as participation in tertiary education expanded, but then began to decline rapidly for cohorts born from 1951 onwards.

Figure 2.1. Long-term trends in the gender gap in tertiary attainment

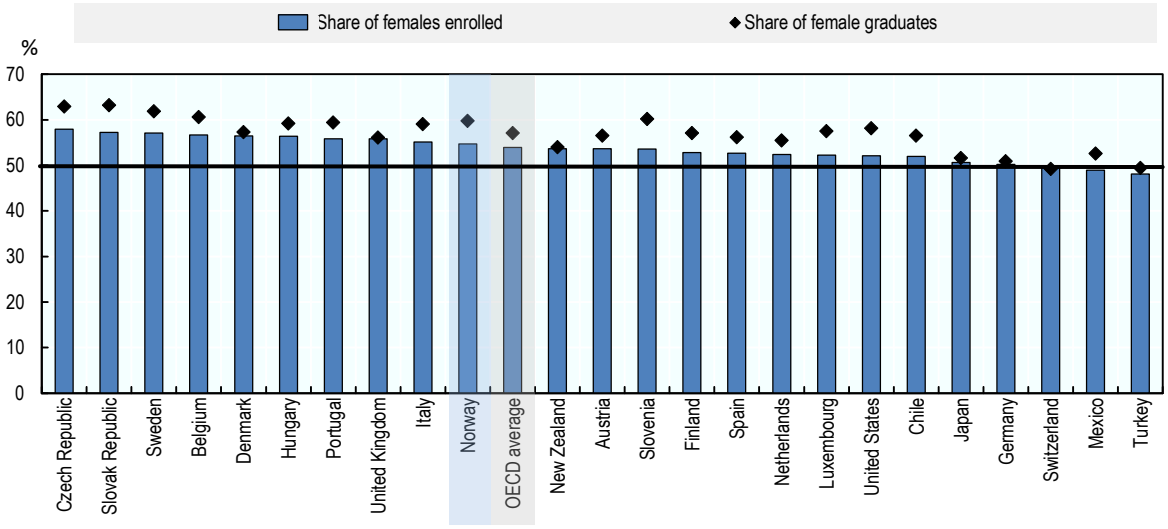


Source: Barro and Lee (2013[1]) "A new data set of educational attainment in the world, 1950-2010", *Journal of Development Economics*, Vol. 104, pp. 184-198, http://dx.doi.org/10.1016/j.jdeveco.2012.10.001.

Data from the OECD's Education at a Glance reveals that women are more likely than men to graduate with a bachelor or equivalent degree and to complete upper secondary school (OECD, 2017[2]). Figure 2.2 illustrates for a selected number of countries, the share of females among those who entered tertiary education for the first time in 2015 and among first-time graduates. In Norway, 60% of first-time tertiary graduates in 2015 were females while on average among OECD countries the share was 57%. Norway is one of the countries with a relatively more unbalanced gender distribution among first-time tertiary graduates together with the Czech Republic, Latvia, the Slovak Republic, Slovenia and Sweden. By contrast Germany and Switzerland, among others, have almost equal number of males and females among first-time tertiary graduates.

Figure 2.2 indicates that gender imbalances are already marked when examining enrolment figures; in 2015, 55% of first-time entrants into tertiary education in Norway were female students, while on average across OECD countries the share was 54%. The fact that in Norway the gender gap in favour of women widens significantly between enrolment and graduation shows that not only are males less likely to enrol, but also that they are more likely than females to drop-out from tertiary education.

Figure 2.2. Share of females among first-time entrants in tertiary education and among first-time tertiary graduates in selected OECD countries (2015)



Source: (OECD, 2017[2]). "Education at a Glance", Indicator A3, http://dx.doi.org/10.1787/888933559313.

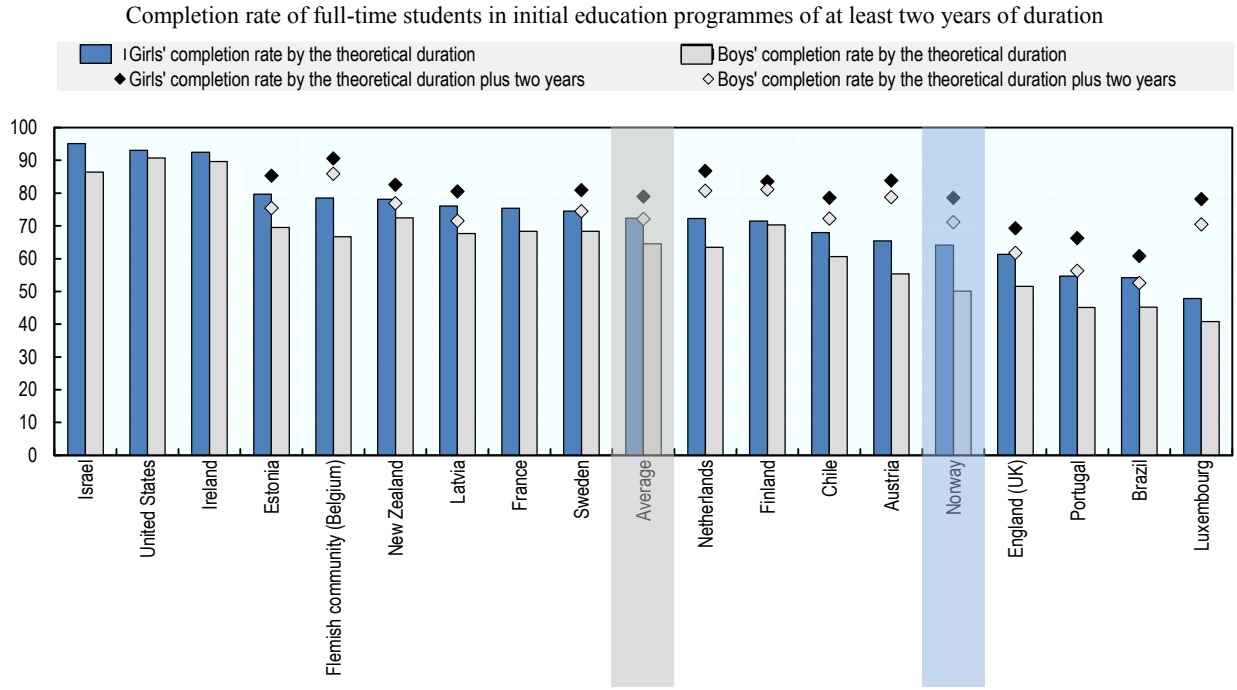
2.3. Gender disparities in secondary school attainment

2.3.1. *In Norway young men are less likely than young women to obtain upper secondary degrees*

Among OECD countries with comparable data, 72% of girls on average graduated from upper secondary education within the theoretical duration of the programme, compared to only 65% of boys. Figure 2.3 shows that Norway is one of the countries in which the gender difference in on-time completion of upper secondary programmes was highest, together with the Flemish Community of Belgium. In both countries the gender gap was greater than 11 percentage points.

In most countries, the gender gap in completion rates decreases after the end of the theoretical duration of programmes, meaning boys tend to have delayed graduation compared to girls. Many factors may contribute to this delay and the causes are likely to vary across countries (OECD, 2015[3]). For example, in some countries boys are more likely to repeat a grade, but grade repetition is not a factor in Norway. On average across countries with available data, 79% of girls and 72% of boys graduate within the two years following the end of the theoretical duration. Other factors may include structural features of the labour market or VET system in Norway. Norway is one of the countries where the closing of the gender gap when considering an additional time frame of two years in upper secondary school completion is most pronounced (about 7 percentage points).

Figure 2.3. Completion rate of upper secondary education, by gender (2015)



Note: The completion rate is calculated as the share of entrants into upper secondary education that have graduated within the specified time frame (theoretical duration or theoretical duration plus two years).
Source: (OECD, 2017[2]), "Education at a Glance", Indicator A9 http://dx.doi.org/10.1787/888933560016.

2.4. Why gender differences in educational attainment matter

Much of the literature on the reversal of traditional gender gaps in educational attainment favouring males in education has focused on girls' better academic performance in compulsory school as a root cause for their increasing tertiary attainment, as well as changes in social institutions that have led to growing economic and labour market returns to education for women (Goldin, Katz and Kuziemko, 2006[4]). These, in turn, have provided a strong incentive for girls to invest in their studies and increase their attainment level.

The reversal of the gender gap in education, with women being more likely than men to obtain tertiary degrees and less likely to have dropped out of education without qualifications (OECD, 2015[3]) has potentially far-reaching consequences.

On the labour market front, modern economies reward the highly educated with higher wages, while adults with no or poor qualifications are at greater risk of being unemployed. OECD-wide, the average unemployment rate among adults who did not reach upper secondary level is 12.4%, but just 4.9% among those with higher education. And full-time workers with upper secondary levels of attainment earn 19% more, on average, than those who did not go that far (OECD, 2016[5]). To the extent that men are more likely than women to finish schooling with no or poor qualifications and are less likely than women to obtain tertiary level qualifications, they may suffer important labour market and economic penalties, particularly in the future, given the importance of high level skills for the labour markets of the future. These penalties may be reduced in

absolute terms if men will continue to have better returns than women given their level of education (OECD, 2016[5]).

Men's lower educational attainment compared to that of women may also have important implications for relationship and family formation (van Bavel, 2012[6]; Schwartz and Han, 2014[7]). Women are less likely than men to form families with a less educated spouse (Therborn, 2004[8]) and poorly educated men are more likely than any other group to remain single (De Hauw, Grow and Van Bavel, 2017[9]). This could be due to gender imbalances in access to education in the past, but may also reflect broader differences in spousal preferences. There is also some evidence that unions characterised by a more educated female spouse tend to be at a higher risk of dissolution. While it remains unknown how changes in broad patterns of relative educational opportunities may shape relationships, the brief evidence presented suggest that there may be important risks associated with males' disadvantage in educational attainment just as there were disadvantages associated with females' lower participation in the past.

2.5. Evidence on the evolution of gender gaps in educational achievement: from primary school into young adulthood

In order to examine if gender gaps in participation in tertiary education and upper secondary school completion reflect the progressively lower chances boys have of making the most of the educational opportunities that are available to them, this section illustrates the evolution of gender gaps in two key domains of academic achievement – literacy and numeracy – and how they evolve between primary school and young adulthood. The aim of this section is to identify similarities and differences between Norway and other countries in how gender gaps evolve using key outcome indicators, while the following sections focus on specific stages of education – primary and secondary schooling – and identify gender gaps in a wide range of measures of academic achievement as well as attitudes, motivation and behaviours.

2.5.1. *In Norway the gender gap in literacy proficiency is comparatively large in primary school, grows during secondary school but vanishes by age 21-22.*

Given the broad similarity of the PIRLS, PISA and PIAAC assessment frameworks for literacy (see Box 2.1) it is possible to map the evolution of gender gaps for the cohort of individuals born between 1990 and 1991. This group of students who sat the PIRLS assessment in 2001, was broadly expected to sit the PISA assessment in 2006 and the PIAAC 2011 assessment at age of 21-22 (the age range was broadened to include 20 to 23 year-olds in PIAAC to have a meaningful sample size). Evidence is available for 14 countries that took part in all three assessments in the relevant editions. Figure 2.4 presents standardised gender gaps in order to allow comparisons across surveys. Results suggest that in Norway, as well as the vast majority of other countries, gender gaps in favour of girls grew from grade 4 (around age 10) to age 15. England, the Netherlands and New Zealand are the only countries where gender gaps tend to remain relatively stable between age 10 and age 15. Figure 2.4 however also shows that between the ages of 15 and 21-22 the gender gap in favour of females is greatly reduced in Norway as well as the majority of countries except for the Netherlands.

Box 2.1. Large-scale international assessments

The Trends in International Mathematics and Science Study (TIMSS)

TIMSS is a large-scale low-stakes assessment of the mathematics and science knowledge of primary and secondary school students. In each participating country a minimum of around 4 500 to 5 000 students take part in the study. The number of participating countries has increased from 41 education systems in 1995 to over 60 in 2015. TIMSS is a grade-based assessment: the science and mathematics test is administered to samples of 4th and 8th graders irrespective of age. The first stage consists in selecting participating schools and the second stage consists of selecting one (or more) intact classrooms from the target grade of each participating school. Contextual data are collected from students and teachers, school principals, and their parents via background questionnaires. TIMSS was first administered in 1995, and has been administered every four years thereafter. Therefore, some of the participating countries have long trend series data spanning 20 years (1995 to 2015). TIMSS takes place every four years. The assessment instruments are curricular in nature.

The Progress in International Reading Literacy Study (PIRLS)

PIRLS is a large-scale low-stakes school-based assessment of the reading literacy of 4th grade students. It has been administered every 4 years since 2001. The number of participating countries has increased from 35 in 2001 to 50 countries in 2016. In 2016 an online assessment of digital reading literacy was administered for the first time. Like TIMSS, PIRLS has a two stage sampling design. The first stage consists in selecting participating schools and the second stage consists of selecting one (or more) intact classrooms from the target grade of each participating school. Contextual data are collected from students and teachers, school principals, and their parents via background questionnaires.

The Programme for International Student Assessment (PISA)

PISA is a triennial large-scale low-stakes standardised assessment conducted since 2000. The number of participating countries has increased from 32 in 2000 to over 70 in 2015. Each PISA cycle assesses three core domains (reading, mathematics and science), one of which constitutes the major domain in a given cycle (reading in 2000 and 2009; mathematics in 2003 and 2012 and science in 2006 and 2015). The major domain receives a larger portion of testing time and questionnaire items tend to focus on students' engagement, attitudes and dispositions towards the main subject domain.

Until 2012, the PISA assessment was administered using printed test booklets containing a range of material from the three core assessment domains and was designed to take around 2 hours to complete. Since 2015 the assessment was delivered by computer. Testing material in PISA is typically organised around subject specific clusters designed to take around 30 minutes to complete and each booklet contains four clusters of test items. Students typically take a break after 1 hour of assessment: in PISA 2000 the booklet was broken into two groups of two clusters each and any question from the first two clusters that were not answered by the student before the break could not be attempted again after the break. In other years, the student was free to move forward and backwards in the test, to strategically solve questions depending on item difficulty, subject and response format, if they so wished. At the end of the two hours, students were

allowed to take an additional half an hour break and were then asked to complete a background questionnaire.

PISA differs from TIMSS and PIRLS because it is an age-based study that collects information from representative samples of students who are enrolled in 7th grade or above and are between 15 years and 3 months and 16 years and 2 months at the time of the assessment administration. This means that "15-year-old" students can be in different grades and different education levels, for example because they may have repeated grades or they may have skipped grades, but they are all in school. Because of the age-based sampling, students can be in different classes and therefore the PISA sampling involves students and schools, not classrooms. Although many countries have samples that are larger than the minimum agreed at the international level (for example to have reliable estimates at the regional/state level), sample size is generally around 150 schools and 4 500 students per country. Like TIMSS and PIRLS the test takes place in a school setting and students typically take the test in a class with other students under supervision. PISA is a problem-based assessment and is not anchored in school curricula. As such students are asked to solve a set of real-life problems expressing real-life situations in which 15 year-olds could be expected to find themselves.

Response rates are high in TIMSS, PIRLS and PISA, and results of countries with response rates that fall below those detailed in the technical standards are not considered comparable with those of other countries (for example in PISA the United Kingdom and the Netherlands in did not meet the target response dates in PISA 2000 and 2003). However, the target population of TIMSS, PIRLS and PISA excludes all students who are not in school. This is not a big problem for the 4th grade samples in TIMSS and PIRLS but poses issues of selectivity in TIMSS grade 8th and PISA. The selectivity of the TIMSS grade 8 and PISA sample (population coverage) varies across countries and determines the extent to which students who were sampled in the two studies can be considered to be representative of the respective grade and age cohorts at the population level. In most countries considered in this report population coverage is high since most students around the age of 14 and 15 are enrolled in school because of compulsory schooling legislation.

The OECD Survey of Adult Skills (PIAAC)

The PIAAC target population is defined as: "all non-institutionalised adults between the ages of 16 and 65 (inclusive) whose usual place of residence is in the country at the time of data collection. Adults are to be included regardless of citizenship, nationality or language". In other words, the target population of country X in PIAAC includes all persons aged 16-65 physically present in X at the date of data collection whose usual place of residence is X, including illegal residents (i.e. persons without a valid residence visa or other authorisation to live in the country), but excludes adults present for short stays (tourists, visitors) and adults residing in institutional settings (prisons, hospitals, aged care facilities and military bases and installations).

PIAAC is a household-based study. Trained interviewers administered the background questionnaire (BQ) and the direct assessment to representative samples of the target population. Achieved samples varied from 3 761 in Northern Ireland to 27 285 in Canada where the sample was designed to provide reliable estimates at provincial level as well as for a range of subgroups of the population such as the indigenous population and linguistic minorities. The BQ took around 40 minutes to complete on average and the

direct assessment, slightly less than an hour. However, no time limit was imposed so respondents could take as much time as they needed to complete the test.

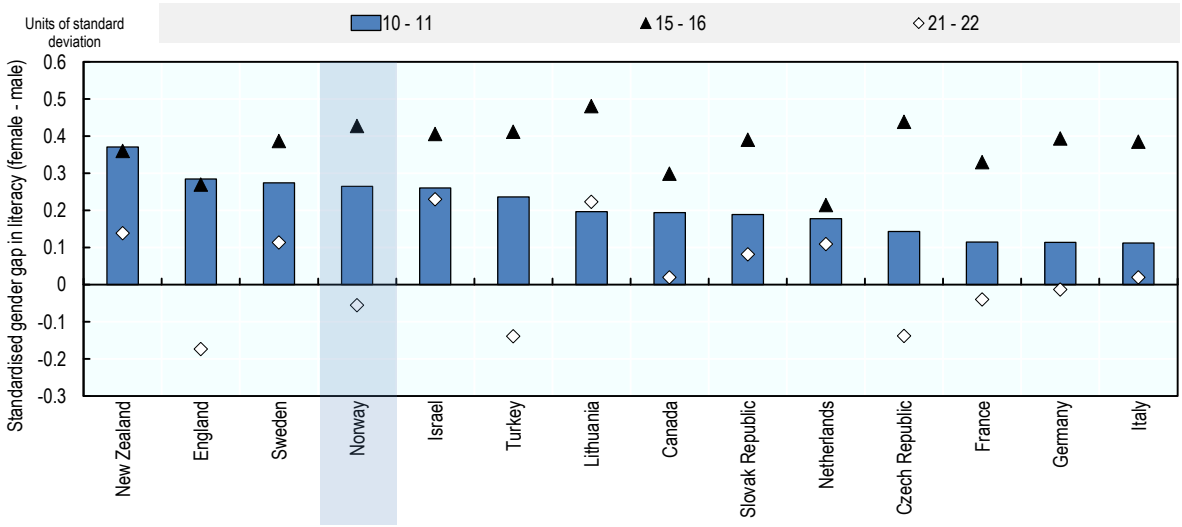
Response rates in PIAAC are lower than in TIMSS, PIRLS and PISA because PIAAC is a household-based study while TIMSS, PIRLS and PISA are school-based. Although response rates in PIAAC are lower than in the three school-based assessments, the population coverage is very high since sample selectivity is limited to the institutionalised population, and therefore the target population reflects the population residing in the country at the time of the test administration. Response rates vary greatly across countries, and ranged between 45% in Sweden to 75% in Korea (detailed information on response rates for individual countries can be found in the PIAAC technical report).

Response bias analyses conducted to validate the quality of the PIAAC data indicate that non-respondents share common background characteristics to respondents. Furthermore, hard to reach individuals (defined as those for whom several contact attempts by the interviewers had to be made to achieve participation) do not appear to have different levels of literacy and numeracy from those individuals whose participation did not require additional effort from the interviewers. These may be due to compensating effects: low skilled individuals may be less likely than others to be willing to sit a test because they might fear test like situations. However, the opportunity cost of time is higher among the highly skilled, who therefore may be less willing to participate in a survey like PIAAC.

The PIAAC assessment frameworks place a strong emphasis on the notion of literacy and situate test questions in real-life contexts. The assessments are designed, piloted and field trialled to be valid cross-culturally and cross-nationally.

Figure 2.4. The evolution of gender gaps in literacy

Gender gaps among the cohort of individuals born between 1990 and 1991 by age period

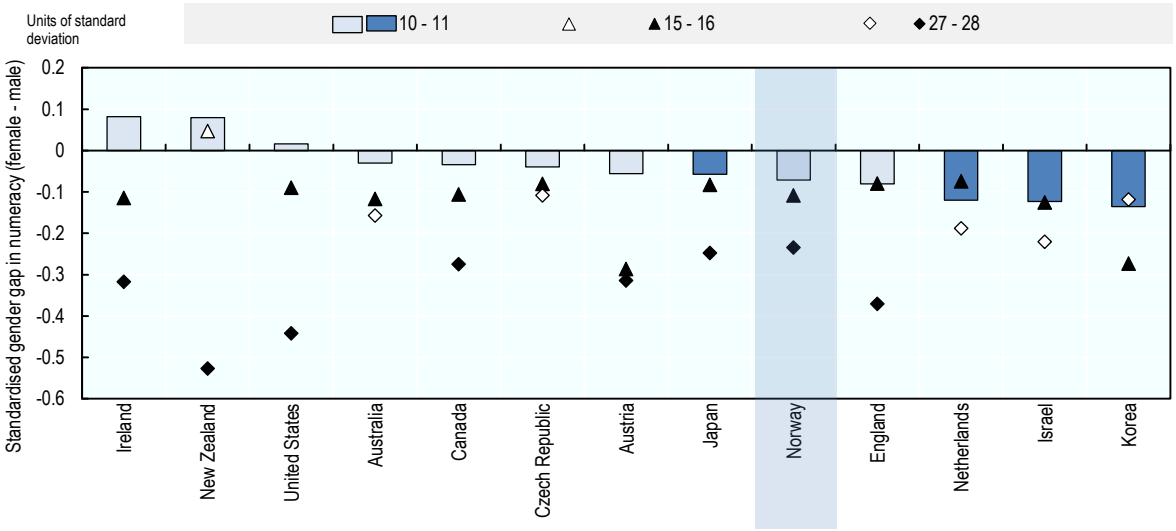


Note: All gaps for the age groups 10-11 and 15-16 are statistically significant, while all gaps for the age group 21-22 are not statistically significant.
Sources: Adapted from OECD, PISA 2006 database (http://www.oecd.org/pisa/data/), PIAAC 2012 and 2015 databases (http://www.oecd.org/skills/piaac/) and PIRLS 2001 database (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

A similar exercise can be carried out to assess numeracy skills in TIMSS, PISA and PIAAC for the cohort of individuals born between 1984 and 1985. This group of students sat the TIMSS assessment in 1995, was broadly expected to sit the PISA assessment in 2000 and the PIAAC assessment at the age of 27-28[1]. Evidence is available for 13 countries that took part in all three assessments in the relevant editions. Figure 2.5 presents standardised gender gaps in order to allow comparisons across surveys. Results suggest that in Norway, as well as the vast majority of other countries, gender gaps in favour of boys were not statistically significant at the age of 10, but they became significant at the age of 15. In New Zealand, the gap remained non-statistically significant also at the age of 15 and in the Netherlands; it was significant but smaller than the gap at the age of 10. Figure 2.5 also shows that in the majority of countries, and in Norway, the numeracy gap in favour of males became even larger by the age of 27-28.

Figure 2.5. The evolution of gender gaps in numeracy

Gender gaps among the cohort of individuals born between 1984 and 1985 by age period



Note: Statistically significant gender gaps are marked in a darker tone.
Sources: Adapted from OECD, PISA 2000 database (http://www.oecd.org/pisa/data/), PIAAC 2012 and 2015 databases (http://www.oecd.org/skills/piaac/) and TIMSS 1995 database (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

2.5.2. *The emergence of gender differences in primary school*

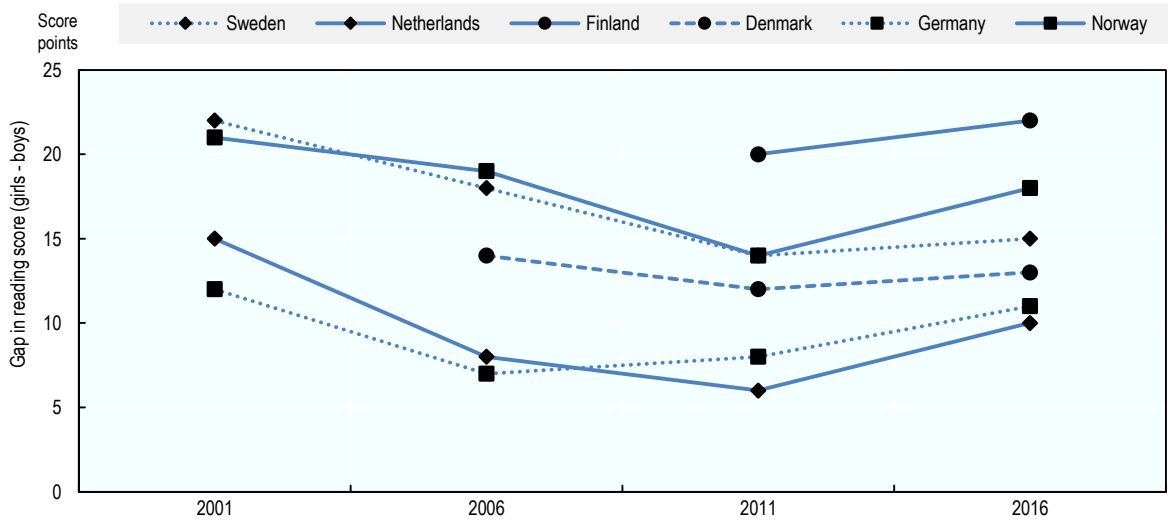
PIRLS and TIMSS grade 4 results can be used to evaluate gender gaps in reading and mathematics during primary school. Given that PIRLS and TIMSS are standardised to have a mean of 500 and a standard deviation of 100, 10 points in the PIRLS and TIMSS scales correspond to around 10% of a standard deviation.

[1] The age range was broadened to include 25 to 30 year olds in PIAAC to have a meaningful sample size.

Gender gaps in reading are very wide in Norway at the primary school level

Figure 2.6 indicates that in 2016, 4th grade girls outperformed 4th grade boys by 18 points in the PIRLS reading assessment in Norway, a difference of about one fifth of a standard deviation. The gender gap is similar to the one estimated in the first two rounds of PIRLS in 2001 and 2006, while in 2011 it was reduced to 14 points. Figure 2.7 shows that the scores of 4th grade boys and girls have been improving in Norway, but the distance between them has remained somewhat constant except in 2011.

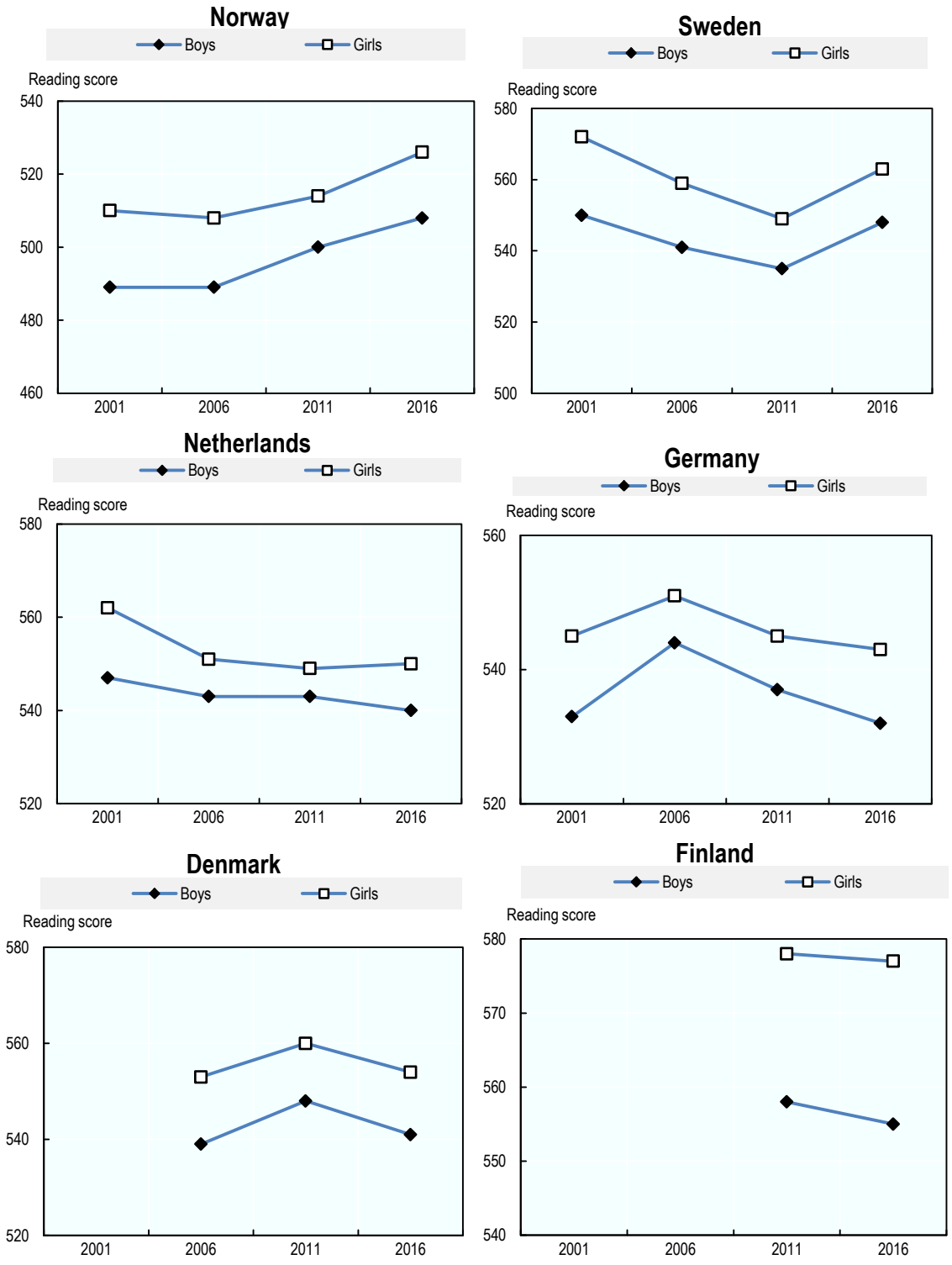
Figure 2.6. Trends in the gender gap in reading among 4th grade students



Note: Statistically significant gender gaps are marked in a darker tone.
Sources: Adapted from PIRLS 2001, PIRLS 2006, PIRLS 2011 AND PIRLS 2016 databases. (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

Similar results are observed for other Nordic countries: Finland had the largest gap among Nordic countries also in the PIRLS reading assessment. In Finland, 4th grade girls outperformed 4th grade boys by 22 points in the PIRLS reading assessment of 2016 (about one fifth of a standard deviation). Interestingly gender gaps in primary school remained stable during a time when overall performance levels increased.

Figure 2.7. Trends in the reading proficiency of 4th graders, by gender



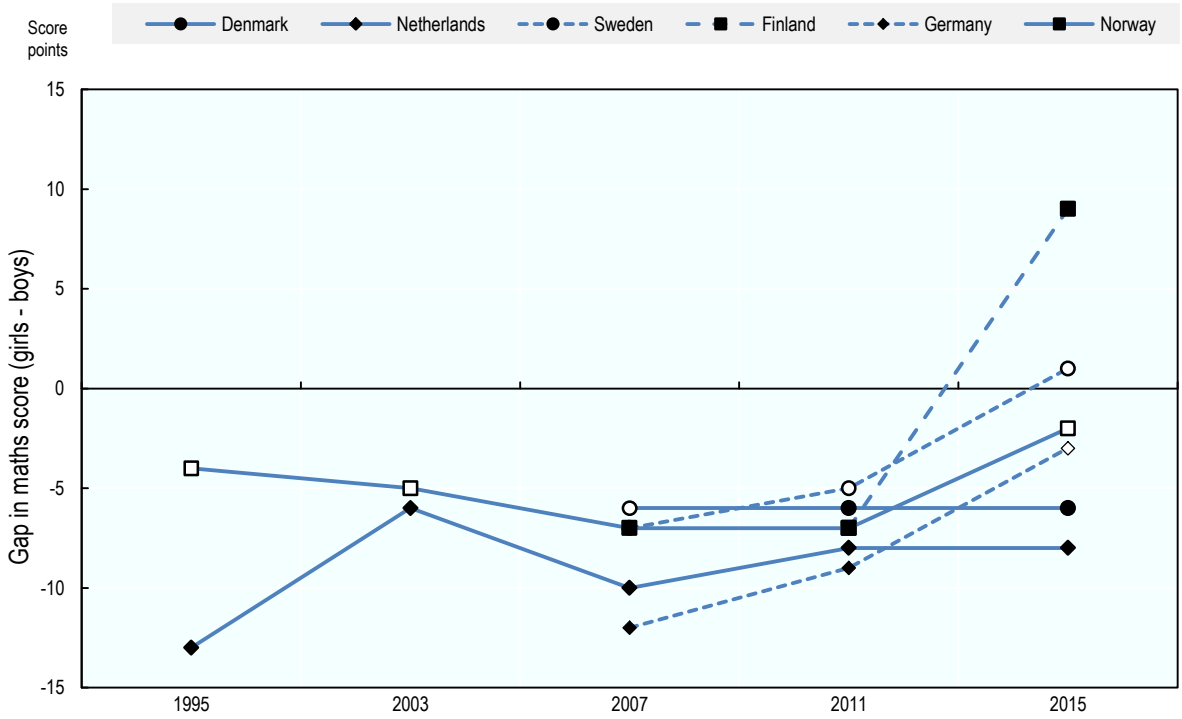
Note: Gender gaps were statistically significant for each country in each year.

Sources: Adapted from PIRLS 2001, PIRLS 2006, PIRLS 2011 AND PIRLS 2016 databases, (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

Gender gaps in mathematics in favour of boys are smaller in Norway than in other countries at the primary school level

In the first two TIMSS rounds, there was no statistically significant difference in the maths scores of 4th grade boys and girls in Norway. In the 2007 survey, 4th grade boys outperformed 4th grade girls by about 7 score points. Figure 2.8 shows that between 2007 and 2015, the gap decreased and became non-statistically significant. Figure 2.9 shows that boys outperformed girls because their scores rose more steeply between 2003 and 2011. By contrast, between 2011 and 2015, girls' scores remained the same, while boys' decreased, thereby closing the gap in mathematics.

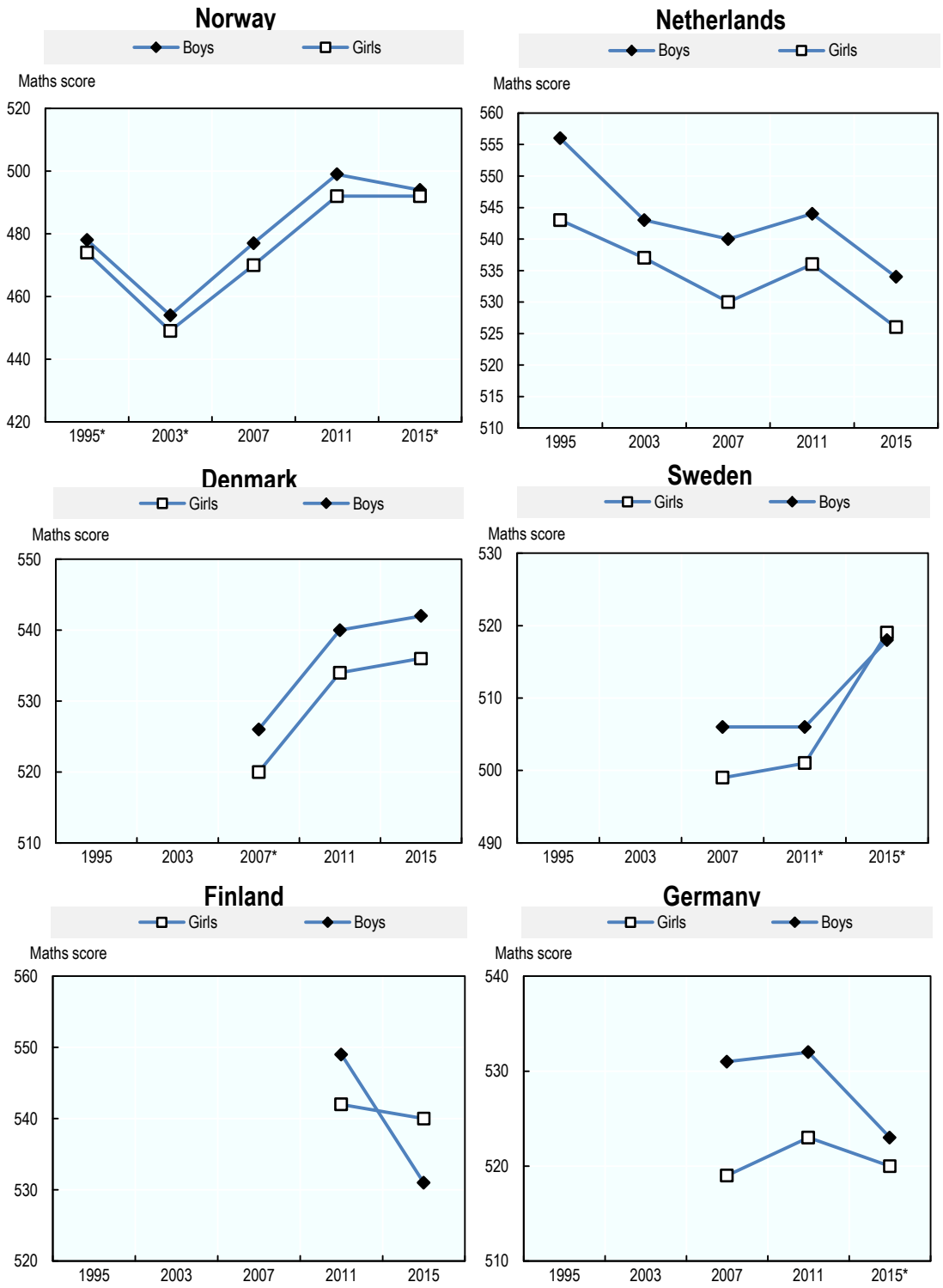
Figure 2.8. Trends in the gender gap in maths among 4th grade students



Note: Statistically significant gender gaps are marked in a darker tone.
Sources: Adapted from TIMSS 1995, TIMSS 2003, TIMSS 2007, TIMSS 2011, and TIMSS 2015 databases, (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

The gender gap in mathematics among 4th grade students differed widely across Nordic countries. In Sweden, the trend was similar as in Norway, except the gap in favour of boys closed in 2011 already, as a result of girls' scores rising faster than the ones of boys. In Denmark, the gap remained constant across TIMSS rounds. In Finland, the gap went from a 7-point advantage for boys in 2011 to a 9 point disadvantage in 2015.

Figure 2.9. Trends in the maths proficiency of 4th graders, by gender



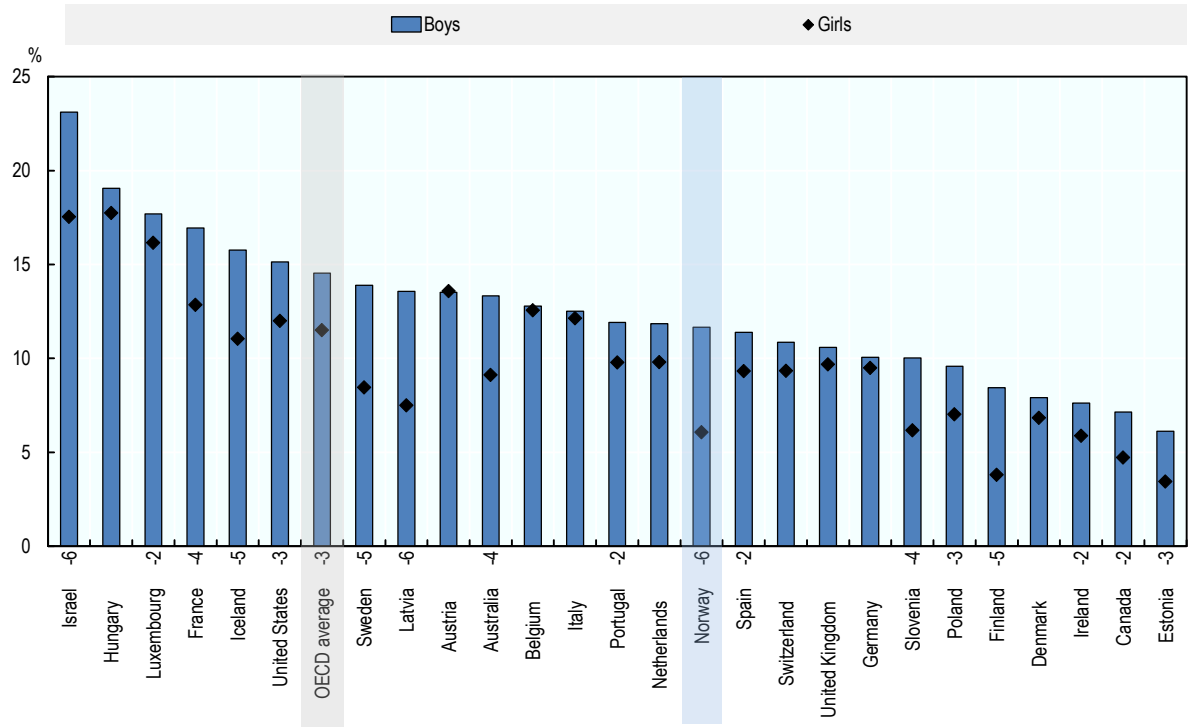
Note: Gender gaps are statistically significant in all years except those marked with an asterisk next to them.
Sources: Adapted from TIMSS 1995, TIMSS 2003, TIMSS 2007, TIMSS 2011, and TIMSS 2015 databases, (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

2.5.3. *Gender differences in academic performance in the teenage years*

Norway has one of the largest gender gaps in the percentage of all-round low achievers

Evidence from PISA data reveals that 15-year-old boys are more likely than girls to be all-round low achievers (OECD, 2016[10]). In other words, they are more likely to perform below the baseline level of proficiency[2] in all three subjects tested in PISA assessments: reading, mathematics and science. The sizeable number of boys who fail to make the grade in PISA assessments is a major challenge for education systems (OECD, 2015[3]). Pupils who perform poorly in all subjects are hard to motivate and keep in school because there is very little that teachers, school principals and parents can build on to promote improvement. They may also come to feel disconnected and find it easier to build an identity based on rebellion against school and formal education than to engage and make the effort needed to break the cycle of poor performance and low motivation.

Figure 2.10. Percentage of all-round low achieving 15-year-old students, by gender in selected countries (2015)



Note: Statistically significant differences between male and female students are reported next to country names.
Source: Adapted from OECD, PISA 2000 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

[2] The PISA proficiency Level 2 is considered the level at which students are able to fully benefit from society as 15-year-olds and are well placed to do so in the future as adults.

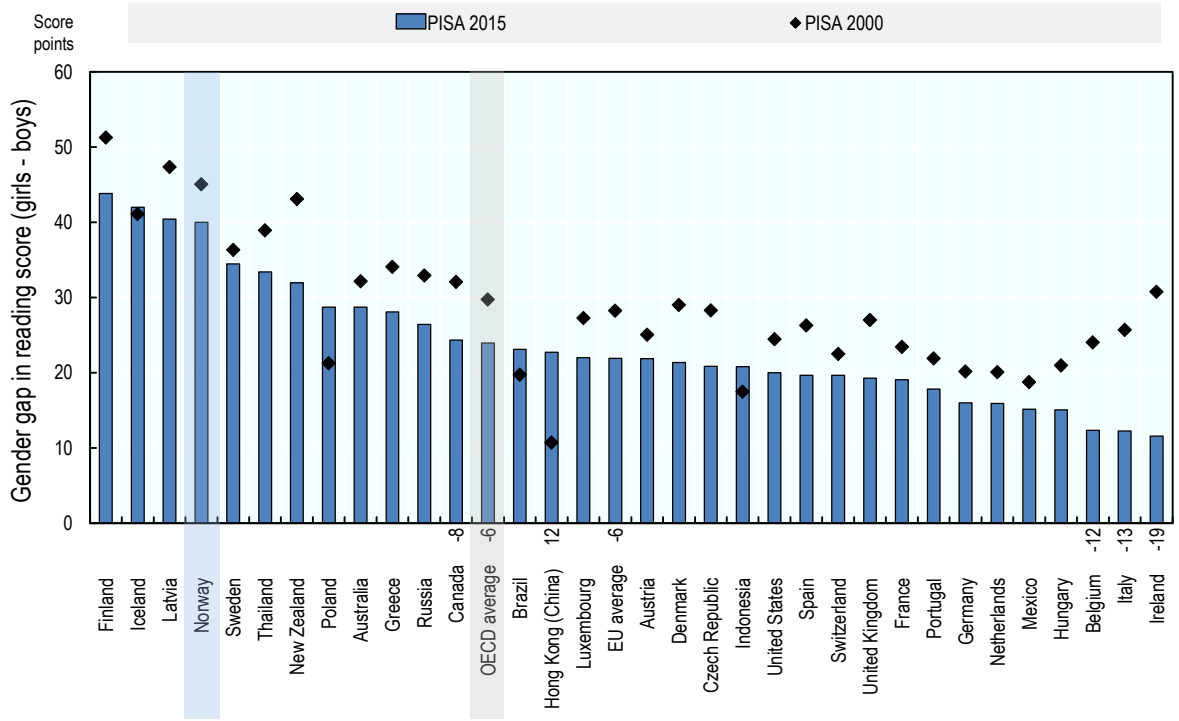
Figure 2.10 suggests that in Norway, about 12% of boys, compared with 6% of girls were all-round low achievers in PISA 2015. In fact, in Norway few students overall were low achievers in the three key PISA domains in 2015, but that the gender gap was wider than in most other countries because the low overall number was primarily driven by the extremely low percentage of girls who failed to make the grade in all three subjects. In countries like, Denmark, Germany, the Netherlands, Switzerland and the United Kingdom there was no gender gap and comparatively few students overall who failed to make the grade in the core competencies measured in PISA. By contrast, in Greece, Israel, Korea, Latvia, Norway, Sweden and Turkey, the gender gap was greater than 5 percentage points.

Norway has one of the largest and most persistent gender gaps in reading

Data from PISA 2015 reveal that 15-year-old girls outperform 15-year-old boys in reading by 40 score points (almost half of a standard deviation). Among Nordic countries, the gap was larger in Finland (44 points) and Iceland (42 points), while it was smaller in Sweden (35 points) and almost half in Denmark (21 points). On average across OECD countries, the gap was 24 score points.

Figure 2.11 reveals that the gender gap in reading in Norway was even larger in PISA 2000 (45 points), although there was no statistically significant reduction between 2000 and 2015. Figure 2.11 also shows that the size of the gender gap varies greatly across countries and that the gender gap was greatly reduced in Belgium, Canada, Ireland and Italy. Germany and the Netherlands are two countries with consistently below-average gender gaps in reading performance in PISA. The gender gap in reading in Germany and the Netherlands was 20 score points in 2000 and 16 points in 2015.

Figure 2.11. Trends in estimated gender gaps in reading in PISA between 2000 and 2015



Notes: All gender gaps are statistically significant. Statistically significant differences between PISA 2015 and PISA 2000 are reported next to country names.
Sources: Adapted from OECD, PISA 2000 and 2015 databases, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

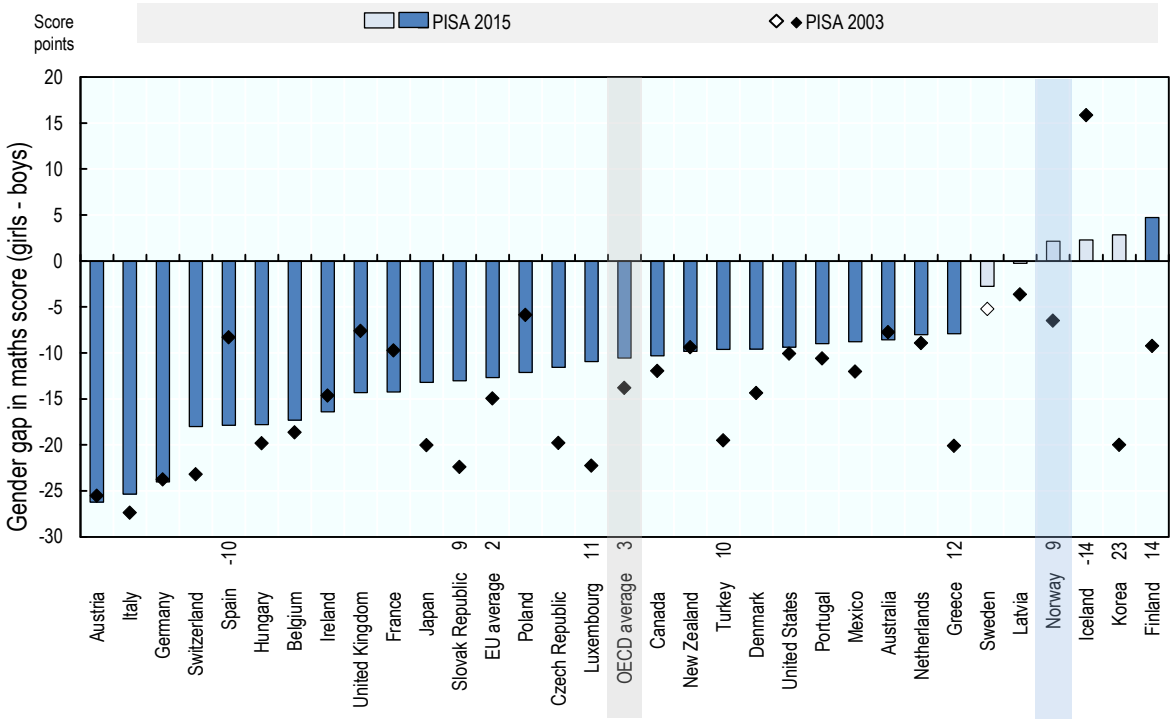
The gender gap in mathematics in favour of boys has closed over time in Norway

In PISA 2003[3], 15-year-old boys in Norway outperformed 15-year-old girls in the mathematics assessment by almost 6 score points. Between 2003 and 2015, the gap decreased by 9 score points, so that in PISA 2015 there was no statistically significant difference in the maths scores of 15-year-old boys and girls. The only other OECD countries where the gender gap in maths scores in PISA 2015 was also non-statistically significant are Iceland, Korea, Latvia and Sweden.

Figure 2.12 reveals that in Nordic countries gender differences in maths scores have been consistently lower compared to the OECD average. However, the size of the gender gap in mathematics and the way it changed over time were markedly different. In Denmark, boys scored almost 10 points more than girls in maths in PISA 2015 (compared to the OECD average of 11), a difference that was similar to the one in 2003. In Finland, the gender gap reversed between 2003 and 2015, changing form a 9-point advantage for boys to a 5-point disadvantage. In Sweden, the gap in 2003 was relatively small and it closed in 2015, as it did in Norway. By contrast, Iceland was the only country where girls outperformed boys in PISA 2003, and by as much as 16 score points. However, this gap was closed between 2003 and 2015.

[3] PISA 2003 was chosen as the base year because it was the first year in which the assessment framework for mathematics was fully developed.

Figure 2.12. Trends in estimated gender gaps in mathematics in PISA between 2003 and 2015

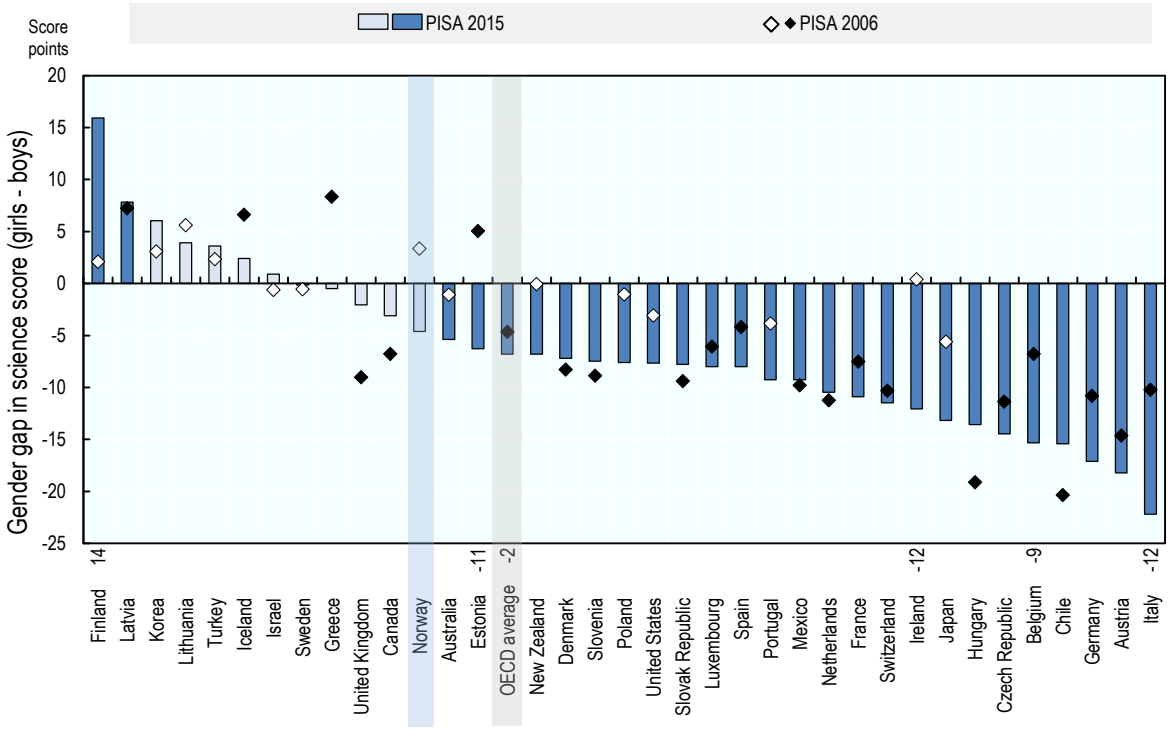


Notes: Statistically significant gaps are marked in a darker tone. Statistically significant differences between PISA 2015 and PISA 2003 are reported next to country names.
Sources: Adapted from OECD, PISA 2003 and 2015 databases, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

Boys and girls have similar science scores in Norway

The PISA science assessment measures "students' ability to engage in reasoned discourse about science and technology, which requires the competence to explain phenomena scientifically, evaluate and design scientific inquiry, and interpret data and evidence scientifically". In PISA 2015, there were no gender gaps in science scores in Norway, and the estimates remained stable between 2006 and 2015. As was the case with reading and maths scores, Sweden recorded similar gender gaps in science as Norway, while results for other Nordic countries are markedly different. In Denmark, the male advantage in science scores was similar to the OECD average and it did not vary significantly between 2006 and 2015. In Iceland a small, but statistically significant gender gap in favour of boys in science in 2006 was closed between 2006 and 2015. By contrast, in Finland there was no gender gap in science in 2006, while in 2015, boys scored 16 points higher than girls. This is in contrast with the trend in gender gaps in maths, which went from an advantage of 9 points for boys to a 5-point disadvantage.

Figure 2.13. Trends in estimated gender gaps in science in PISA between 2006 and 2015



Notes: Statistically significant gaps are marked in a darker tone. Statistically significant differences between PISA 2015 and PISA 2006 are reported next to country names.
Sources: Adapted from OECD, PISA 2006 and 2015 databases, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

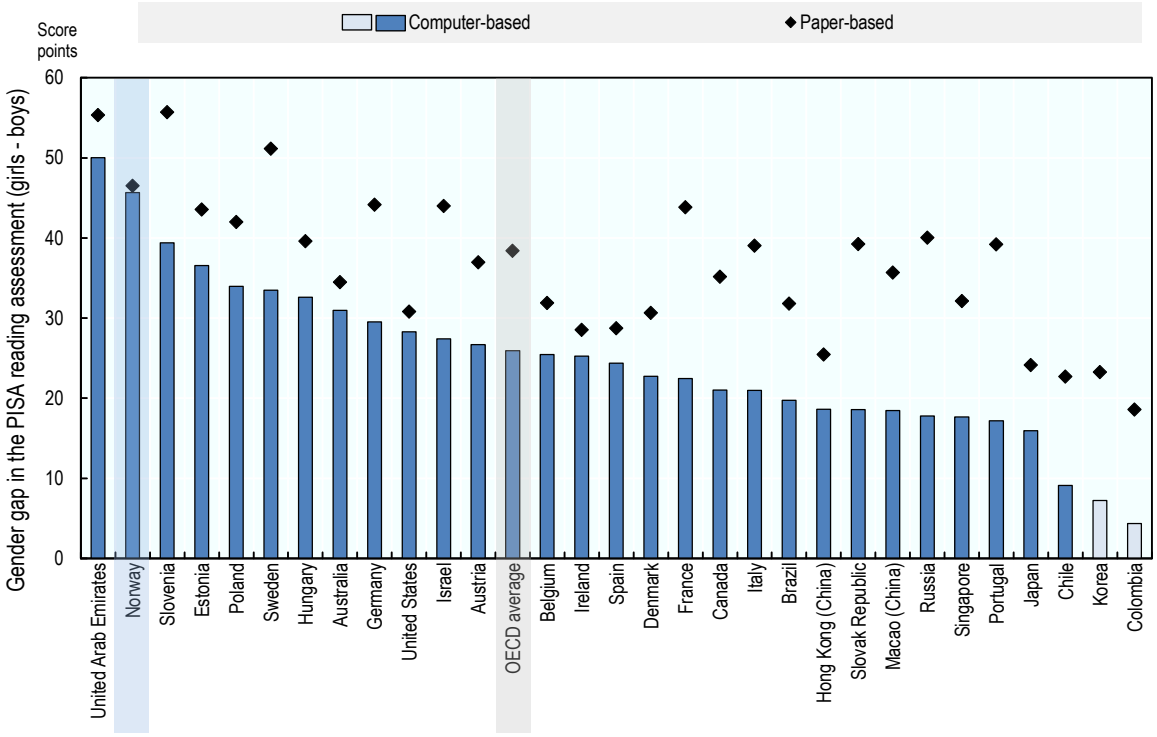
Gender gaps in reading in Norway are identical in paper- and digital-based tasks

In 2012 in a number of countries, students participating in the PISA assessment took a digital reading assessment in addition to the traditional paper-based version. It is therefore possible to identify in a precise way how the gender gap in reading depends on the mode of delivery but also, and importantly, on the type of reading tasks students are confronted with since the reading tasks presented in the digital reading assessment were different from those administered in the print-reading assessment.

Technological changes have modified the world in which students grow and learn and by so doing are changing the skills students need to master and the ways in which they need to be able to express their knowledge. As digital technologies and their use become pervasive, teenagers are increasingly required to apply their skills to read digital material to solve problems on computers (Coiro et al., 2008[11]; Kemp, 2011[12]; Wirth and Klieme, 2003[13]). The change in the medium of delivery of texts, from paper to electronic, from page to screen, is also changing the skills that students need to master (Goldman et al., 2012[14]; Leu et al., 2015[15]). When accessing digital material, students are not only required to comprehend and interpret extended pieces of continuous texts e including literary texts, but also to deploy information-processing strategies such as analysing, synthesising, integrating and interpreting relevant information from multiple texts and information sources (Rouet, 2013[16]; Spiro, 2015[17]).

Figure 2.14 illustrates that in the majority of countries with available data, the gender gap in favour of girls in digital reading is narrower than the gender gap in reading printed texts, but that this is not the case in Norway. In fact, Norway is the country among those with available data with the second widest gap in digital reading after the United Arab Emirates and, crucially, no difference in the extent to which the gender gap differs according to whether the test focuses on the text comprehension skills that are necessary in a paper-based world or the additional skills that need to be employed when processing digital texts. In France, Italy, Portugal, Russia, the Slovak Republic and Sweden the gender gap is considerably narrowed when considering digital reading.

Figure 2.14. The gender gap in print and digital reading, evidence from PISA 2012



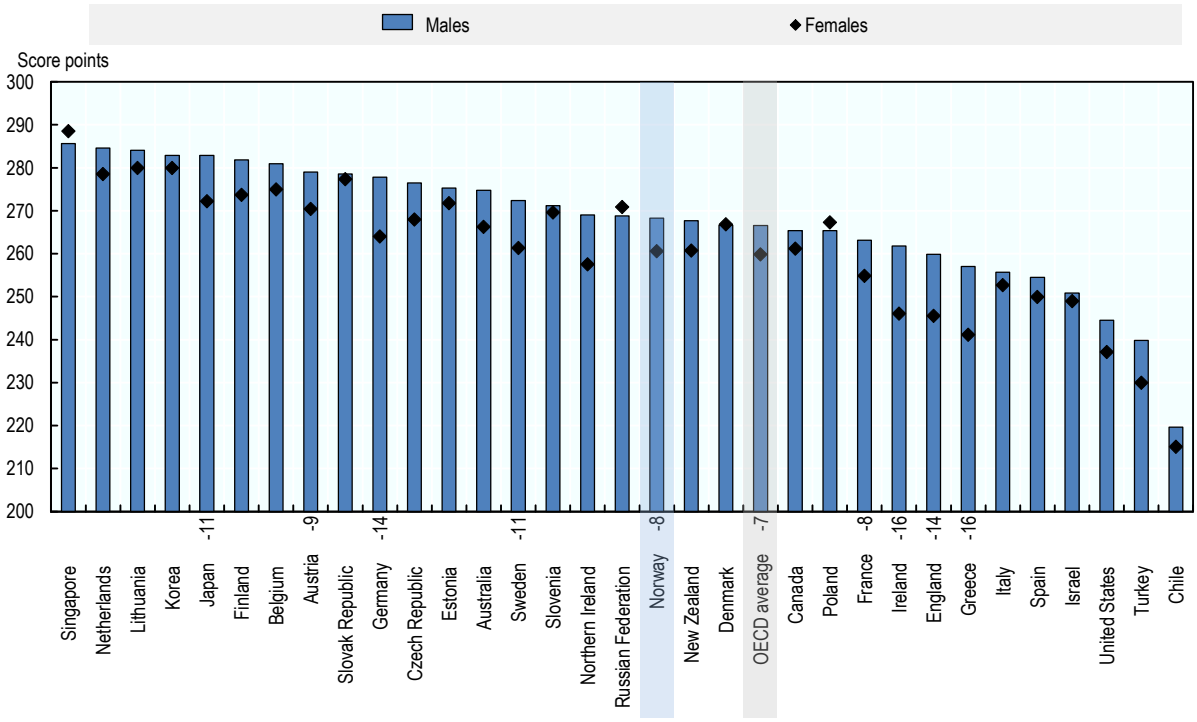
Note: Statistically significant gender gaps are marked in a darker tone.
Source: Adapted from OECD, PISA 2012 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

In Norway, like in other countries, there is some evidence that gender gaps may differ in school- and home-based assessments

PISA suggests that there are important differences in the reading competences of boys and girls, with a large and pervasive advantage for girls in most countries and especially in Norway. Figure 2.15 however shows that no such gap emerges when examining the literacy proficiency of 16-20 year-old boys and girls in PIAAC. Only in Germany there is a gender gap and, in fact the gap is in favour of young males rather than young females. Given the broad similarity between the PISA reading and the PIAAC literacy assessments (for a comprehensive discussion on the comparability of the PISA reading and the PIAAC literacy assessments see (Borgonovi et al., 2017[18])), these results, together with the evidence presented in previous sections, are of potential great policy relevance. Borgonovi and co-authors show that differences in target population, differences in the

assessment content, differences in response formats or mode of delivery do not explain the very different results on gender gaps estimated in the two surveys (Borgonovi et al., 2017[18]). While further work evaluating the impact of the test length, response rates and treatment of missing answers should be undertaken, the evidence from the two surveys, if confirmed would appear to suggest that gender gaps in text comprehension skills may depend, at least in part, from test conditions and therefore that boys' disadvantage in school-based assessments may reflect not just differences in cognitive skills but also (and crucially) differences in engagement and motivation with school-based tests. Therefore, changes in how skills and competences are assessed and/or interventions that educate boys to display their full level of proficiency could help narrow gender gaps.

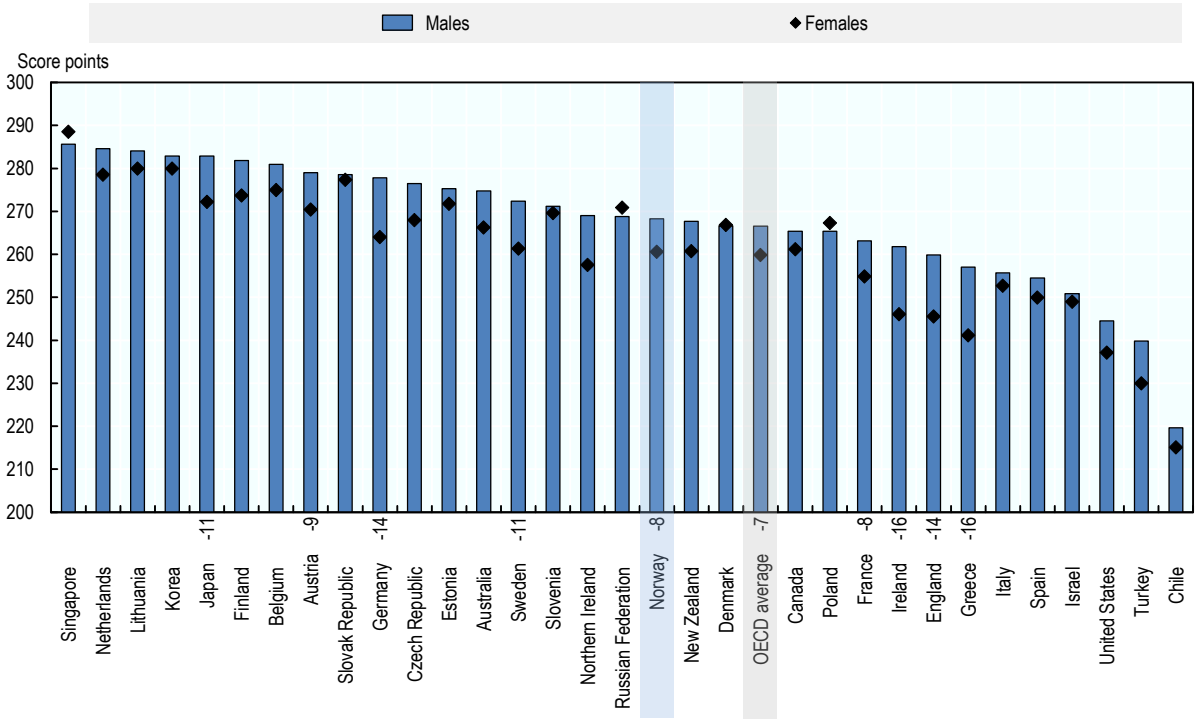
Figure 2.15. Literacy scores of 16-20 year-olds in PIAAC, by gender



Note: Statistically significant differences between males and females are reported next to country names.
Sources: Adapted from OECD, PIAAC 2012 and 2015 databases, (http://www.oecd.org/skills/piaac/) (accessed 15 June 2018).

Figure 2.16 is broadly in line with results based on PISA, since it indicates that in some countries young males display an advantage in numeracy skills compared to young females. In Norway, male 16-20 year-old individuals score 8 points higher than females of the same age in the PIAAC numeracy assessment, whereas in PISA they have statistically identical numeracy scores. These results also suggest that the gender gap in numeracy is related to test content and conditions.

Figure 2.16. Numeracy scores of 16-20 year-olds in PIAAC, by gender



Note: Statistically significant differences between males and females are reported next to country names.
Sources: Adapted from OECD, PIAAC 2012 and 2015 databases, (http://www.oecd.org/skills/piaac/) (accessed 15 June 2018).

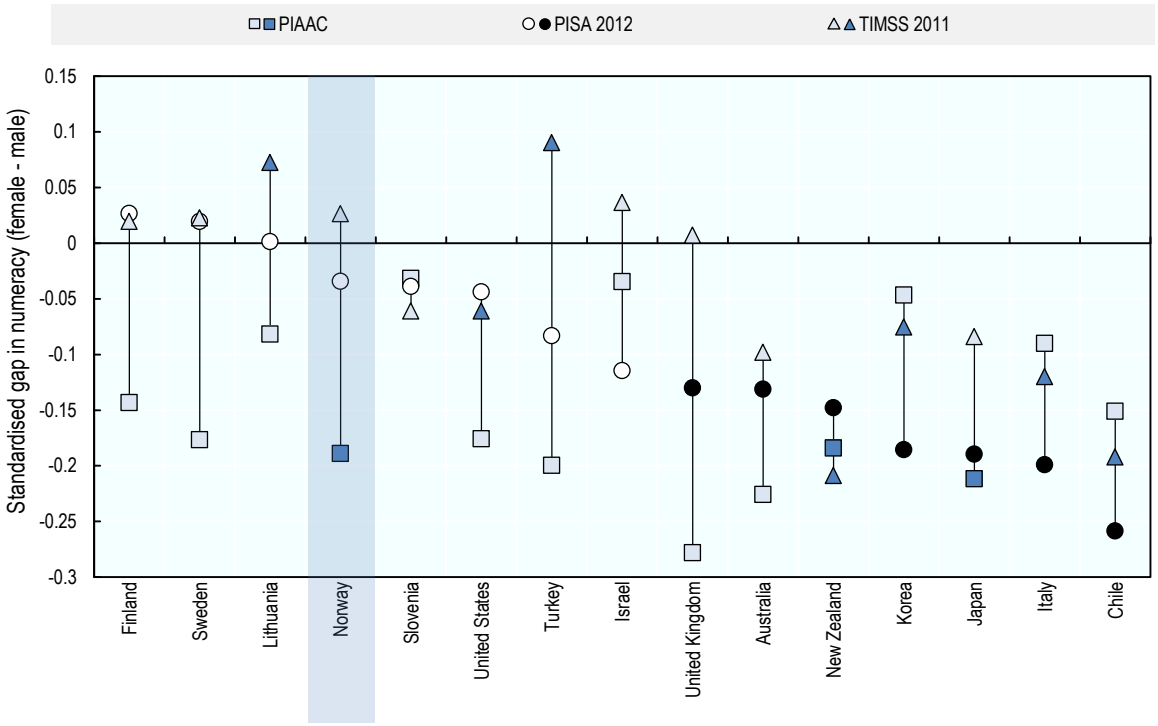
PISA and PIAAC share common assessment principles, most notably the fact that assessment questions are embedded in real-life problems and situations and that neither literacy nor numeracy follow a particular curriculum [see (Borgonovi et al., 2017[18]) for a detailed analysis of similarities and differences between PISA and PIAAC]. TIMSS grade 8 is a school-based assessment like PISA and is conducted on a similar sample of students. However, contrary to PISA the test is curricular in nature rather than problem-based.

Figure 2.17 presents standardised gender gaps in numeracy scores for groups of students who had broadly the same age and took the three assessments between 2011 and 2012[4]. Results reveal that in many of the countries represented in Figure 2.17, boys' relative strength is when they are tested in PIAAC while girls tend to perform better in TIMSS and PISA. In Norway, there was no statistically significant difference in the numeracy scores of boys and girls in PISA and TIMSS, while in PIAAC males scored almost one fifth of a standard deviation above females. Gender gaps in PIAAC (a household-based assessment) differ completely from those in PISA and TIMSS (school-based assessments)

[4] For the PISA 2012 and the TIMSS 2011 results, only students who were born in 1996 or 1997 were considered. So the sample included individuals who sat TIMSS 2011 at the age of 14 to 15 and individuals who sat PISA 2012 at the age of 15 to 16. In the case of PIAAC, the age range was expanded to 16 to 20 in order to have sufficiently large sample sizes. In the majority of countries, the assessment occurred in 2012, while in round 2 countries, it occurred in 2015.

even though the assessment framework for PISA and PIAAC are arguably closer than the assessment frameworks of PISA and TIMSS. Similar results are estimated for Sweden and Finland, although the gender gap in PIAAC is large but non-statistically significant due to sample size issues.

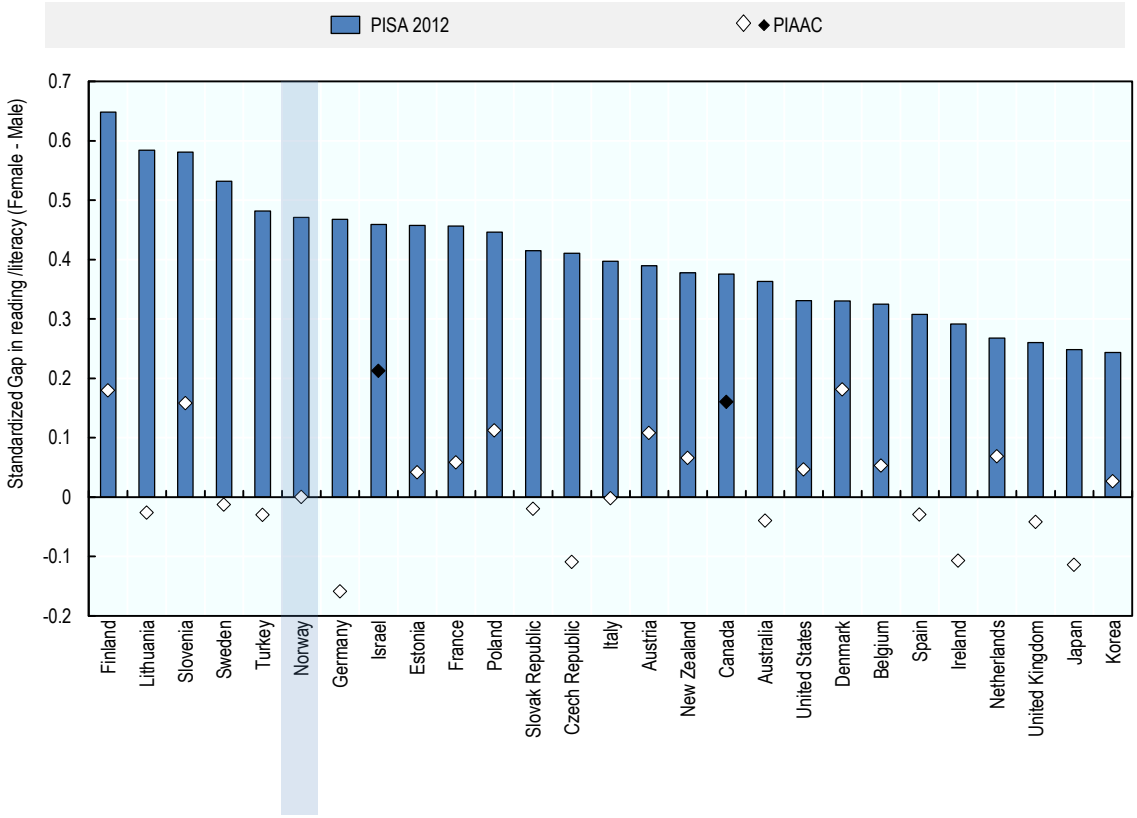
Figure 2.17. Gender gaps in numeracy scores, by international survey



Notes: Statistically significant gender gaps are marked in a darker tone. For the PISA 2012 and the TIMSS 2011 results, only students who were born in 1996 or 1997 were considered, while for the PIAAC results the age range was expanded to 16 to 20 in order to have sufficiently large sample sizes. Data for the United Kingdom exclude Scotland in all the surveys and in PIAAC Wales is also excluded because of lack of data.
Sources: Adapted from OECD, PISA 2015 (http://www.oecd.org/pisa/data/), PIAAC 2012 and 2015 (http://www.oecd.org/skills/piaac/) and TIMSS 2011 databases (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

Similar evidence based on the comparison between gender gaps observed when 16 year-olds in the PISA sample and 16-20 year-olds participating in PIAAC reveal that the gender gap in literacy is very large in Norway in the school-based PISA test (like in other countries). By contrast, the gender gap in literacy in the PIAAC test is imprecisely estimated (due to the small sample size) but is close to 0 and is statistically significantly different from the estimate observed in PISA.

Figure 2.18. Gender differences in literacy between PISA and PIAAC



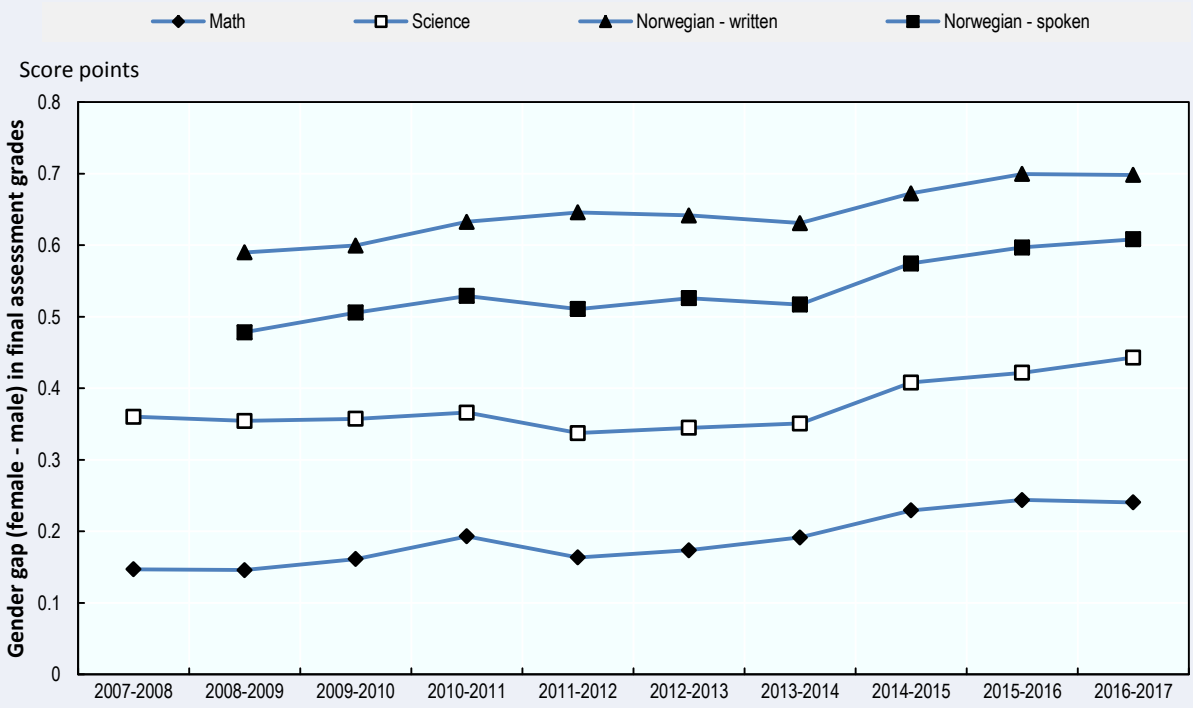
Notes: Statistically significant gender gaps are marked in a darker tone.
Data for the United Kingdom exclude Scotland in PISA and in PIAAC Wales is also excluded because of lack of data. Data for Belgium refer to the Flemish Community in PISA and Flanders in PIAAC.
Sources: Adapted from OECD, PISA 2012 (http://www.oecd.org/pisa/data/), PIAAC 2012 and 2015 (http://www.oecd.org/skills/piaac/) databases (accessed 15 June 2018).

Box 2.2. Gender gaps in Norwegian national assessments

Results from PISA reveal that among teenagers in Norway, girls have a large and persistent advantage in reading compared to boys, that the gender gap in maths in favour of boys has closed over time, and that girls and boys have similar scores in science. Previous sections have shown that gender gaps can vary substantially according to the test in which they are measured. The relative performance of boys vis-á-vis girls could therefore differ when measured in the context of national examinations or in classroom assessments.

In Norway, at the end of year 10, students are assigned a final assessment grade for each subject they attended in school. The marking scale runs from 1 to 6 and the grade reflects students' achievements in class throughout the year. Figure 2.19 reports the gender gap in final assessment grades between 2007 and 2017 by subject. Figure 2.19 reveals that in the past decade, girls have consistently outperformed boys in all key subjects (Figure 2.19 does not present grades in all school subjects but presents subjects that are also tested in large-scale assessment initiatives such as TIMSS, PIRLS, PISA and PIAAC). Girls' advantage is also present in maths and science, subjects where PISA reveals that there is no gender gap or the gender gap favours boys. The largest gender gap is in written Norwegian and is as large as 0.7 point. The data confirm the trend observed in the context of PISA, in which over time the relative performance of girls has improved in all 3 subjects. Excluding science, all gender gaps in final assessment grades in favour of girls have grown by 0.1 point between 2007 and 2017.

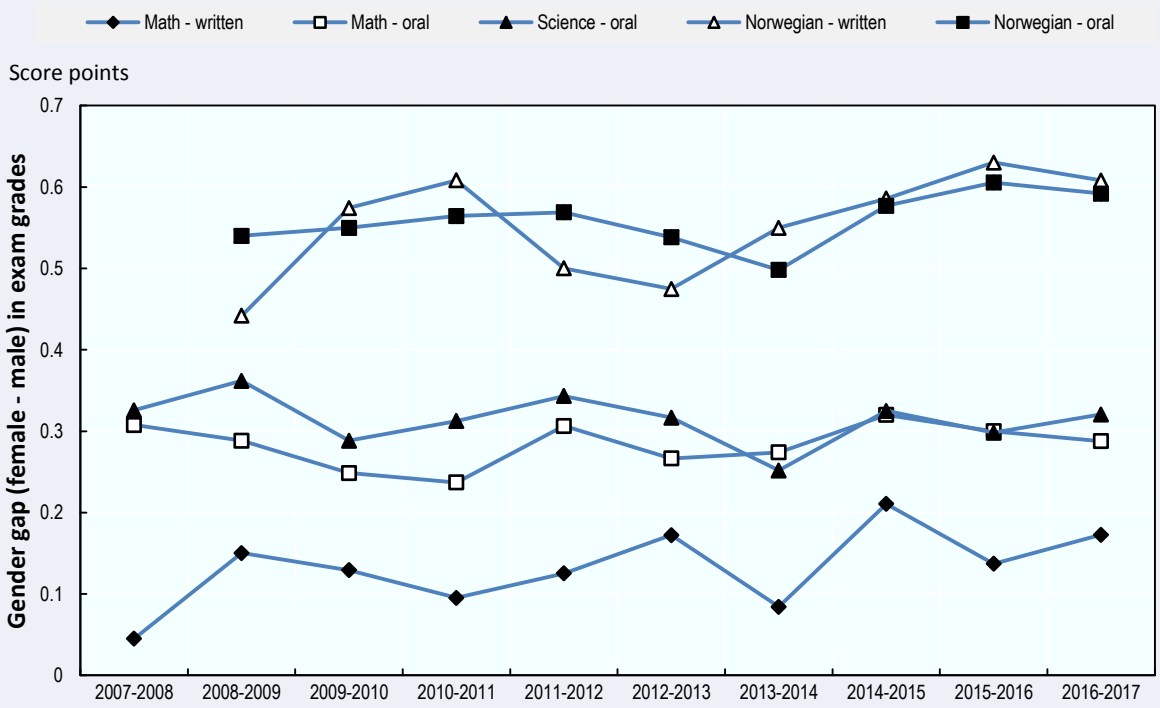
Figure 2.19. Gender gap in final assessment grades



Source: Statistics Norway, StatBank, (https://www.ssb.no/en/utdanning/statistikker/kargrs) (accessed 27 July 2018).

In Norway, students are also assessed through final exams in year 10. Students do not sit an exam in all subjects but they are randomly allocated to sit two final examinations, and their grades are averaged with their final assessment grades to obtain their GPA. Figure 2.20 reports the gender gap in final examination marks for the years 2007 to 2017. Similarly to final assessment grades, Figure 2.20 indicates that boys underachieve in all subjects compared to girls in the final assessment. The gender gap in favour of girls is largest in Norwegian, followed by science and mathematics. The data reveal that the gender gap has increased in written and oral Norwegian, as well as in written maths between 2007 and 2017. By contrast, the gap has remained stable and relatively large in oral science and oral maths.

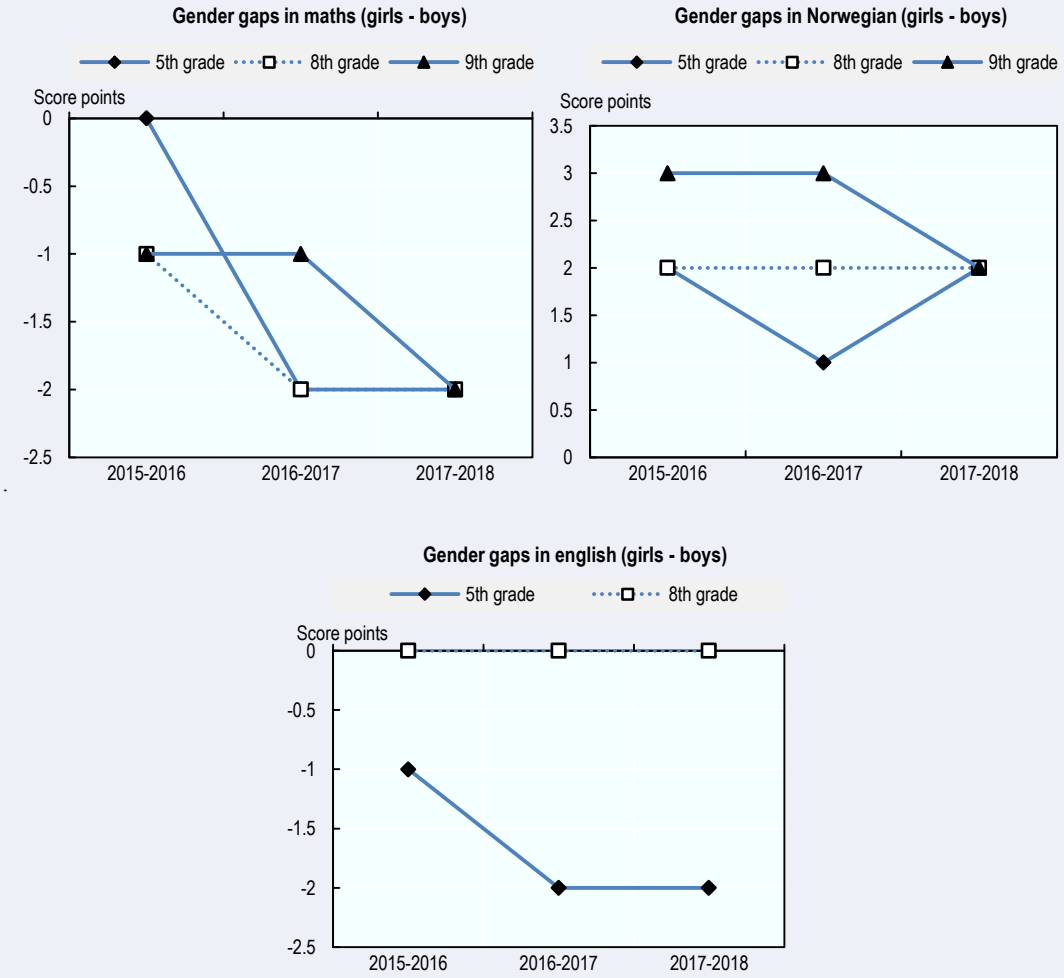
Figure 2.20. Gender gap in exam grades



Source: Statistics Norway, StatBank, (https://www.ssb.no/en/utdanning/statistikker/kargrs), (accessed 27 July 2018).

Students in Norway also sit national standardised tests in grades 4, 8 and 9. Results are used to gather statistics and guide policy, so like PISA these assessments are low-stakes and contrary to the national assessments have no consequences for students' educational pathways. Scores are standardised such that the national average score corresponds to 50 points and have a standard deviation of 10. Figure 2.21 shows that in the national standardised mathematics assessment, boys tend to outperform girls, although boys' advantage is small. Boys' average scores were higher than girls' for all grades and in all years with available data except for 5th grade in 2015. The opposite is true for Norwegian, in which girls have consistently outperformed boys by a larger margin in all years and grades. English results are the same for boys and girls in 8th grade, while in 5th grade girls have performed better.

Figure 2.21. Gender gaps in national standardised assessments

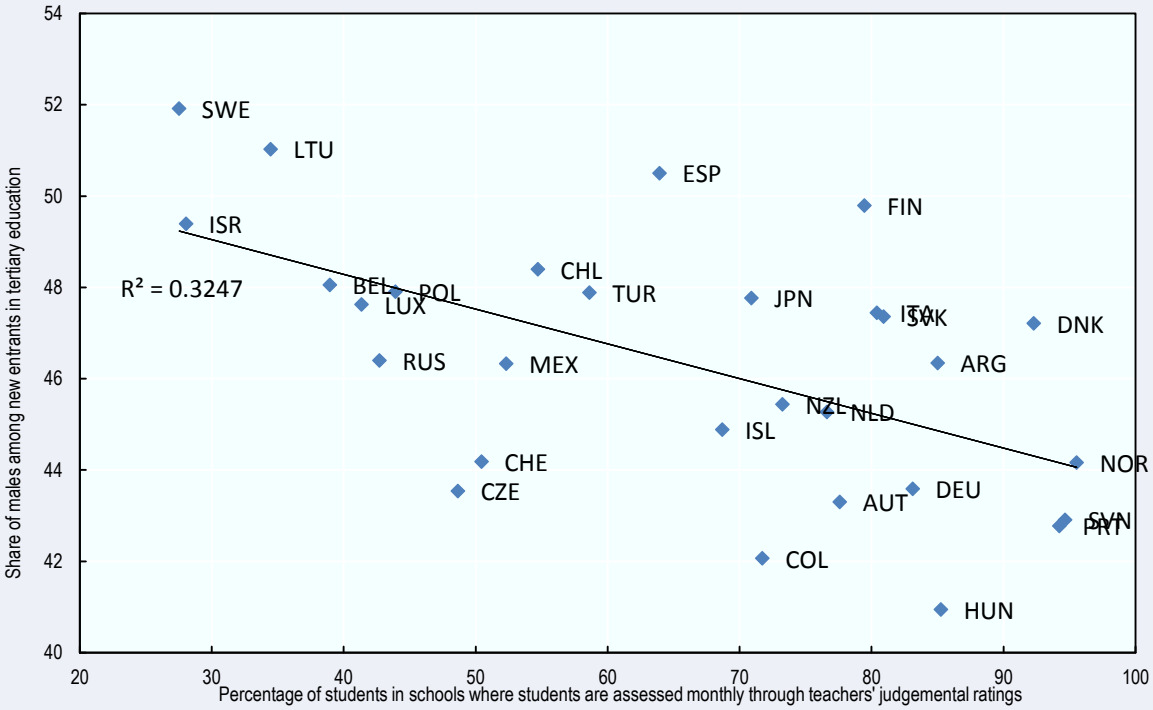


Source: Statistics Norway, StatBank, (https://www.ssb.no/en/utdanning/statistikker/kargrs), (accessed 27 July 2018). Overall these results suggest that the gender gap in academic achievement as measured in school-based that are low-stakes, moderately high-stakes and classroom examinations is broadly similar.

Box 2.3. Assessment practices and the gender gap in tertiary education

Boys appear to be particularly sensitive to how assessments are organised and delivered and that their motivation to do well in their studies may be crucial in shaping their achievement in school, a key driver of their willingness to continue their studies. Figure 2.22 suggests that the male share of new entrants in tertiary education is considerably lower when there is a large use of teacher judgemental evaluations in secondary school (classroom assessments graded by teachers). Boys may be less motivated by these types of assessment practices or teachers may put a greater emphasis on factors in which girls excel, such as conscientiousness and diligence (Falch and Naper, 2013[19]). Figure 2.22 suggests that Norway is the country where the use of teacher judgemental evaluations was largest and where the male share of new entrants in tertiary was among the lowest.

Figure 2.22. Male share of new entrants in tertiary education and the percentage of students who at age 15 report that their teachers use teacher judgemental evaluations monthly



Sources: Adapted from OECD, PISA 2015 database (http://www.oecd.org/pisa/data/) and (OECD, 2017[2]) "Education at a Glance" (https://doi.org/10.1787/eag-2017-en).

2.6. How gender gaps in academic achievement vary by socio-economic status and immigration background

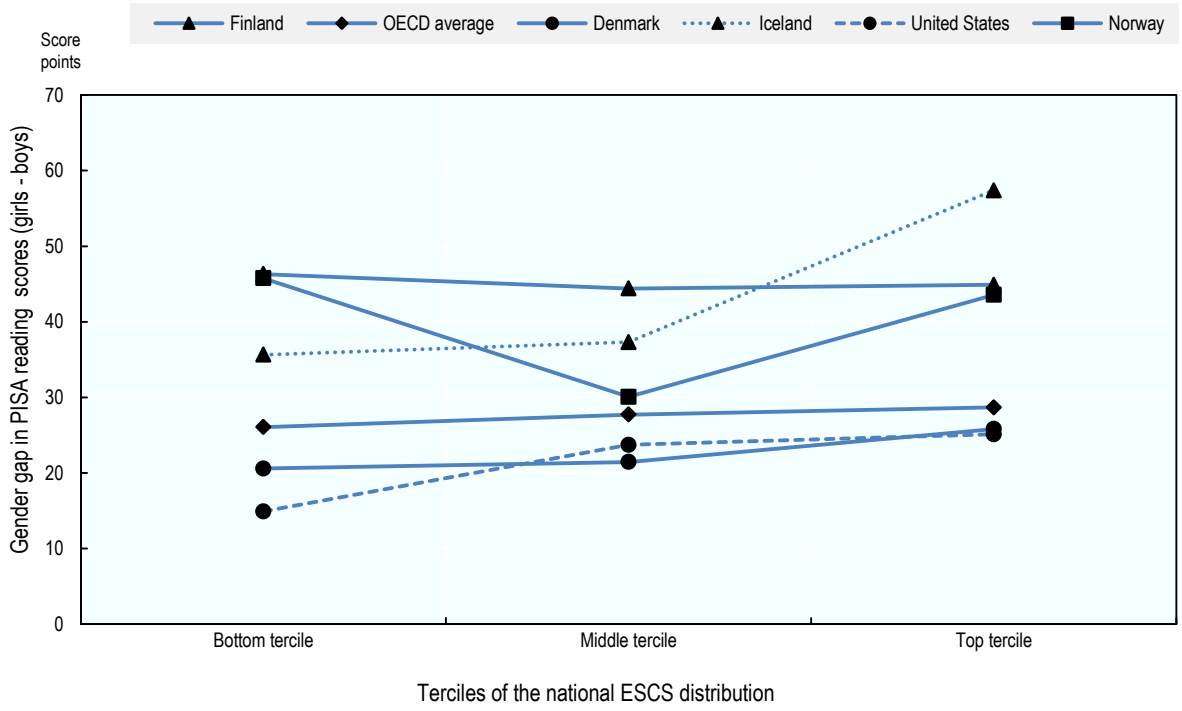
Research suggests that boys may be particularly likely to fare poorly at school when they come from socio-economically disadvantaged households (DiPrete and Buchmann, 2013[20]; Entwisle, Alexander and Olson Steffel, 1997[21]). Because both gender and socio-economic status are factors related to achievement and to attitudes towards school and learning, it is important to examine whether each of these factors adds to or amplifies the other. Furthermore gender gaps might differ across different groups of students according to migration background. In many OECD societies immigration is predominantly from countries where boys still outperform girls (Fleischmann et al.,(n.d.)[22]). Since immigrant children as a group are over-represented among disadvantaged students, it is possible that the gender gap in favour of girls might be less pronounced among immigrant students than among native Norwegian students. Moreover, Norway is a country with marked social norms on equality of opportunities for men and women in the labour market and society more widely. By contrast gender norms in many countries of origin of immigrant communities, social norms on gender equity are not as marked as in Norway. Finally, since boys appear to be at a particular disadvantage in reading, it is possible that boys whose mother tongue is different from Norwegian may face an increased risk of poor performance.

2.6.1. *In Norway the gender gap in reading appears to be particularly pronounced for high and low SES students. Among middle SES students, boys score higher than girls in the science assessment. This pattern is driven by parental occupational status and household possessions. No differences in gender gaps emerge between boys and girls with differently educated parents*

Figure 2.22 shows, for a selected number of countries, variations in the estimated gender gap in reading at age 15 in the PISA 2015 assessment among three categories of students defined in terms of their socio-economic status. Socio-economic status is captured in PISA through a composite indicator of parental educational attainment, occupational status and household resources. The student population was divided in 3 groups on the basis of the students' own relative position in the socio-economic status distribution in his or her country. Socio-economically advantaged students (top tercile) are students in the top 33% most socio-economically advantaged students and socio-economically disadvantaged students (bottom tercile) are students in 33% most socio-economically disadvantaged.

Figure 2.23 indicates that in Norway the gender gap in favour of girls is most pronounced among high and low SES students while it is considerably lower among students in the middle tercile of socio-economic status. The gender gap in fact corresponds to 46 points among the most socio-economically disadvantaged and 44 points among the most socio-economically advantaged, but only 30 points among middle-class students. By contrast, in most other countries considered, the gender gap is relatively similar across the socio-economic distribution. Iceland is an exception in that the gender gap appears to be considerably wider among socio-economically advantaged students.

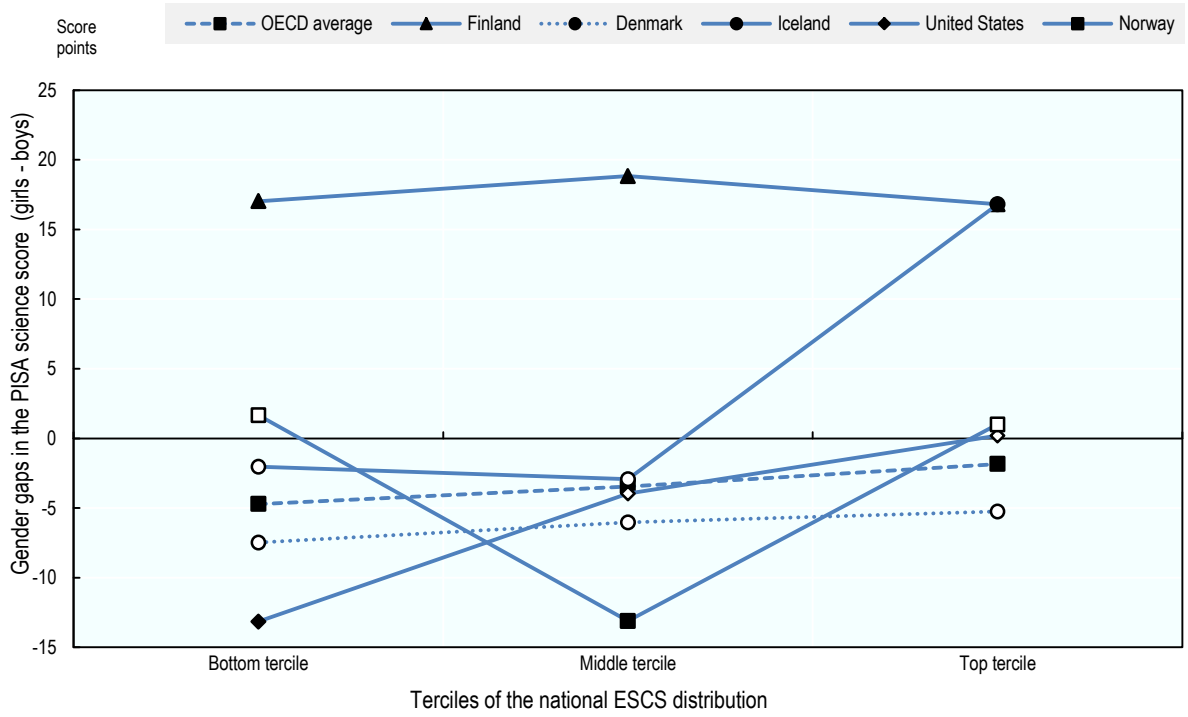
Figure 2.23. Estimated gender gap in reading at age 15 in PISA 2015, by socio-economic group



Notes: Statistically significant gender gaps are marked in a darker tone. ESCS stands for the PISA Index of Economic, Social and Cultural Status.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

Figure 2.24 suggests that a similar pattern also holds for science scores: the gender gap is more in favour of girls in the top and bottom terciles of the SES distribution compared to the middle. While among socio-economically advantaged and disadvantaged students, boys and girls had similar science scores, among middle-class students boys scored 13 points less than girls. In Finland, girls outperform boys in science in all terciles of the socio-economic distribution. In Germany, the male advantage is lower in the middle tercile compared to the bottom and top ones. Similar results also hold for mathematics achievement.

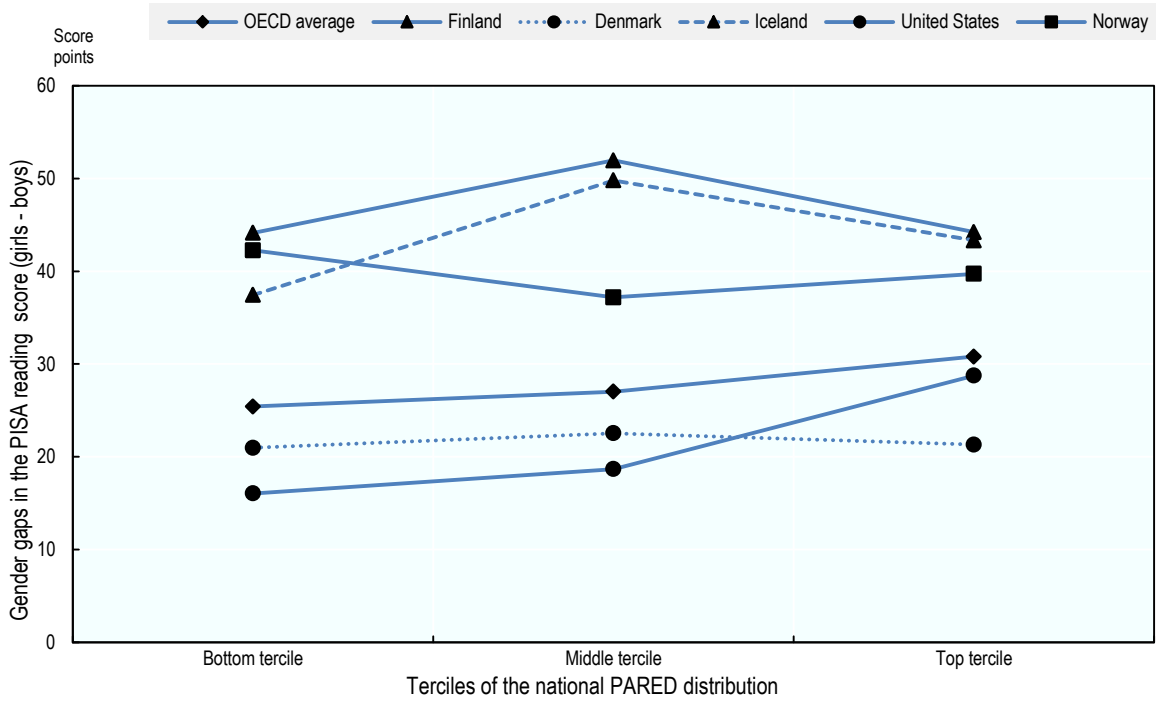
Figure 2.24. Estimated gender gap in science at age 15 in PISA 2015, by socio-economic group

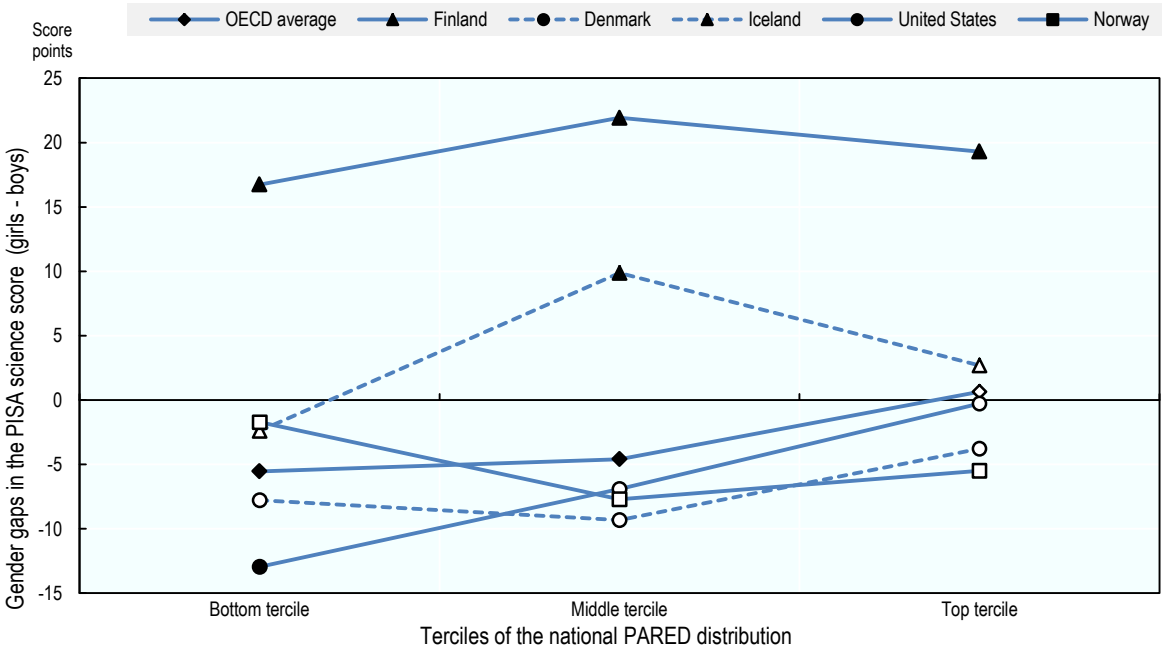


Notes: Statistically significant gender gaps are marked in a darker tone. ESCS stands for the PISA Index of Economic, Social and Cultural Status.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

Figures 2.25, 2.26 and 2.27 display results when the analyses are replicated using the components of the aggregated socio-economic indicator: household possessions and parental educational and occupational status. Although parental education is arguably the best proxy for socio-economic status and the most widely used in context where strong welfare systems reduce the potential impact of income and occupational differentials such as in Norway, results suggest that the patterns observed for the composite socio-economic indicator are driven primarily by the strong interaction of gender and household possessions (the measure in PISA which indicates wealth and economic resources) and parental occupational status rather than parental education. Research based on Norwegian data on the effect of household income (the indicator that is most readily comparable to household possessions in the context of PISA) on students' academic performance suggest that income effects are small in the Norwegian context, except for students who live in families with very low levels of income (Elstad and Bakken, 2015[23]; Løken, Mogstad and Wiswall, 2012[24]). Results presented in this report indicate that income effects may not only be non-linear but also differ across genders.

Figure 2.25. Estimated gender gap in reading and science at age 15 in PISA 2015, by parental educational attainment

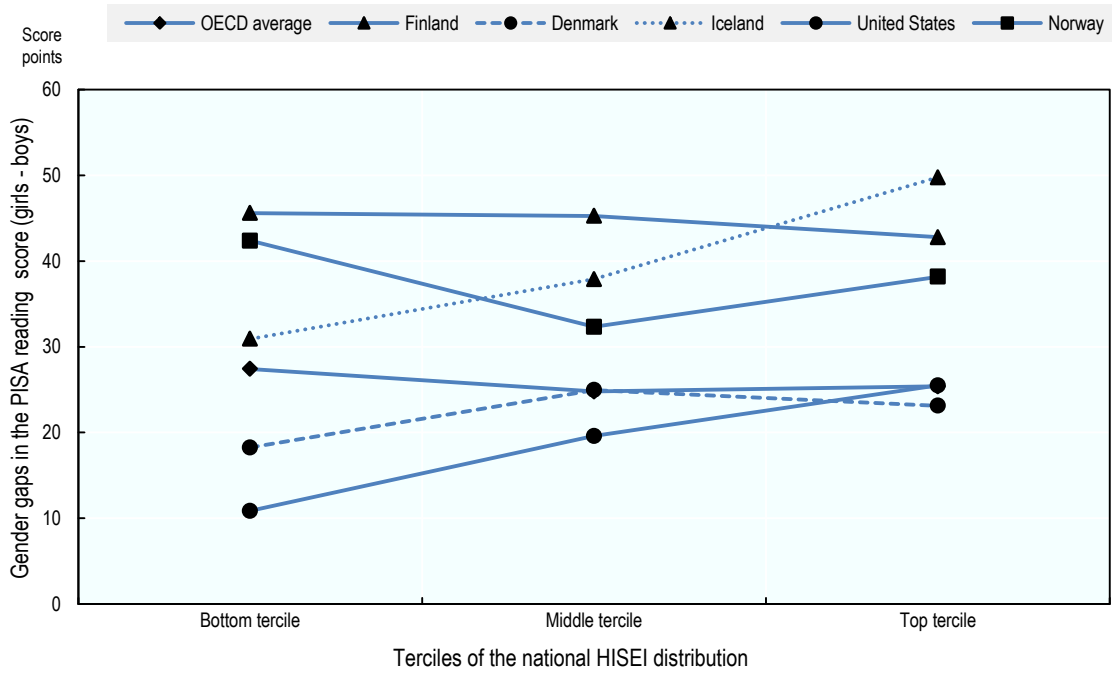


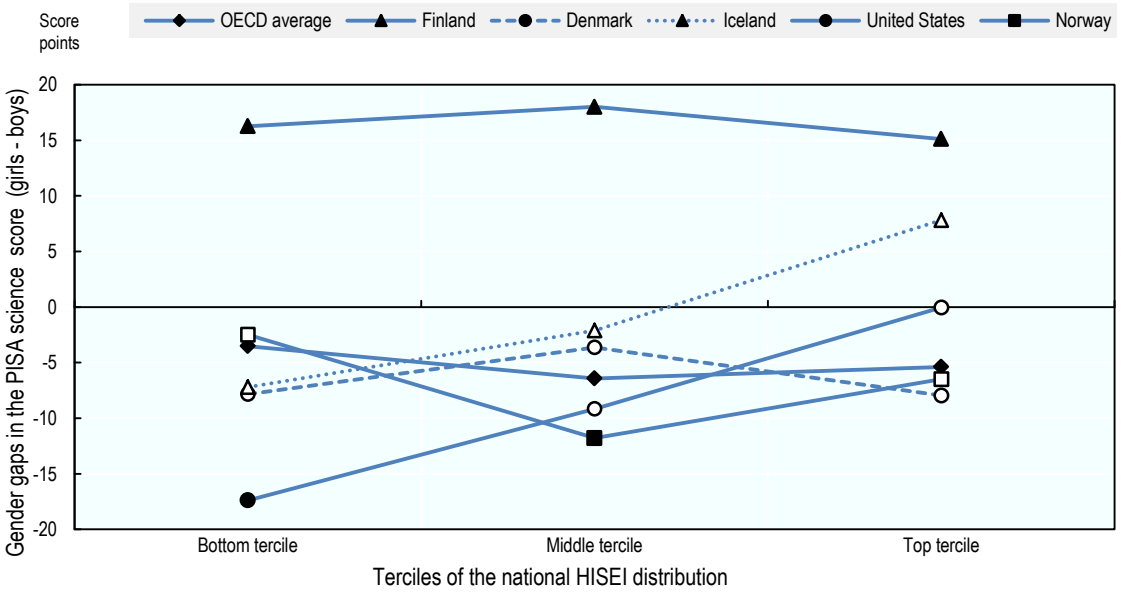


Notes: PARED is an indicator of the maximum number of years of schooling attended by the students' parents. The highest number between the mother and the father was recorded and students are divided into terciles based on this indicator. The bottom tercile is composed by students with the lowest educated parents and the top by students with the most educated parents. Statistically significant gender gaps are marked in a darker tone.

Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

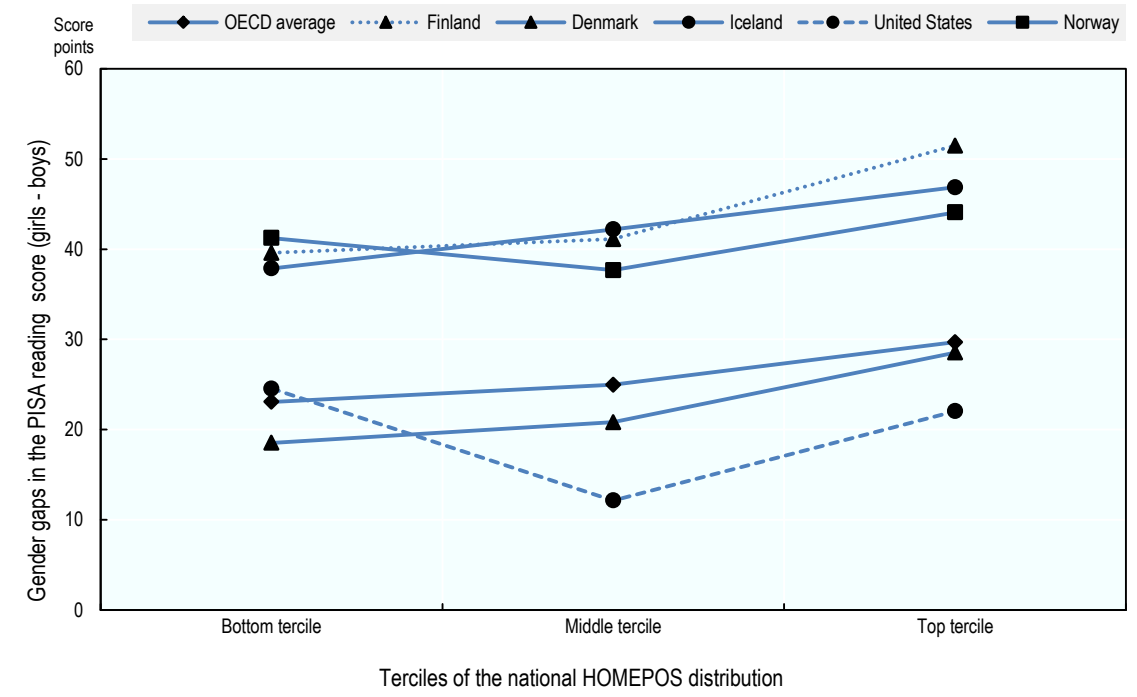
Figure 2.26. Estimated gender gap in reading and science at age 15 in PISA 2015, by parental occupational status

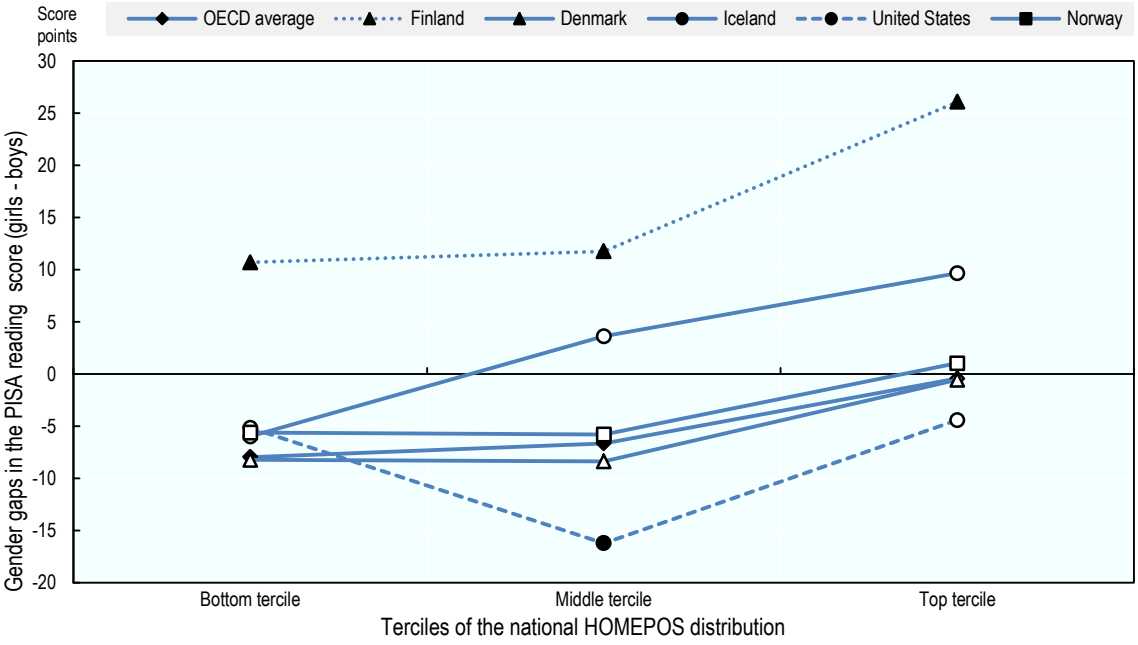




Notes: HISEI is an indicator of the social status of the parents' occupation and is derived using student open ended responses which were first recorded in the International Standard Classification of Occupations (ISCO) international classification of occupations. Higher values on the HISEI scale correspond to more prestigious occupations, namely occupations that command higher wages. The highest number between the mother and the father was recorded and students were divided into terciles based on this indicator. The bottom tercile is composed by students with parents working in the lowest status occupations and the top by students with parents working in the highest status occupations.
Statistically significant gender gaps are marked in a darker tone.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

Figure 2.27. Estimated gender gap in reading and science at age 15 in PISA 2015, by household possessions





Notes: HOMEPOS is an indicator of the availability of household possessions and characterises the financial and economic possibility of the students' family. The bottom tercile is composed by students with the lowest number of household possessions and the top by students with the highest number of household possessions. Statistically significant gender gaps are marked in a darker tone.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

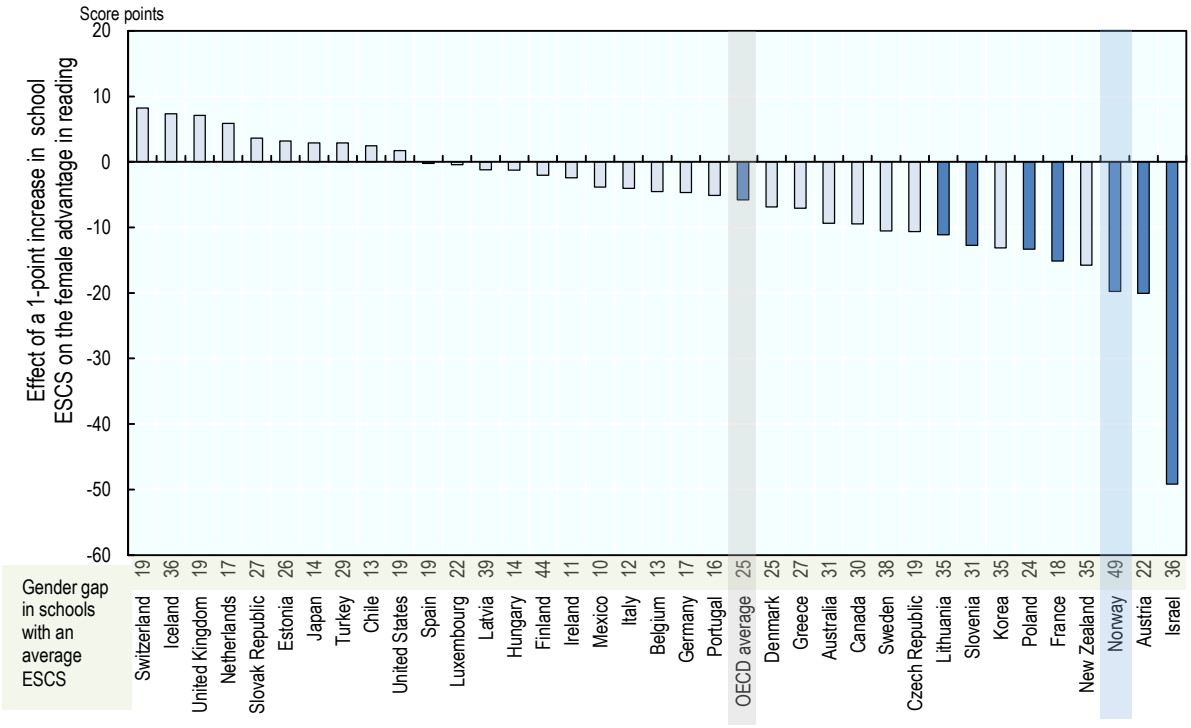
2.6.2. *Norway is one of the countries where a school's socio-economic composition is strongly associated with gender gaps in reading*

Norway is one of the OECD countries where the socio-economic composition of schools has the greatest impact on gender gaps in reading. A school's socio-economic composition is computed by calculating the average socio-economic status of students in the school (as measured by their scores on ESCS - the PISA index of economic, cultural and social status). In schools where the average socio-economic status of students is higher, the reading gap in favour of girls is significantly lower.

While girls' peer groups tend to encourage engagement in school independently of school context, the SES of the school group has a greater impact on boys' attitude towards school. In a low SES context, boys tend to develop an oppositional culture towards school, while in more advantaged groups different conceptions of masculinity can lead to positive outcomes. Legewie and DiPrete ((n.d.)[25]) find causal evidence of a strong effect of peer SES on gender gaps in reading.

Figure 2.28 reveals that among OECD countries, in Norway, the gender reading gap in schools with an average socio-economic profile is the greatest (49 score points). The gap for such schools is also large in Finland (44 score points) and Sweden (38 score points), while it is lower in Denmark (25 points). In Norway, for each 1-standard deviation increase in the average socio-economic status of students in a school, the gender gap in reading in favour of girls decreases by 20 score points. This implies that in more advantaged schools the gender gap is smaller. This implies that, for example, in schools in Norway with an average SES that is 2.5 standard deviations above the average school, there should be no significant gender gap in reading. This effect is larger only in Austria and Israel, and is not statistically significant in other Nordic countries

Figure 2.28. Gender gap in reading and the school socio-economic profile

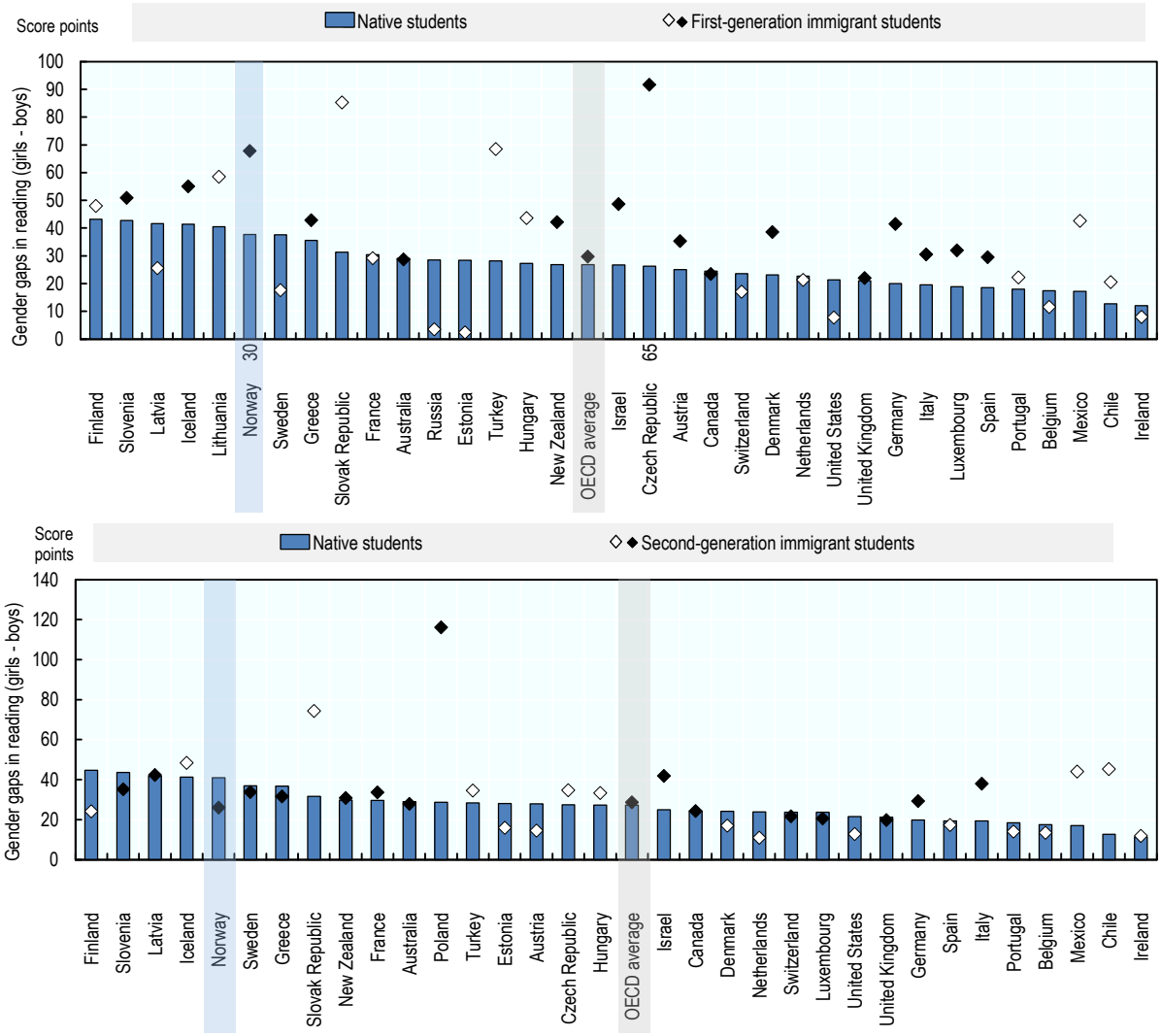


Note: Statistically significant effects of ESCS *(PISA Index of Economic, Social and Cultural Status)* on the female advantage in reading are marked in a darker tone.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

2.6.3. *In Norway the gender gap in reading is particularly wide among first-generation immigrant students. By contrast among second-generation immigrant students the gender gap is small by international standards and smaller than among students without an immigrant background*

The top panel of Figure 2.29 indicates that in Norway, the gender gap in reading at the age of 15 is particularly wide among first-generation immigrant students: while the gender gap in favour of girls among native-born Norwegians who have two Norwegian born parents is 38 score points, among first-generation immigrant students this gap corresponds to 68 score points, a difference of 30 points. Norway is the only country, together with the Czech Republic, in which the gender gap in favour of girls is wider among first-generation immigrant students. In all other OECD countries the gender gap in reading is similar among the two groups. However, the bottom panel of Figure 2.29 suggests that the gender gap in reading is smaller among second-generation immigrant students than among students without an immigrant background in Norway. In fact, the gender gap in reading among second-generation immigrant students is smaller in Norway than the gap that is observed on average across OECD countries. These results should be interpreted carefully because the samples of first- and second-generation immigrant students in the Norwegian PISA population were limited in size, which could have an effect on the precision of the estimates.

Figure 2.29. The gender gap in reading among 15 year-olds, by immigrant background



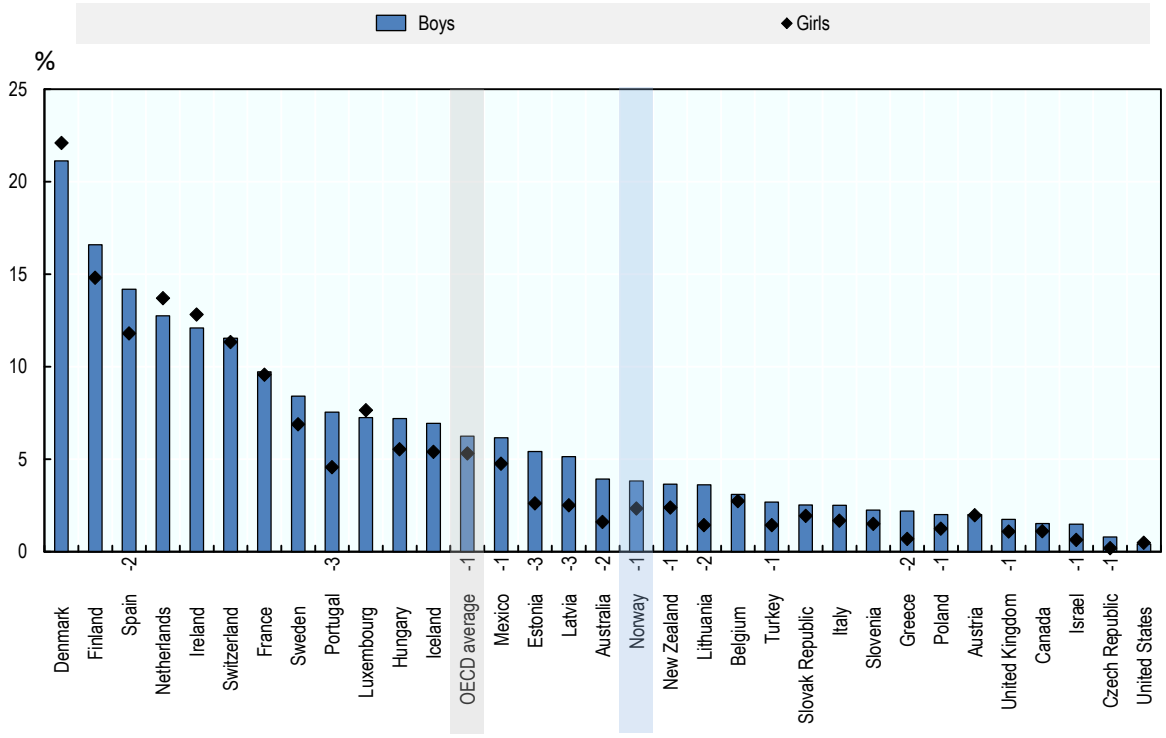
Notes: Statistically significant gender gaps are marked in a darker tone. Statistically significant differences in the gender gap among native students and immigrant students are reported next to country names.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

2.7. Gender differences in educational expectations in the teenage years

Students who hold ambitious expectations about their educational prospects are more likely to put effort into their learning and make better use of the education opportunities available to them to achieve their goals (OECD, 2012[26]; Borgonovi and Pál, 2016[27]; Nurmi, 2013[28]; Beal and Crockett, 2010[29]; Morgan, 2005[30]; Perna, 2000[31]). Therefore, expectations of further education, in part, become self-fulfilling prophecies. When comparing students with similar levels of skills and similar attitudes towards school, those who expect to graduate from university are more likely than those who do not hold such expectations to eventually earn a university degree (OECD, 2012[26]). Countries vary widely in the extent to which their students expect to graduate from university. Such differences reflect historical differences in levels of participation in tertiary level education, the availability and quality of vocational education and training, in the relative returns associated with attending tertiary studies, in the structure of the local labour markets, as well as the incentives available to students to pursue tertiary level education.

Figure 2.30 shows that in many countries, Norway included, boys at the age of 15 are more likely than girls not to expect to graduate from upper secondary school. Compared to the gap in the expectation to complete tertiary education, this difference is smaller in absolute terms, one percentage point in Norway, because few students expect to drop-out of education without upper secondary qualifications. However, this difference still signals a double gap among boys, which appears wider in Norway than in many other countries; boys at the age of 15 are less likely than girls to expect to obtain high levels of qualifications and are more likely than girls to expect to obtain very poor qualifications. In Denmark, Finland, Iceland and Sweden, girls and boys are equally likely to expect not to complete secondary education.

Figure 2.30. Expectation not to complete upper secondary education, by gender in selected PISA countries

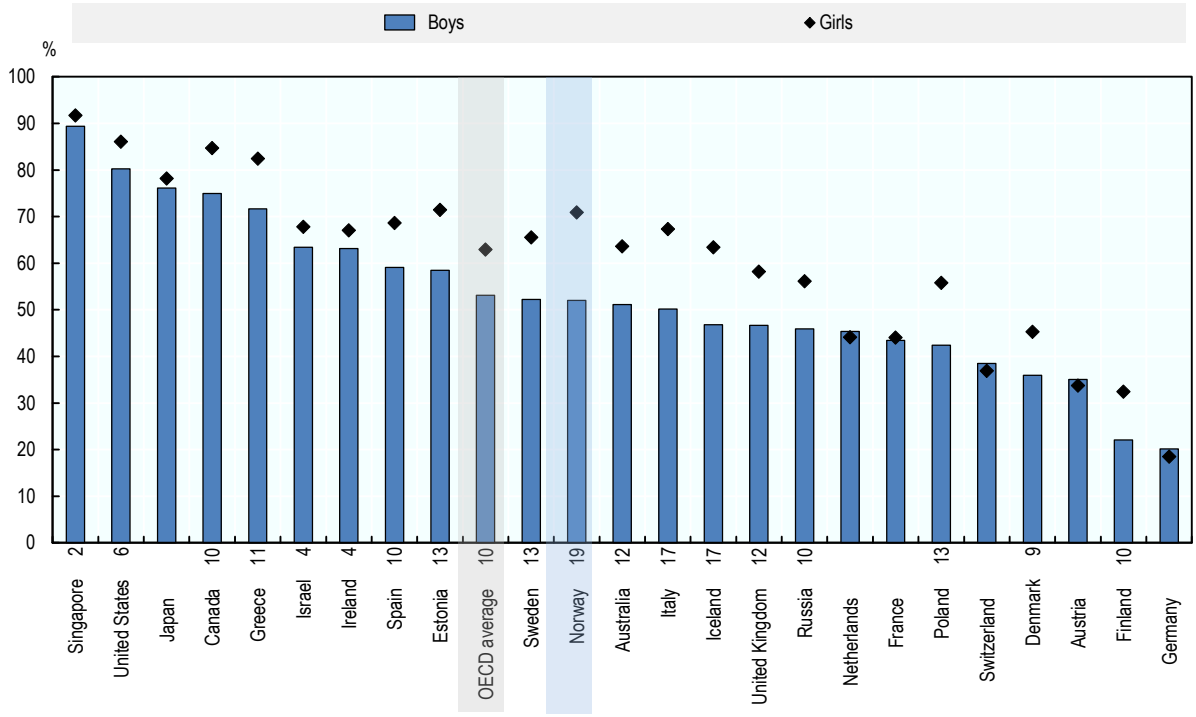


Note: Statistically significant differences between male and female students are reported next to country names.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

2.7.1. *Norway has one of the widest gender gaps in the expectation to complete tertiary education*

PISA data reveals that in 2015 in Norway 52% of boys but 71% of girls at the age of 15 expected that they would obtain a tertiary level degree. This corresponds to a difference in educational expectations of 19 percentage points, one of the widest observed out of all the 57 countries and economies that asked this question in PISA 2015. To put this number in perspective, the OECD average difference stands at 10 percentage points, 13 percentage points in Poland and Sweden, and at 12 percentage points in Australia and the United Kingdom. No gender gap could be observed in Austria, France, Germany or Japan. In some countries, such as Germany, overall levels of expectations to complete tertiary education are very low by international standards. This is mostly because of the fact that in countries with strong tracking policies, students in non-academic tracks have few opportunities, if any, to attend tertiary education. By contrast, there is evidence that the overall low levels of tertiary level expectations in Finland may be due to a question of wording (which however does not influence gender gaps within the country).

Figure 2.31. Expectation to complete tertiary education, by gender in selected PISA countries



Note: Statistically significant differences between male and female students are reported next to country names.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

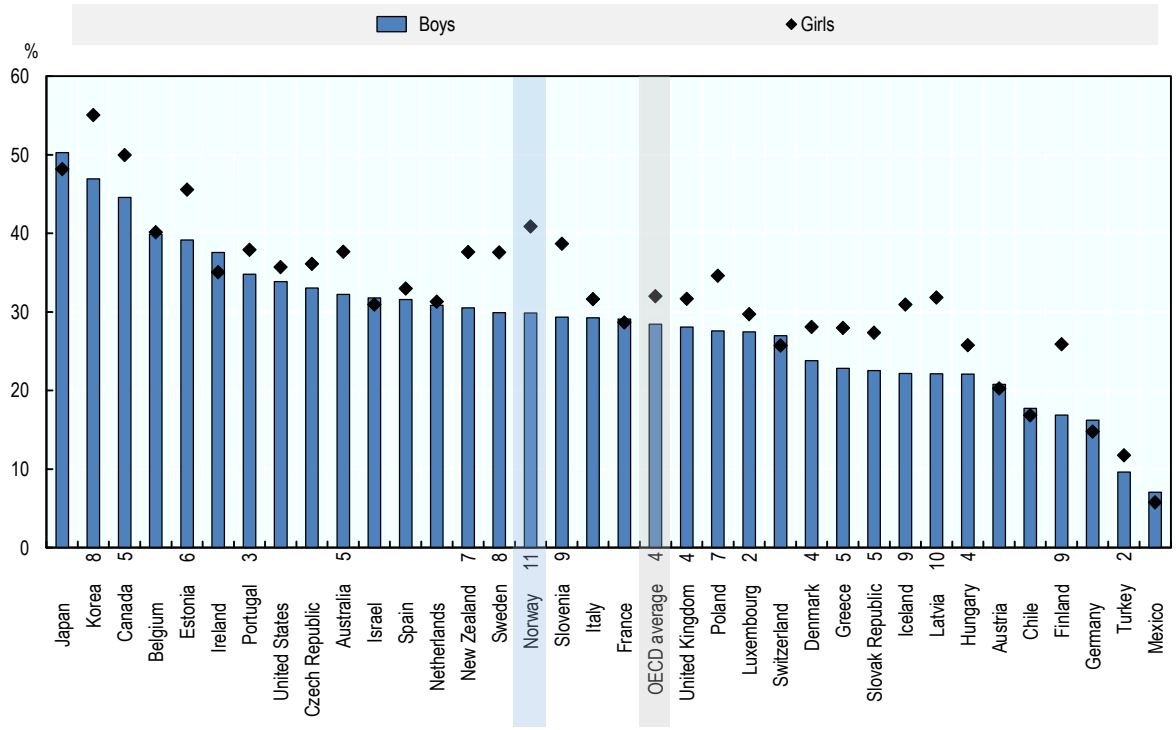
2.7.2. *Norway has the largest gender gap in holding ambitious and realistic academic expectations among OECD countries*

Students who hold high educational expectations often lack the academic skills to fulfil them. Students who do not reach at least Level 2 of proficiency[5] in the core PISA subjects – science, reading and mathematics – are unlikely to be able to realise ambitious academic goals and unlock their full potential. Those who not only manage to reach at least Level 2 of proficiency in all subjects but, on top of that, also reach proficiency Level 4 in at least one subject, can realistically expect to complete tertiary education. Figure 2.32 shows that in 2015 in Norway, 30% of all boys but 41% of all girls attained such levels of academic proficiency and also expected to complete tertiary education. This corresponds to a gender gap of 11 percentage points, the largest among OECD countries (4 percentage points on average across OECD countries). The gap is large also in Finland and Iceland (9 percentage points), but it is significantly smaller in Denmark (4 percentage points).

[5] The Level 2 proficiency (out of 6) in PISA core subjects is defined as the baseline level at which students are able to tackle tasks that require, at least, a minimal ability and disposition to think autonomously.

Figure 2.32. Realistic academic expectations, by gender in selected OECD countries

Percentage of students who expected to complete tertiary education and also attained at least proficiency Level 2 in all core PISA subjects and at least Level 4 in one of the three



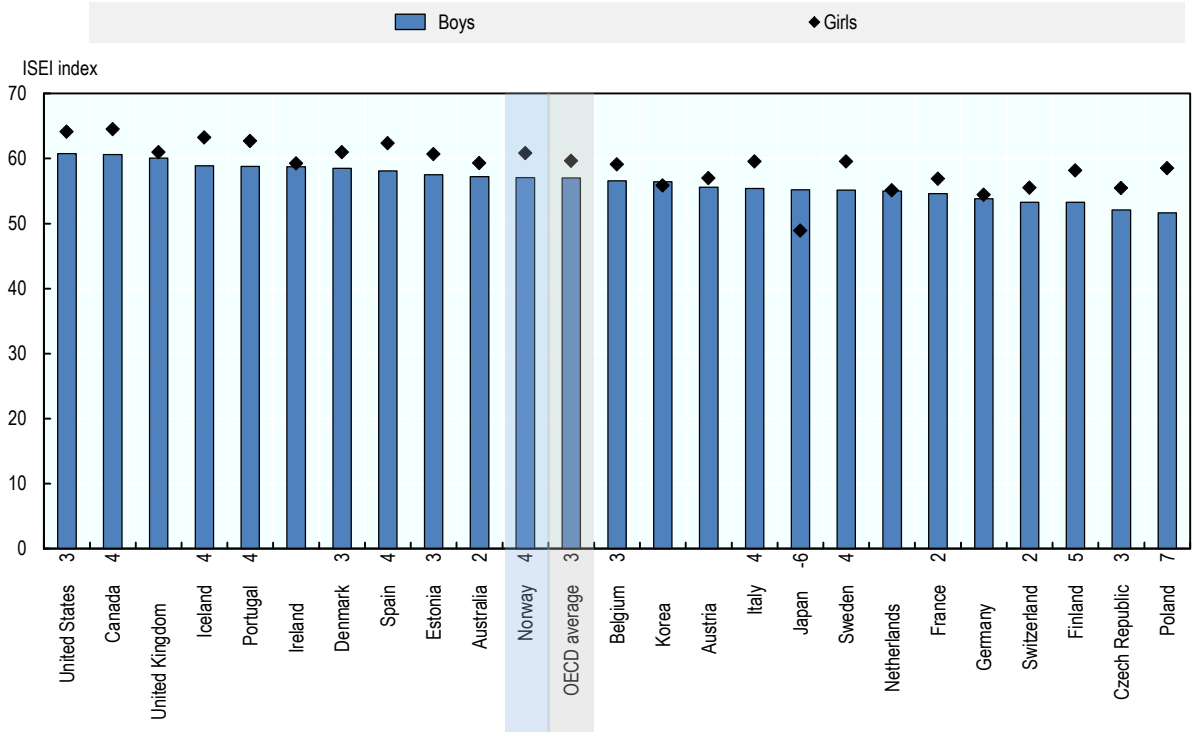
Note: Statistically significant differences between male and female students are reported next to country names.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

2.7.3. *In Norway, like in many countries, girls hold more ambitious career expectations than boys*

In PISA 2015, students were asked to report what job they expected to hold at the age of 30. Responses were coded according the International Standard Classification of Occupations (ISCO) and converted into prestige scores based on the ISEI index of occupational prestige. Analyses of data from PISA 2015 reveal that in many countries 15-year-old girls expect to work in occupations that are higher in social status than the occupations expected by boys, in part a reflection of the fact that girls are more likely to expect occupations that require tertiary level qualifications at entry. Norway is one of the OECD countries where the gender gap is wider, corresponding to 4 points, although in Finland and Poland the gap is much wider and corresponding to 5 and 7 percentage points. In countries such as Austria, Germany, Ireland, the Netherlands and the United Kingdom there is no gender gap in this indicator.

Figure 2.33. How ambitious are the career expectations of boys and girls?

Expected ISEI of 15-year-old boys and girls in PISA 2015 in selected countries



Note: Statistically significant differences between male and female students are reported next to country names.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

2.8. Gender gaps in non-achievement outcomes: engagement, motivation and effort

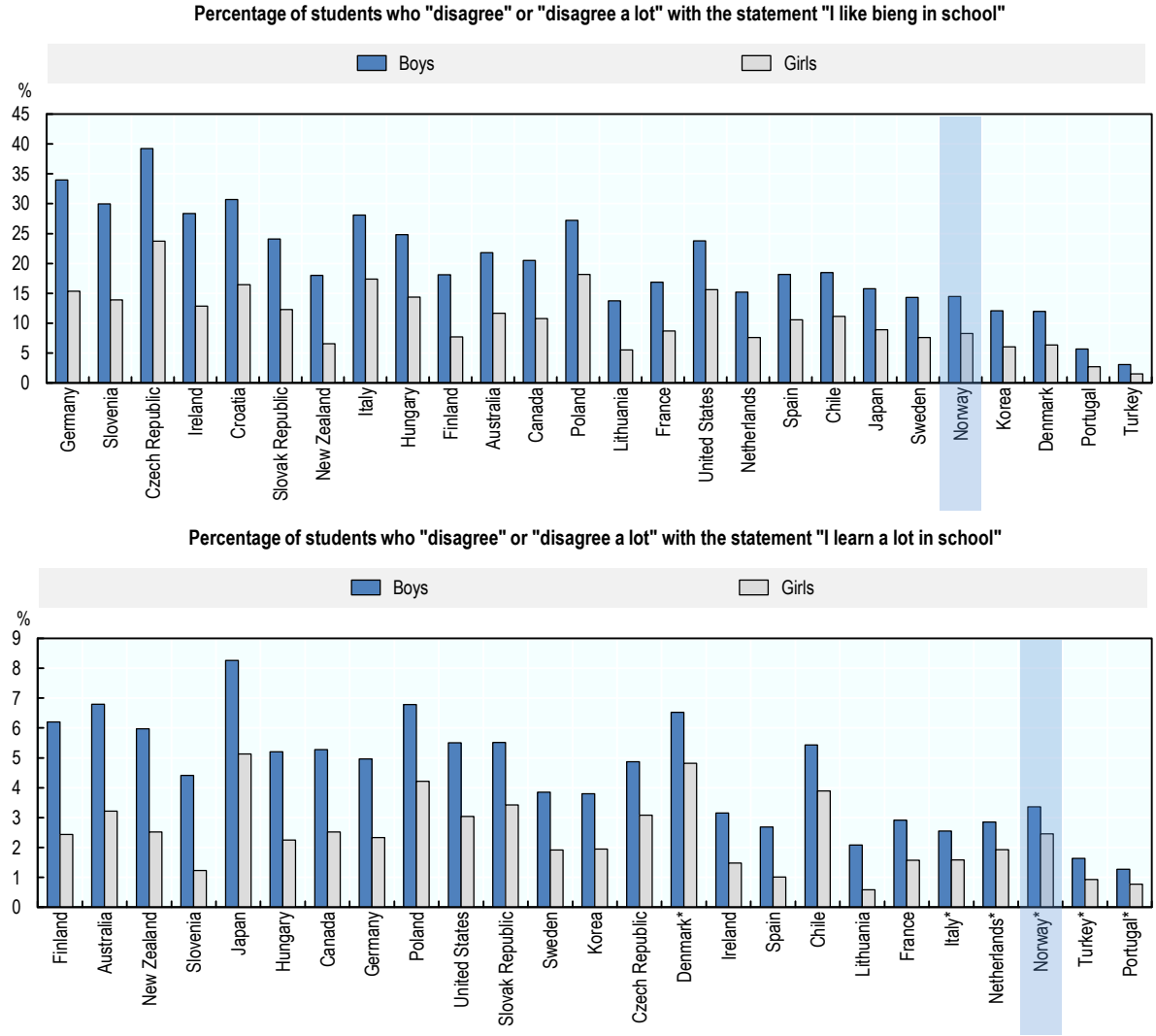
The previous sections developed key indicators on gender gaps in educational attainment and achievement in Norway and compared these to gender gaps in other countries. Individuals' long term educational, labour market and social outcomes however depend not only on their level of mastery of subject specific competencies, but also on their attitudes towards school and learning, their level of engagement and effort put in their studies. This section presents evidence on gender differences in students' attitudes towards school and learning, effort and motivation to achieve.

2.8.1. *In Norway at the primary level there are small differences between boys and girls in attitudes towards school*

Among 4th grade students only in a few countries there are differences in the percentage of boys and girls who report that they learn a lot in schools and these differences tend to be small. In Norway the same low percentage of boys and girls disagrees or strongly disagrees that they learn a lot in school: 3.3% of boys and 2.4% of girls so reported. However, a higher percentage of girls than boys reports that they like being in school in most of the countries that took part in the TIMSS study. In Norway, the gender gap was 6 percentage points: around 15% of boys but only around 8% of girls disagreed or

strongly disagreed that they like being in school. The gender gap was considerably larger in Germany where the difference in the percentage of 4th grade boys and girls who reported disagreeing or strongly disagreeing that they like being in school was as large as 19 percentage points.

Figure 2.34. Gender differences in attitudes towards school among 4th graders



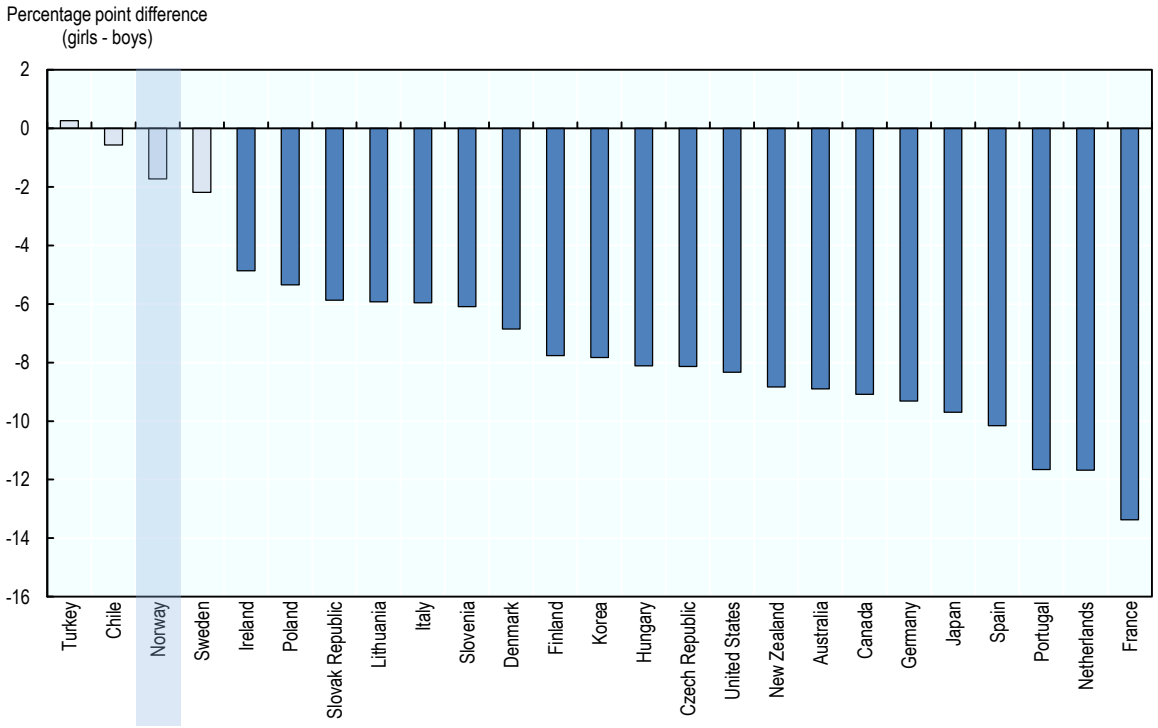
Note: Countries where the difference between boys and girls is not statistically significant are marked with an asterisk. Countries are ranked in descending order of the gender gap (female – male) in attitudes towards school

Source: Adapted from TIMSS 2015 database, (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

2.8.2. *In Norway at the primary level there are no gender gaps in students' confidence in mathematics, but 4th grade girls already report greater confidence in reading*

In Norway among 4th graders boys and girls report similar levels of enjoyment and engagement with mathematics as well as confidence in their ability to study mathematics and solve mathematics problems. While results on gender gaps in enjoyment and engagement in mathematics are very similar in Norway and in many of the countries that took part in the TIMSS study, Norway is one of the few countries (together with Chile, Sweden and Turkey) where 4th grade girls do not report a lower confidence in their ability in mathematics than boys: as many as 89% of boys and 87% of girls in 4th grade in Norway report being confident or very confident in mathematics.

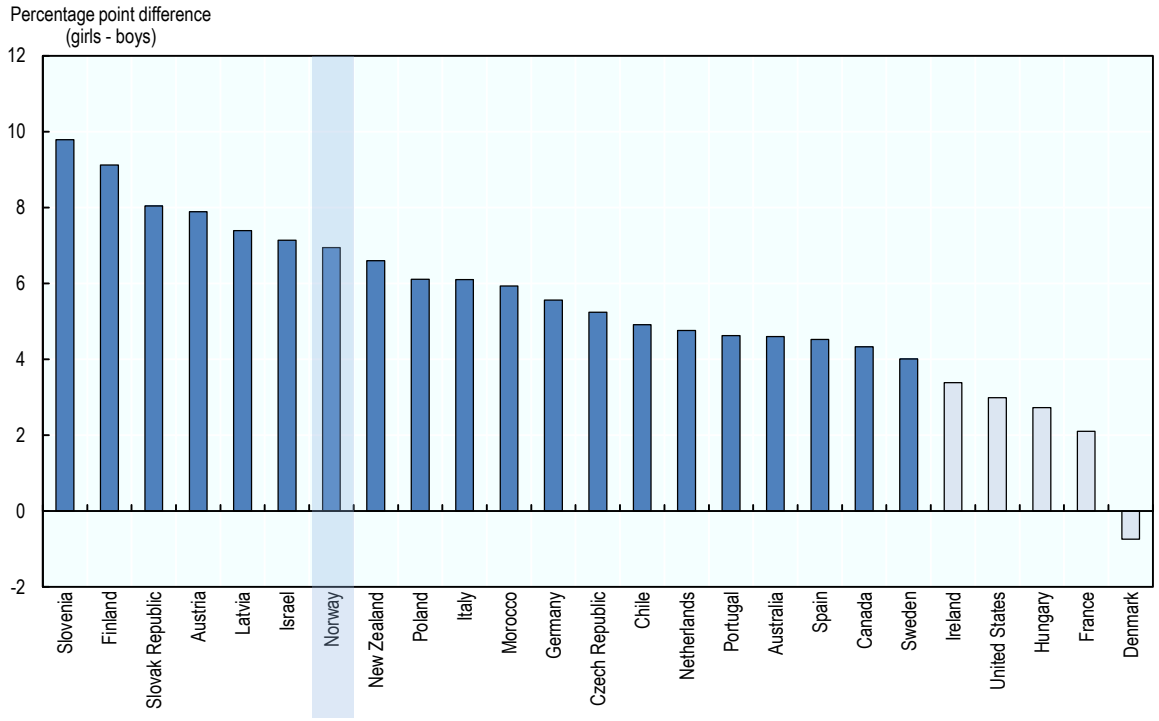
Figure 2.35. Gender differences in confidence in mathematics among 4th graders



Note: Statistically significant gender gaps are marked in a darker tone.
Source: Adapted from TIMSS 2015 database, https://timssandpirls.bc.edu/)

However, gender gaps in reading abilities are already present among 4th graders: only 49% of 4th grade boys but 56% of 4th grade girls in Norway report feeling confident or very confident in their reading abilities, a gender gap of 7 percentage points. Norway is, in fact, one of the countries with the largest observed gap in students' perceptions about their ability as readers during primary school years. The gender gap in favour of girls is higher only in Austria, Finland, Latvia, Israel, the Slovak Republic and Slovenia. These differences mirror differences observed in Norway on the percentage of boys and girls who report that they enjoy reading (a difference of 14 percentage points in favour of girls), like reading (a difference of 10 percentage points) or that they read for fun weekly (a difference of 10 percentage points). Girls in Norway are also more likely to report that they are very engaged with reading classes (a difference of 8 percentage points).

Figure 2.36. Gender differences in confidence in reading among 4th graders



Note: Statistically significant gender gaps are marked in a darker tone.
Source: Adapted from PIRLS 2016 database, (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

2.8.3. *In Norway the gender gap in favour of girls in the percentage of 15-year-old boys and girls who believe that trying hard at school is important is among the largest across all OECD countries*

Fifteen-year-olds are in the middle of adolescence – a time when children start to claim their independence from their parents and when social acceptance by one's peers – can have a powerful influence on behaviour (Baumeister and Leary, 1995[32]; Rubin, Bukowski and Parker, 2007[33]). Other students can encourage and support their classmates in their drive to achieve; they can also undermine students' motivation (Ladd et al., 2012[34]).

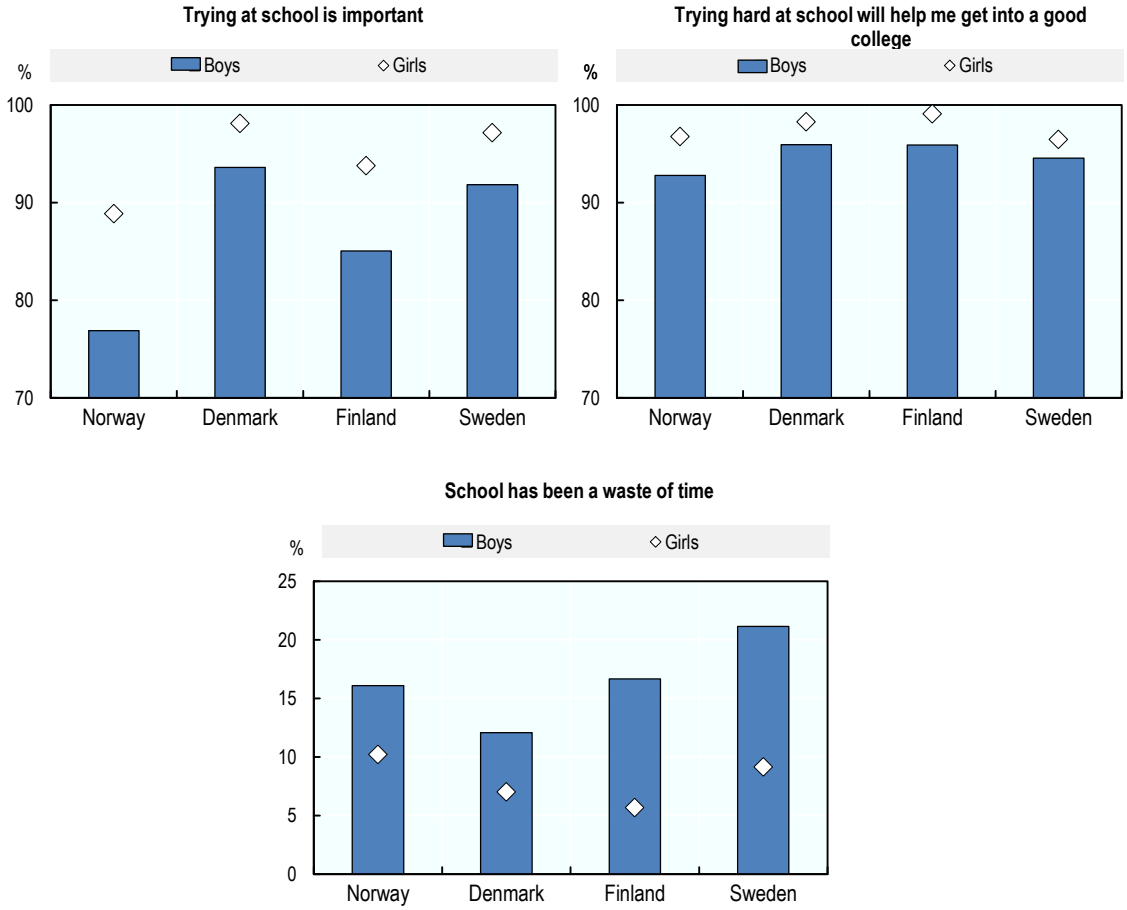
Around this time, too, gender differences in attitudes towards school and learning become evident. These seem to be strongly related to how girls and boys have absorbed society's notions of "masculine" and "feminine" behaviour and pursuits as they were growing up. For example, several research studies suggest that, for many boys, it is not acceptable to be seen to be interested in school work. Boys adopt a concept of masculinity that includes a disregard for authority, academic work and formal achievement. For these boys, academic achievement is not "cool" (Salisbury, Rees and Gorard, 1999[35]). Although an individual boy may understand how important it is to study and achieve at school, he will choose to do neither for fear of being excluded from the society of his male classmates (Van Houtte, 2004[36]). Indeed, some have suggested that boys' motivation at school dissipates from the age of eight onwards, and that by the age of 10 or 11, 40% of boys belong to one of three groups: the "disaffected", the "disappointed" and the "disappeared". Members of the latter group either drop-out of the education system or are thrown out (Salisbury, Rees and Gorard, 1999[35]). Meanwhile, studies show that girls

seem to "allow" their female peers to work hard at school, as long as they are also perceived as "cool" outside of school (Van Houtte, 2004[36]). Other studies suggest that girls get greater intrinsic satisfaction from doing well at school than boys do (DiPrete and Buchmann, 2013[20]).

While in PISA 2015 there were no questions designed to capture students' attitudes towards school and learning, it is possible to derive useful indicators on gender differences in these measures of engagement with school and education more generally using information collected in PISA 2012. Figure 2.36 reveals that in 2012 in Norway, 77% of boys but as many as 89% of girls agreed or strongly agreed that trying hard at school is important. The difference corresponds to a difference of 12 percentage points, the largest across all OECD countries. Similarly, 16% of 15-year-old male students in Norway reported that they thought that school was a waste of time, compared to 10% of female students, a difference of six percentage points, and 36% of boys but only 32% of girls in Norway agreed or strongly agreed that school has done little to prepare them for adult life when they leave school, a difference of four percentage points. In Australia, Austria, Germany, Ireland and the United Kingdom no gender gap can be observed in this dimension.

Figure 2.37. Attitudes towards school, by gender

Percentage of students who reported that they "agree" or "strongly agree" with the statements



Note: All differences in attitudes between girls and boys are statistically significant. The vertical axis is truncated below 70% to favour the interpretation of the figure.
Source: Adapted from PIRLS 2012 database, (https://timssandpirls.bc.edu/) (accessed 15 June 2018).

2.8.4. *Norway is one of the countries with the largest gender gap in self-reported effort invested in the PISA low-stakes test*

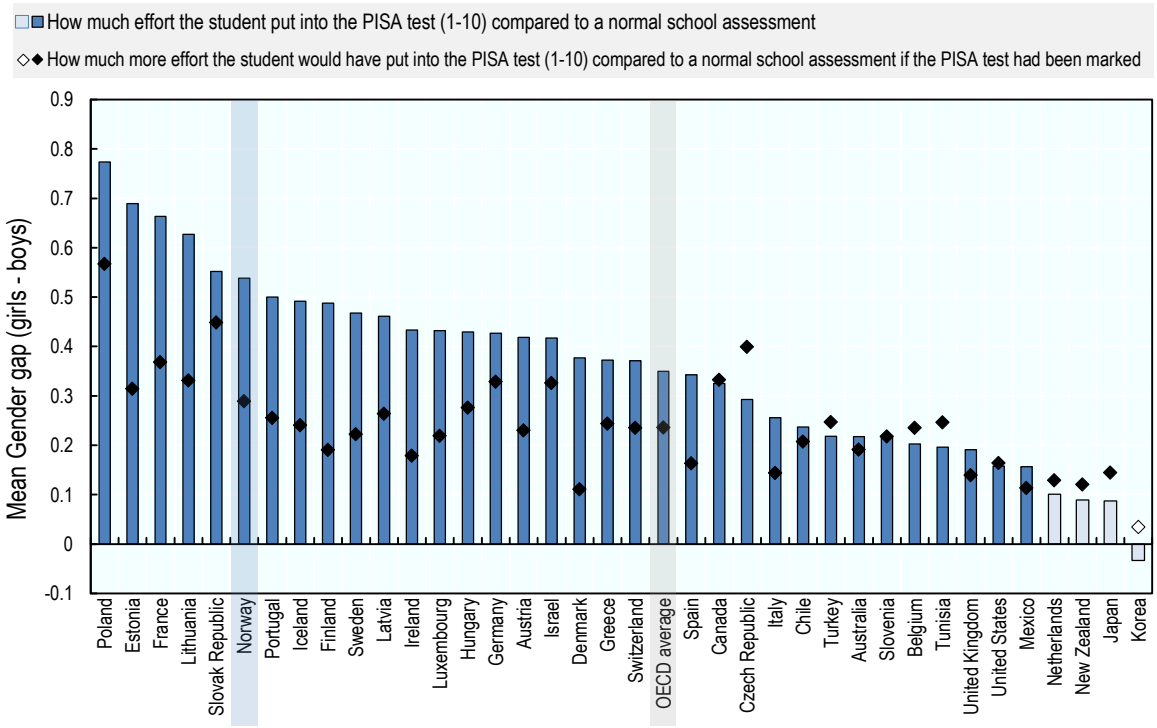
Findings from psychological experiments conducted in laboratory settings suggest that, among boys and girls of similar academic ability, girls tend to be more reluctant to compete than boys, while boys are more responsive to extrinsic motivation than girls (Niederle and Vesterlund, 2005[37]). Within countries, girls tend to report higher levels of motivation to do their best in a test (Demars, Bashkov and Socha, 2013[38]), although it appears that gender differences in motivation related to test-taking may vary across countries (Eklöf et al., 2014) and by the type of test (Borgonovi et al., 2017[18]). Furthermore, the relationship between reported motivation and performance may be stronger among boys (Eklöf, 2007; Eklöf et al., 2014; Eklöf and Nyroos, 2013; Karmos and Karmos, 1984).

This section provides evidence on gender gaps in the effort 15-year-old boys and girls exerted in the PISA test, how much effort they reported exerting on the PISA test as well

as how much more effort they would have invested had the PISA test been counted in the student's school marks. When students participating in PISA 2012 finished the test, they were asked how much effort they thought they had put into it, and to consider how much effort they would have put into the test if their performance had counted towards their school marks. The question appeared on the last page of their assessment booklet. Figure 2.38 suggests that girls report investing greater effort than boys in the majority of countries participating in PISA 2012 and that in Norway the gender gap in reported effort is among the largest. Furthermore, Norway is one of the countries where the difference in the gender gaps in how much effort students report having invested in the test and in how much they think they would have invested had the test counted towards marks is largest.

In Norway, as well as Denmark, Estonia, Finland, France, Iceland, Ireland, and the Russian Federation, the gender gap in effort invested between the low-stakes assessment and the hypothetical high-stakes scenario is larger than 0.25 point on the scale. In all these countries, the large difference between boys and girls appears to be primarily due to the fact that boys reported investing far less effort in the test in the absence of external rewards. By contrast, in the Netherlands there was no difference in the effort boys and girls reported having invested in the PISA test and a small gender gap in favour of girls in how much more effort students would have put had the test counted towards their school marks.

Figure 2.38. Gender differences in self-reported effort in the PISA low-stake assessment



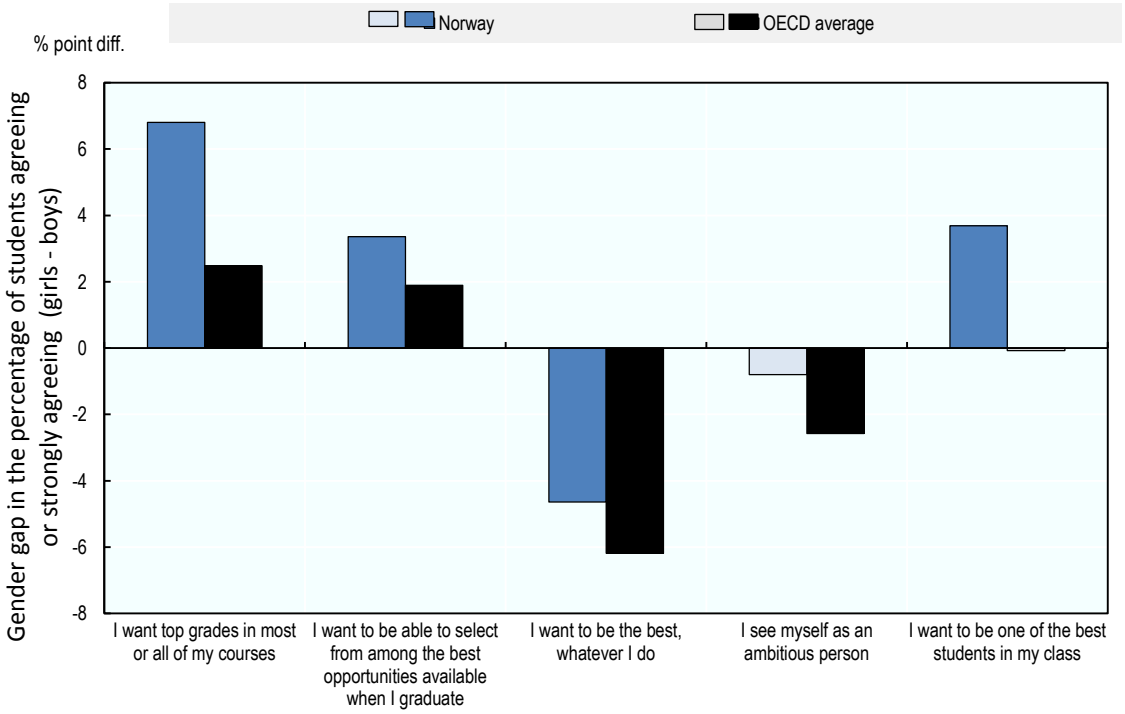
Note: Statistically significant gender gaps are marked in a darker tone.
Source: Adapted from OECD, PISA 2012 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

For the first time, PISA 2015 asked students to report whether they "strongly agree", "agree", "disagree" or "strongly disagree" with the following statements: "I want top

grades in most or all of my courses"; "I want to be able to select from among the best opportunities available when I graduate"; "I want to be the best, whatever I do"; "I see myself as an ambitious person"; and "I want to be one of the best students in my class". Student responses to these five questions were used to construct the index of achievement motivation, which has a mean of 0 and a standard deviation of 1 across OECD countries. Measures of achievement motivation provide useful information on the goals 15-year-old students set for themselves. However, the measures collected in PISA do not allow distinguishing between students who have these achievement goals because they are intrinsically motivated (students who internalise and accept as their own the values and activities associated with excellence in and out of school) and students who strive to attain goals that are externally imposed on them. This is an important distinction since there is evidence that boys are more extrinsically motivated and girls are more intrinsically motivated in their studies (OECD, 2015[3]).

The responses to the five statements show that boys and girls differ in their motivation to achieve. In particular, girls in Norway were considerably more likely than boys to report that they want top grades at school (87% of girls but only 80% of boys so reported), that they care more than boys about being able to select among the best opportunities when they graduate (97% of girls and 94% of boys so reported) and that they want to be one of the best students in their class (66% of girls and 62% of boys so reported). Girls thus seem to care more than boys that their efforts at school are properly recognised. Figure 2.39 illustrates gender differences in students' responses in Norway and selected OECD countries in self-reported achievement motivation.

Figure 2.39. Gender differences in achievement motivation



Note: Statistically significant gender gaps are marked in a darker tone.
Source: Adapted from OECD, PISA 2015 database, (http://www.oecd.org/pisa/data/) (accessed 15 June 2018).

2.9. Summary and conclusions

Although some researchers highlight biological differences between males and females as a source of gender gaps in education, several studies attribute such gaps to sociocultural factors. One such factor that has gained the attention is societal level gender inequality. Previous research shows that the gender gap in favour of boys in standardised maths tests is larger in countries with lower female participation in the labour market and where women are less represented in political institutions (Guiso et al., 2008[39]; Else-Quest, Hyde and Linn, 2010[40]; Breda, Jouini and Napp, 2018[41]). Conceptually, this correlation has been traced to the presence of strong stereotypes on the role of men and women which reduce incentives for girls to invest time and effort in skills that do not conform to stereotypes because they will not have adequate returns to such investments.

Stereotypes can also lead girls to hold lower expectations about their own maths skills – again reducing incentives to (and thus fail to) invest in building their maths skills. In the presence of strong stereotypes, girls may also not receive the support they need to excel in mathematics from their teachers or families.

According to the World Economic Forum's Global Gender Gap Index Norway ranked second after Iceland in terms of equity between men and women in health, education, economic participation and politics. Norway's achievement in ensuring that men and women have similar opportunities for participation in society is likely to act as a strong incentive for girls to do well in education so that they reap the full benefits of high levels of equity. Girls' relatively strong performance in later-life outcomes is therefore likely to explain, at least in part, why gender gaps in favour of girls in academic achievement and attainment are larger in Norway than in other countries. Clearly, ensuring that boys close gender gaps in educational attainment and achievement cannot come at the expense of girls' progress. Rather, reform efforts in Norway should be directed at ensuring that both boys and girls achieve their full potential.

Results presented in this section suggest that gender differences in educational attainment in Norway reflect, to a large extent, gender differences in achievement and in the attitudes boys and girls develop in their childhood both at school and outside of formal education settings. In particular gender gaps in Norway appear to be distinctive in the following areas when compared to other countries:

- Norway should be celebrated for its success in closing traditional gender gaps; girls are comparatively more confident in mathematics, better in numeracy skills and digital reading than girls in most other OECD countries. However, this had the unintended consequence of leaving boys lagging behind.
- Gender gaps in primary school are small when they are present (except for gaps in reading that are large compared to most countries considered in this report), but they become very large in most dimensions considered during secondary school.
- Gender gaps in secondary school in favour of girls are very pronounced when considering attitudinal and motivational aspects of learning. Boys appear to put less effort than girls in their studies, to report that they put less effort and to believe that trying hard in school does not matter.
- A school's socio-economic condition appears to be particularly associated with the size of the gender gap in Norway: in schools that have a relatively disadvantaged socio-economic intake the gender gap in favour of girls appears to be particularly wide in Norway.

The fact that in Norway large gaps are identified in motivational and affective dimensions of learning suggests that any policy aimed at promoting boys' educational outcomes should be holistic in nature and consider how best to promote both subject specific knowledge and competences as well as motivation to learn, ambition and perseverance. These factors are fundamental in sustaining the long-term learning prospects of boys and girls. The material presented suggests that there are a number of countries where boys and girls do equally well or where gender gaps have closed over the years. The following section of this report systematises and documents information developed by the OECD through a peer review exercise on policies and initiatives that could be of inspiration for Norway, should it aim to develop strategies with the objective of closing the gender gap in educational attainment and achievement.

3. Policies and practices to mitigate or prevent the gender gap in school achievement: an OECD peer-learning review

Part II of this report provides an international perspective on the current debate about boys' underachievement in schools and shares examples from OECD countries of policies they have adopted to help reduce the gender gap. It employs a peer-learning approach that brings together research and policy experience from across the OECD. The evidence is organised in three levels of education policy: the classroom, the school and the education system. Concrete international examples and policy pointers were identified and described for each of these policy levels.

This analysis builds on the findings of Part I of this report which provided a description of the gender gap in Norway relative to other OECD countries and looked at the various factors that are associated with it. The Commission will present its recommendations for action to the Norwegian government by February 2019, and this analysis aims to support its work.

3.1. Analytical framework and methodology

This section presents the analytical framework and methodology used to gather and present the evidence and some caveats that should be considered when using the material presented in this report.

3.1.1. *An OECD peer-learning review*

Working in consultation with the Norwegian National Commission on Gender Equity in Education, the review team identified Finland, the Netherlands and the United States as peer countries. The peer countries were chosen for being some of the most advanced in the OECD in thinking about issues related to boys' underachievement and because each of these countries implemented policy interventions to prevent the emergence of gender gaps in education. Researchers from these three countries with expertise in school achievement gender gaps were invited to join the OECD review team and share their knowledge with the National Commission on Gender Equity in Education (see 3.6.4.Annex A for the list of the review team members). The experts were invited to share examples of policies from their countries at a peer-learning seminar with the Commission in May 2018 and provide input to this report. This evidence is supplemented by examples of research and policy interventions from other OECD countries that were identified by the OECD Secretariat on the basis of their relevance to the Norwegian context.

3.1.2. *State of the debate in the peer review countries*

Policy debates and initiatives concerning boys' underachievement in school appear to be more visible and extensive in the three peer countries than in other OECD countries. Some policies explicitly or implicitly targeting low achieving boys were introduced in

these countries, but not all were evaluated for their impact on reducing the gender gap in learning outcomes and school completion.

Giving visibility to the issue and encouraging research

In the United States, the Netherlands and Finland, the publication of research illustrating the magnitude of boys' underachievement in school has brought more attention to the issue among policy-makers and the public at large. In Finland, the National Board of Education published in 2004 a report describing evidence of boys underachievement in reading and foreign languages and highlighting the uneven distribution of boys and girls in general and vocational programmes (National Board of Education of Finland, 2004[42]). This report helped start the discussion on the issue and encouraged further research on the underlying causes of such disparities as well as what could mitigate gender gap. In 2017, the Prime Minister of Finland launched a new initiative to fund research to improve evidence on boys' underachievement in the country. Similarly, the Dutch Ministry of education commissioned three studies between 2006 and 2015 to look at boys' underachievement in school. The first study described the gender gap in the Netherlands and other OECD countries (van Langen, Driessen and Dekkers, 2008[43]). The second study focused specifically on the gap in learning outcomes in primary and lower secondary education (Driessen and van Langen, 2010[44]) and the third study looked at boys' access to tertiary education (Belfi et al., 2015[45]). In the United States the discussion of the gender gap in the research community has been particularly active in the past two decades. For example, Thomas DiPrete and Claudia Buchmann published in 2013 a comprehensive assessment of the problem in their book "The Rise of Women: the Growing Gender Gap in Education and What it Means for American Schools" (DiPrete and Buchmann, 2013[46]).

Limited policy interventions to explicitly mitigate or prevent the gender gap

In the three peer countries, as in other OECD countries, few targeted interventions were introduced at national level to prevent the emergence or mitigate the magnitude of the gender gaps in school achievement. In the United States some school level interventions targeting boys have been introduced, but there is no evidence about their effect if scaled-up at national level. In Finland and the Netherlands, very few interventions specifically targeting boys' underachievement were introduced and evaluated. However, boys have been an implicit target of many national policies given their over-representation among low achieving students and early school leavers. For instance, while the Netherlands' *Aanval op uitval* (Drive to reduce dropout rates) launched in 2002, does not target boys explicitly, they are disproportionally represented among the beneficiary group of students at risk of dropping out from school. Similarly, policies aiming to improve the delivery of Special Education Needs (SEN) support in Finland and the United States have implicitly benefited boys, as boys are over-represented among students referred to SEN programmes. Additionally, the Netherlands makes gender quality one of the criteria in any policy design making sure that any policy benefits equally boys and girls.

Shifting the focus towards inter-connection between gender and education equity dimensions

Countries are increasingly aware of the interaction between gender disparities and dimensions of educational disadvantage, such as students' socio-economic background, immigrant status and ethnicity. In the United States, the intersectionality of gender and ethnicity raised a lot of attention after a recent study showed that African-American boys

face a distinct disadvantage in terms of intergenerational mobility regardless of the income level of their parents (Chetty et al., 2018[47]). Most policy interventions focus primarily on boys from low socio-economic backgrounds and minorities. For example, the United States introduced in 2004 a national initiative called My Boy's Keeper to improve education and labour opportunities for boys from minority ethnic groups.

3.1.3. *Choice of policies*

The review team identified criteria to judge of the pertinence of the policies to Norway. The elements taken into account in choosing policies include:

- **Actual or expected effect on improving boys' achievement:** Policies were chosen based upon their proven or potential positive impact on reducing the gender gap in school achievement. Some selected policies include an explicit gender dimension in their designs; others do not, but nonetheless may have a positive impact on boys' outcomes.
- **Relevance to Norway:** This report focuses specifically on the policies that are most relevant to issues hampering boys' educational attainment and achievement in Norway. Therefore the policy review does not aim to be exhaustive and a number of policies were not included despite evidence on their role in promoting boys' educational progress For instance, despite being an important issue in the literature on boys underachievement in school, early tracking is not discussed in this report as Norway has a comprehensive education system until age 16.
- **Inclusiveness:** Policies that lift all students' outcomes are included. Boys are over-represented among low achieving students or students at risk of dropping out, thus policies aiming to meet the learning needs of all students often have a larger impact on boys and thus reduce the gender gap even if it is not the policy's stated intent. For instance, adapting the level of learning support provided to students' needs has a positive impact on learning for all students while still reducing the gender gap.
- **Policy evaluation:** The report highlights as much as possible policies that have been rigorously evaluated. Evaluation methods vary from experimental or quasi-experimental impact evaluation designs to qualitative evaluations and descriptions of changes in trends.
- **Scale of the policy:** Policies included in this report vary in scale from evaluated policy interventions in few schools to system-wide policies for which rigorous evaluation is often lacking.

3.1.4. *Limitations and caveats*

To make the most of the policy discussion in this report, it is important to take into account some caveats:

- **Some important evidence gaps still need to be addressed.** While student assessments are often the main source of information used to describe and understand the nature of the gender gap, research shows that the assessment design may influence the size and significance of this gap. It is therefore important to treat information provided by these assessments with caution and develop research to better understand the differentiated effect of assessment on boys and girls. Moreover, while information about factors associated with the

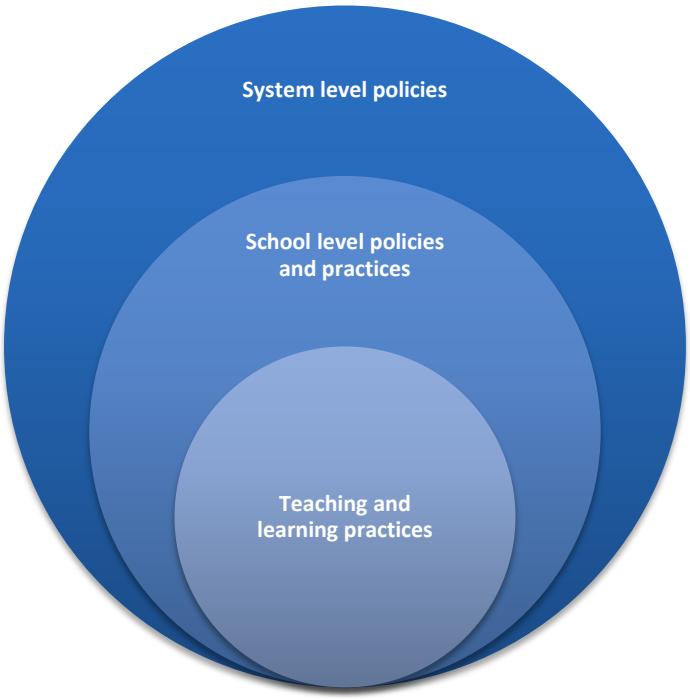
gender gap in adolescence are readily available thanks to international assessments such the Programme for International Student Assessments (PISA), evidence in earlier stages of child development are more limited which gives a partial view of the problem.

- **Policies are often context-specific and not systematically evaluated.** Available international evidence on impact of policies to reduce the gender gap is often context-specific – usually from Anglophone countries – and often introduced on a small scale (e.g. few schools or districts). Little is known about the effect of these policies when introduced in a different educational context or scaled-up.
- **Policy pointers are not policy recommendations.** The OECD peer-learning reviews provide countries with policy pointers on how to approach the policy issues based on the experience of other OECD countries. However, policy learning from other countries needs to be approached with caution and contextualised.

3.1.5. *Focusing on the three levels of policies*

This report aims to provide the National Commission and policy-makers in Norway with policy examples at three levels of education policy: the classroom, the school and the system. This organising framework highlights the responsibility at all levels of the education system in reducing the gender gap in school achievement. At each level, key policy levers to improve boys' learning outcomes and attainment are identified and examples of policy options are provided.

Figure 3.1. The three levels of policies to reduce the gender gap in school achievement



Teaching and learning practices in the classroom

Part I of this report shows a gender gap in learning outcomes for boys and girls but also in attitude towards learning, motivation and future career aspirations. Classroom teaching and learning practices play a central role in addressing these gaps. Teachers can help improve the learning outcomes of all their students by motivating and supporting all them to learn and adapting their teaching methods to the needs of both boys and girls. Providing teachers with tools and guidance on how to adapt their teaching strategies to the needs of low achieving boys has proven to be effective in improving boys' learning outcomes. This is particularly important in Norway where teachers have a high level of autonomy in implementing the curriculum and student assessment.

Other areas related to the teaching and learning practices in the classroom such as the feminisation of the teaching workforce, teachers' own stereotypes and biases, use of instruction time and grading practices are not discussed in this report but can be relevant to explain to what extent gender gaps exist and can help reduce gender gaps. For some of these areas the evidence of their effect on the gender gap is still very inconclusive. For example, the increase in the number of women in the teaching workforce has led some parents and policy-makers to argue that this led to a "feminisation" of the curriculum favouring girls through the choice of topics and content more aligned with girls' interests over boys' (Gambell and Hunter, 2000[48]). However, there is no evidence of a strong negative impact of a feminised teaching workforce on gender gaps.

School level practices and policies

As shown in Part I, boys are more likely to be early school leavers in OECD countries than girls. This is particularly significant in Norway which has one of the widest gender gaps in completion of upper secondary. School level efforts to identify and help students

at risk of dropping out – most often boys – is a key component of national strategies to improve completion rates of upper secondary education. Dropout reduction is linked to several other factors and policies such as improvement of learning outcomes, reduction of inequities in access to quality learning as well as improvement of student well-being and engagement in schools. In Norway, schools' high level of autonomy in pedagogy, curriculum implementation and resource management make them an even more central actor in reducing the gender gap compared to schools in other OECD countries.

System level policies

In decentralised education systems like Norway, national governments play a central role in incentivising action in priority policy areas and ensuring that minimum standards of quality are met by all actors. To reduce the gender gap in achievement, Norway's central government could use tools such as regulation, funding, guidelines, templates and knowledge dissemination databases to increase schools and municipalities' awareness to the problem of the gender gap and promote policies to reduce it.

3.1.6. ***Review methodology***

The policy levels, the levers and policy examples were selected based on their relevance to reducing the gender gap in achievement in Norway. The identification process was carried out in three steps:

Step 1: Identification of the policy focus for each level of the education system

The focus of each of the three policy levels was determined using the international comparative analysis of the gender gap in achievement in Norway summarised in Part I of this report. Moreover the review team interviewed education stakeholders representing the Ministry of Education and Research, the Directorate for Education and Training, municipalities, counties and schools to gain a better understanding of the education context in Norway. National and OECD research on the Norwegian education system were also used in this identification process.

Step 2: Identification of the policy levers

The OECD team reviewed the relevant literature to identify the key policy factors that can contribute to mitigate or prevent the gender gap in school achievement. Discussions with the Norwegian Commission on Gender Equity in Education helped the team select the policy levers that are most relevant to the work of the Commission.

Step 3: Policy examples from peer countries and other OECD countries

Policy examples for each lever were identified by experts from the three peer countries based on the criteria listed in 3.1.3. Additional examples from other OECD countries were also identified using the same criteria to complement those from the peer countries.

3.2. Teaching and learning practices: adapting teaching to students' needs

Boys' disengagement from learning and behavioural problems have been identified as one of the leading factors associated with the gender gap in learning outcomes and attainment (DiPrete and Buchmann, 2013[46]; OECD, 2015[3]). Teachers can play a central role in supporting children and their families to address both. Ensuring that teaching practices are engaging and adapted to students needs and are designed in a way that helps

boys improve their social and emotional skills can go a long way in preventing dropout among one of the groups that suffers the highest risk of disengagement from school (European Commission, 2013[49]). To do so, teachers need support and guidelines on how to best adapt their teaching practices to be more engaging and adapted to the needs of struggling students.

3.2.1. *Context*

Across OECD countries, boys tend to perform lower on reading assessments than girls and feel less engaged in reading. In Norway, this gender gap is apparent as early as grade 4 in the Progress in International Reading Literacy Study (PIRLS) with boys scoring on average 30 points lower than girls in 2016. Norway has also one of the widest gender gap favouring girls in the share of 4th graders reporting being confident or very confident in their reading ability in PIRLS. The gender gap in reading skills continues into adolescent years with 15 year-old boys performing lower on the PISA reading test than girls and reporting lower level of reading for pleasure (see Part I of this report). The gender gap in reading skills may partially be linked to boys limited engagement with the reading materials in the classroom and limited time spent reading outside of school (OECD, 2015[3]).

Moreover, boys tend to show more disruptive classroom behaviour than girls which impact their learning outcome and increases their chances of dropping out (DiPrete and Jennings, 2012[50]). Classroom teaching practices play an important role in ensuring that boys feel engaged with learning and are developing non-cognitive skills such as self-regulation that are central to reducing the gender gap in reading. These strategies can be universal (i.e. provided to all students in a classroom) or focused on students that are behind in their learning.

3.2.2. *Policy lever 1.1: Increasing students' engagement with reading*

Providing students with engaging and accessible reading materials is important to improve interest in reading and literacy skills (OECD, 2012[51]). This is particularly important for boys as studies show that they are less likely than girls to read and less likely to perform well in reading tasks when their interest in the content is low as they need to be engaged by the content in order to maintain focus and a sense of purpose (Price-Mohr and Price, 2017[52]; OECD, 2015[3]). Both parents and teachers are key actors for introducing boys to reading and keeping them engaged and motivated.

Encouraging parents to read with their children

Reading materials are most effective when provided to parents of young children to encourage them to read with their child in order to develop habits of reading for leisure. In fact, regardless of gender, early reading habits are proven to have a lasting effect on children's reading skills (OECD, 2012[51]). Countries can encourage parents to read to their children by providing reading materials. In the United Kingdom for instance the national Bookstart programme provides free reading material to 8-12 months old babies during their medical checks and to 3 year-olds through nurseries, preschools and care centres. The coverage of the programme is almost universal with 95% of children in the target age group receiving the reading materials (see Box 3.2). Countries can also choose to focus efforts on segments of population more in need for support. For instance Sweden introduced "Läs för mej, pappa" (Read to me, Daddy). The programme targets working fathers, most of which are from immigrant background, registered with a trade union. The

unions informed fathers about the benefits of reading to their children and made reading materials available for fathers to take home (see Box 3.1). In the United Kingdom, the Bookstart programme developed dual-language reading materials for parents of immigrant background that feel less at ease reading to their children in English. Adopting similar programmes to those used in Sweden and the United Kingdom can help ensure that boys in Norway, particularly those from low socio-economic background or immigrant families, are exposed early to reading for leisure.

Box 3.1. Läs för mej, pappa (Read to me, Daddy) initiative in Sweden

Läs For Mej, Papa ("Read to Me, Daddy") is a literacy-based project in Sweden targeting working fathers, most of them immigrants, who are members of local trade unions. It reflects the belief, prevalent in Sweden, that literacy is everyone's responsibility, not just that of the education system. Begun by national unions in 1999, the project was a response to the observation that men at the local unions were not reading sufficiently and thus were not helping their children to read. The unions perceived the lack of reading as a threat to democracy.

Local union branches are responsible for disseminating information about the programme among their members and for stocking books of interest to both union members and their children. Each local union organises "daddy days", when a working-class author, who presents his book, and a child-development expert discuss the importance of writing and reading, and explain to fathers how they can help to improve their child's reading habits.

All local unions in Sweden now run the programme, and as of June 2008, around 1 500 fathers had participated.

Source: (OECD, 2012[51]) *Let's Read Them a Story! The Parent Factor in Education*, PISA, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264176232-en.

Box 3.2. The Bookstart programme in the United Kingdom

The policy

Bookstart is a national programme that encourages all parents and care-givers to enjoy books with children from as early an age as possible. It provides free reading material to families to encourage them to enjoy books together. The Bookstart Baby Bag, which contains two books, is given to babies at their 8-12-month development check by health visitors. The Bookstart Treasure Chest is distributed to three-year-olds through children's centres, nurseries, preschools and other settings for young children. Each year, around 3.3 million children – around 95% of all children in England, Wales and Northern Ireland – receive the packs. To be as inclusive as possible, Bookstart provides dual-language books and guidance materials. There are also packs available for deaf children (Bookshine) and blind and partially sighted children (Booktouch). The Bookstart Treasure Chest contains a GBP 1 book token, accepted in most bookshops in the United Kingdom that children can use to buy books.

Bookstart packs contain guidance material for parents that explains how children benefit from reading, or being read to, at different stages in their lives, and how to choose age-appropriate books for their children. The two Bookstart packs contain invitations to join local libraries and many libraries offer Bookstart-related programmes, providing a way for involved parents to meet each other and share their experiences. In fact, while Bookstart encourages parents to read with their children, it also aims to create a community of readers that spans the generations. Bookstart, which began in 1999 with initial funding from the private company Sainsbury's, is now funded by Booktrust, an independent charity. Around 25% of overall funding comes from the devolved administrations in Wales, the Department of Education in Northern Ireland and the Department for Education in England. A range of children's book publishers and booksellers supports the programme and, with its charity status, Bookstart can accept donations from the general public. Indirect support also comes from those who distribute the packs, including libraries, health professionals and early childhood professionals.

Evaluation

Evaluations of the pilot phase in Birmingham in 1990 when 300 families of low socio-economic background received learning material for their 7-8 months children showed positive and promising results. A majority of parents (71%) bought additional books for their children and 28% increased their reading time with their children. Children who took part in the interventions showed more interest in books two years after the intervention than children in the control group. Studies also showed higher scores in reading test in SAT Key Stage I (assessment of students at 7 years-old) for students who benefited from the Bookstart pilot project compared to control groups.

Source: (OECD, 2012[51]) Let's Read Them a Story, http://dx.doi.org/10.1787/9789264176232-en.

Classroom strategies to improve engagement in reading

While it is easier for teachers to maintain a strong interest in reading among their students when they have been exposed to early reading at home, there are several strategies that teachers can use to engage students in reading even at a later stage. For example, the Premier League Reading Stars materials in England, United Kingdom is a good example of how teachers and school staff can improve boys' engagement in reading by providing a content that is more in line with their interests and hobbies. The Premier League Reading Stars include videos of famous footballers talking about books that they like and guiding students through a series of reading activities. The programme has shown promising results, in particular among boys (see Box 3.3). Dedicated time during the school day for reading for pleasure can also help students pick up the habit of reading autonomously and for pleasure. Programmes such as DEAR (Drop Everything and Read) can help improve students interest in reading by showing that it is a valued activity. During DEAR time, teachers and other school staff also read thus modelling what reading for pleasure looks like. Successful DEAR times are structured and teachers provide clear instructions to students on how to make the most of their reading time (OECD, 2012[51]). This is particularly important for boys as they tend to need more structured learning environment and are less likely to self-regulate. As Norway is in the process of introducing a new curriculum, teachers would benefit from receiving pointers on activities and teaching practices that have a proven effect on engaging boys or students with learning difficulties, in particular activities to encourage and improve reading levels among boys.

Box 3.3. Premier League Reading Stars in England, United Kingdom

The policy

The Premier League Reading Stars (PLRS) is a reading intervention designed by the Literacy trust and targeting students 8 to 13 year-olds. PLRS' goal is to capture the motivational power of football stars from the United Kingdom Premier League. The intervention is administered by teachers or the school librarian and includes 10 themed literacy lessons where football stars talk about what, where and why they like reading. PLRS include guided activities to teach students reading methods such as how to skim and scan through information as well as engaging challenges and videos of football stars.

Evaluation

The Literacy trust surveyed schools involved in the intervention in 2013. It found that on average students moved 1.3 sub-levels in the UK reading proficiency scale. The share of confident readers increased from half before the intervention to 80% after with a stronger increase for boys than for girls (36 percentage point increase for boys against 24 percentage point increase for girls).The share of students reading every day also increased from 16% before the intervention to 33%.

Source: (Pabion, 2015[531]) Premier League Reading Stars 2013/14 : Evaluation Report https://files.eric.ed.gov/fulltext/ED560658.pdf.

3.2.3. ***Policy lever 1.2: Reducing disruptive behaviours in classrooms***

While classroom interventions aiming to improve students' achievement have often focused on providing direct academic support, research shows that these might not be

enough to improve outcomes of students at the very bottom of the learning outcome distribution, a group where boys are over-represented. Preventing or addressing classroom disruptions has proven to be as central to improving students' learning outcomes as addressing learning difficulties (Institute of Education Sciences, 2008[54]). Ensuring that teachers are able to implement effective methods to prevent and address classroom disruptions is particularly important for improving boys' learning outcomes, as research shows that boys' disruptive behaviours is one of the leading factors behind the gender gap in achievement in primary education (DiPrete and Jennings, 2012[50]). Moreover, disruptive behaviour in the classroom can often be linked to students' lack of development of some social or behavioural skills (Institute of Education Sciences, 2008[54]). Thus addressing classroom behaviour may not only improve students' social skills but also have positive spill over effects on their academic outcomes.

Classroom management and preventing classroom disruption is, in many OECD countries, a core component of initial teacher education and in-service professional development. Nonetheless many teachers report feeling ill-equipped at creating disciplined learning environments and results from the OECD Teaching and Learning International Survey (TALIS) indicates that teachers express a high demand to receive support, guidance and training in how best to ensure that their classroom's environment is conducive to learning for all students (OECD, 2014[55]). In the United States, the Institute of Education Sciences developed guidelines for teachers summarising twenty years of research and evaluation on the subject of classroom behaviour. The guidelines provide practical tools to address classroom disruption ranging from preventative measures to targeted measures to improve students social and behavioural skills ranging from how to prevent and manage classroom disruptions to how to help students develop the necessary social and emotional skills that will serve them in school and at later stages in the labour market such as self-regulation and resilience (see Box 3.4)

Box 3.4. Practice guide to reduce behavioural problems in classrooms in the United States

In 2008, the Institute of Educational Sciences (IES), the research branch of the United States Department of Education, published a practice guide to help teachers in primary school reduce behavioural problems in their classrooms. The report summarised key findings from research in the past twenty years. It classified the practices into 5 categories (recommendations) and provided an indication to their proven effectiveness ranging from moderate impact to strong impact based on the IES classification. The IES recommended the following actions:

- Identifying the problem and what prompted it (moderate evidence)
- Modifying the classroom learning environment to decrease behavioural issues (strong evidence)
- Reinforcing and teaching behaviourally-appropriate skills (strong evidence)
- Collaborating with other teachers, school staff and parents to provide students with guidance and support (moderate evidence)
- Assessing need for school-wide action if systemic behavioural problem in school (moderate evidence)

Source: (Institute of Education Sciences, 2008[541]) , Reducing Behavior Problems in the Elementary School Classrom, https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/behavior_pg_092308.pdf.

3.3. School level practices and policies to prevent early school leaving among boys

Boys' over-representation among early school leavers makes school policies and programmes for dropout prevention a central component of any strategy aiming at reducing the gender gap in school attainment. While dropout prevention policies often do not have a gender dimension, boys tend be the primary beneficiaries of such policies (Balenović and Etnan, 2017[56]). Schools are the key actors of these dropout prevention measures as they are the main point of contact of students in the education system. They are responsible for identifying students at risk and for providing adapted measures to prevent dropout.

Early school leaving is a cumulative process rather than a discrete event. In fact, factors associated with dropout can be traced down to students' early years in the education system and are correlated with low learning achievement and disengagement from school. It is therefore important to consider how to identify students at risk early on and address the first signs of dropout such as school truancy and low learning achievement. It also requires co-ordination across a wide range of actors to ensure that the needs of all students are met by the education system.

3.3.1. *Context*

As is the case across OECD countries, boys in Norway are over-represented among early school-leavers (see Part I of this report). In 2017, the completion rate of upper secondary

education was at 70% among boys compared to 80% among girls[6]. The gender gap widens even more when socio-economic background variables such as parental educational attainment or immigrant status are taken into account. For example, among students whose parents have only an upper secondary degree or lower secondary degree, the gender gap is of 11 percentage points in favour of girls (Statistics Norway, 2018[57]). The completion rate among immigrant boys in Norway was also lower (31%) compared to immigrant girls (47%) in 2016 (Norwegian Directorate for Education and Training, 2016[58]).

The completion rate gap is unsurprising as boys tend to be over-represented among the groups most at risk of dropping out such as low achieving students and students referred to Special Education Needs (SEN) support. Similar to trends in other OECD countries, boys in Norway are more likely than girls to be overall low achievers in the core subjects of maths, reading and sciences (see Part I of this report). Boys also represent more than two thirds of students referred to SEN education (Norwegian Directorate for Education and Training, 2016[58]).

Across OECD and European countries, schools are the key actor in preventing dropout. In most countries, schools are responsible for identifying students at risk of dropping out and providing them with adequate support to ensure their completion of schooling (European Commission, 2013[49]). This role is even more pronounced in countries like Norway where schools are given a high level of autonomy and flexibility in implementing national education policies.

3.3.2. *Policy lever 2.1: Early identification of students at risk of dropping out*

Accurate identification of students at risk is an important first step in any dropout prevention strategy. The earlier the school is able to identify students at risk of dropping out, the better the chances of avoiding dropout. Strict monitoring of students' unexcused absences from school (truancy) and triangulating information about learning achievement, classroom behaviour, health and social problems are the most reliable ways to identify potential early school leavers.

Preventing truancy

Truancy, defined as unexcused absences from school, is often a first step towards dropout (De Witte and Csillag, 2014[59]). In the long term, prolonged non-attendance of school is also associated with negative consequences on the person's mental health, income level and social ties (Havik, Bru and Ertesvåg, 2015[60]). Various school factors can lead to truancy such as having difficult peer relationships in school (i.e. bullying and difficulty in making and keeping friends); poor classroom management from teachers and lack of monitoring of attendance. Individual and family factors such as emotional instability (i.e. depression or anxiety) and limited parental engagement in their child' education are also associated with higher levels of truancy (Havik, Bru and Ertesvåg, 2015[60]).

Truancy monitoring and prevention measures are often included in national strategies to combat dropout and have shown positive impact on completion rates (Wilson et al., 2011[61]; Balenović and Etnan, 2017[56]). Several European countries have introduced

[6] Share of pupils of the 2012-17 cohort who completed upper-secondary education within five years

stricter monitoring of student attendance and follow-up measures in the past decade. For instance, England, Ireland and Belgium (FR) all introduced regional truancy monitoring and support services to help schools in a given area monitor students' truancy. Such support systems often play a dual role of liaising between the schools and students at risk of dropping out and increasing awareness among the school community and parents about the importance of school attendance (European Commission, 2013[49]). The effect of stricter monitoring in reducing dropout has been evaluated in Amsterdam in the Netherlands and has shown a positive impact, in particular among low achieving students in general programmes (see Box 3.5).

Norway introduced in 2016 a stricter monitoring of truancy in upper secondary schools by which students that have missed more than 10% of class without documented justification, will fail the subject (i.e. not receiving a mark on their assessments). Schools are given some discretion to use their judgement about whether the student shall fail the subject if the absences are between 10 and 15% of the class time (Norwegian Directorate for Education and Training, 2016[62]). This new measure has led to decreases in truancy, in particular in vocational education. However, a study points out that the level of discretion given to schools creates unfair treatments of students (Andresen et al., 2017[63]).

Box 3.5. Stricter monitoring of truancy in the Netherlands

The policy

In 2005, the Netherlands introduced a series of measures to prevent dropout. As part of this policy, several Dutch cities introduced stricter monitoring of school truancy reporting by the Municipal authorities. Amsterdam set up a central truancy registration system for all primary and secondary schools (Centrale Amsterdamse Leerling- en Verzuimregistratie) and organised surprise visits to schools by Municipal civil servants to ensure that schools are effectively reporting truancy. The purpose of this measure was to ensure a uniform definition of truancy and a more centralised reporting to co-ordinate efforts of actors. It also aimed at discouraging truancy by increasing the likelihood of being caught. By the end of 2005, the registration system was considered as uniform for general and pre-university schools (and for 70% of vocational schools.

Evaluation

De Witt and Csillag evaluated the impact of the introduction of stricter truancy reporting in Amsterdam on dropout rate by identifying the schools that were more lenient with their reporting pre-measure as the treatment group. They found that dropout rates decreased slightly in all schools except for the most lenient schools. The authors find the strongest effect in non-vocational schools with higher shares of low achieving students in national exams.

Sources: (De Witte and Csillag, 2014[59]) Does anybody notice? On the impact of improved truancy reporting on school dropout, http://dx.doi.org/10.1080/09645292.2012.672555; (De Witte and Cabus, 2013[64]) Dropout prevention measures in the Netherlands, an explorative evaluation, http://dx.doi.org/10.1080/00131911.2011.648172.

Early warning systems

While school attendance is a key indicator to monitor risks of early school leaving, other factors may also help schools identify accurately students at risk. To get the most complete picture, schools are thus often asked to triangulate information about students' attendance, learning progress, and other factors such as classroom behaviour or recent trauma as part of their Early Warning Systems (EWS) to identify at risk students and intervene early (European Commission, 2013[49]). EWS are particularly helpful in decentralised systems like Norway, to provide some minimum standards for early interventions across schools and reduce heterogeneity of actions. In Iceland, the "Risk Detector", an interactive platform, allows school counsellors to identify students at risk by filling-in a questionnaire. The school counsellor receives a report with "student scores" reflecting the risk of dropout of individual students (see Box 3.6).

Similar initiatives exist at local level in Norway where some counties have introduced processes to monitor and follow-up with students at risk of dropping out. For example, in the counties of Hedmark, Oppland, Nord-Trøndelag and Aust-Agder a EWS is tested out (2016-2019) and will be evaluated (Oslo and Akershus University College of Applied Sciences,(n.d.)[65]).

Box 3.6. The Risk Detector platform in Iceland

The policy

In 2007, Iceland introduced a questionnaire called "Risk Detector" to help school counsellors identify accurately students at risk of dropping out before completing upper secondary education. The questionnaire was first implemented in the last year of lower secondary and first year of upper secondary and included questions about the student background, family factors, previous school experience, school engagement and attitude towards school, part-time working, psychological adjustment, social ties in schools (i.e. friendships and relationships with teachers and school staff).

Evaluation

The Risk Detector was first piloted in three schools with high dropout rates and received very positive feedbacks from school counsellors. Upon this success, the Ministry of Education, Science and Culture decided to expand the programme to 18 out of the 32 upper secondary schools in the country (European Commission, 2013[49]). However, this measure was not formally evaluated.

Source: (European Commission, 2013[49]), Reducing Early school Leaving: Key Messages and Policy Support, http://ec.europa.eu/dgs/education_culture/repository/education/policy/strategic-framework/doc/esl-group-report_en.pdf

3.3.3. *Policy lever 2.2: Targeted support to students at risk of falling behind in their learning and dropping out*

Once students at risk of dropping out are accurately identified, schools should introduce interventions and programmes to reengage them in the learning environment. These programmes can either have a universal approach with support provided to all students by ensuring that teaching practices are adapted to all students' learning needs or they can be targeted at those more in need for additional cognitive or non-cognitive support (Mitchell, 2014[66]).

Multi-tiered interventions

Multi-tier intervention approaches provide schools with a three level of support options (i.e. universal support to the whole class, targeted remedial classes to low achieving students and additional support to special education needs (SEN) students). These approaches have become more popular internationally in recent years. Originally introduced as part of special education needs (SEN) programmes, multi-tier approaches aim at meeting the learning needs of students who do not traditionally qualify for SEN support but would benefit from additional learning support (Mitchell, 2014[66]). While these approaches started in SEN education, they are now often considered as part of the mainstream education toolkit to prevent students' disengagement from school. Examples of multi-tiered interventions include the Response to Intervention model in the United States and the Finnish three-tiered support model described below (see Box 3.7). The first tier of intervention is to make sure that teachers are capable of meeting the various learning needs of their students in the classroom, Tier 2 includes targeted support in small groups to students with higher risk of falling behind and Tier 3 is intensive interventions

by multi-professional teams (what would be conventionally perceived as SEN programmes) (Mitchell, 2014[66]).

While still not in use in all schools, the multi-tier intervention approach has been tested and evaluation in about 300 schools in Norway and was first introduced in 2005. This approach can help complement the current Norwegian SEN model by introducing more low-cost and in-school support to students that do not qualify for SEN support (students in tiers 1 and 2). This may also help respond to some of the current criticisms of the Norwegian SEN system which is considered too costly and ineffective at responding to the learning needs of students which are below the eligibility margin (Nordahl, 2018[67]). Finally, if the Finnish experience is any evidence, this may also decrease the number of students that are referred to SEN education by providing them with a lighter school-based alternative (see Box 3.7). Such model would particularly benefits boys which represent the overwhelming majority of children referred to SEN programmes in Norway and the majority of low achievers in the education system (Norwegian Directorate for Education and Training, 2016[58]).

Box 3.7. The three-tiered support model in Finland

The policy

In 2007, Finland introduced a new Special Education Strategy that was fully implemented by 2011. The new strategy was a response to concerns expressed by several municipalities about the increasing number of students referred to Special Education Needs (SEN) support. The new strategy introduced a three-tier level of support to students at risk of falling behind:

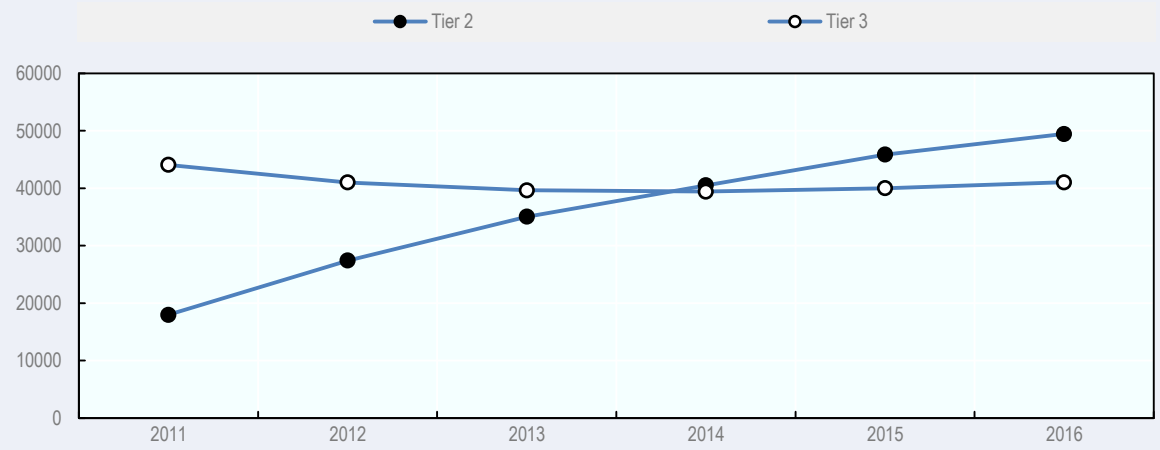
- **Tier 1: General support** is accessible to all students and includes further in-class differentiation of learning; remedial teaching; co-teaching with specialised education needs teacher and part-time special education support. Organisation of this support is left at the discretion of the classroom or subject teacher.
- **Tier 2: A learning plan for intensified support** is prepared for students who need additional support. Teachers identify the students at risk through a pedagogical assessment and develop an action plan. The plan is often the same as the Tier 1 support but implemented more intensively. It is left to the school to decide on whether to offer other evidence-based targeted interventions.
- **Tier 3: Special support** is available when Tier 2 has proven ineffective to meet a student's needs. A pedagogical evaluation is conducted by multi-professional team in the school. Access to Tier 3 support requires confirmation by the Municipality. The planned actions are specified in an official document the "Individual Education Plan" which has to be monitored and adjusted regularly.

This policy was heavily supported by national authorities which provided municipalities with financial support over a period of four years to renew their curriculum, develop guiding documents for schools and train teachers prior to the legislation change.

Evaluation

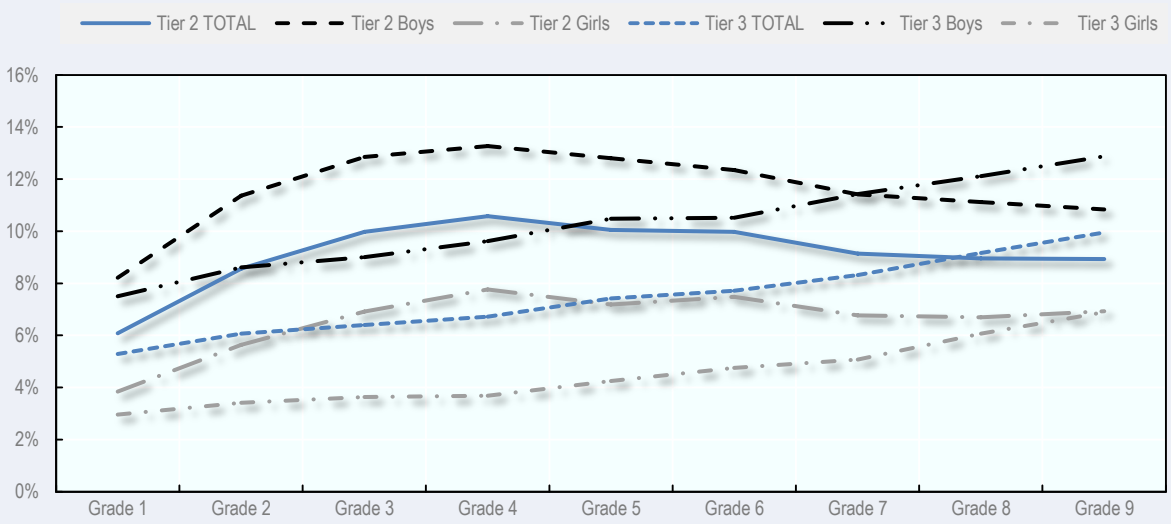
The measure was rolled-out in all municipalities at once limiting the capacity for an experimental or quasi-experimental evaluation of impact. A qualitative evaluation showed that the model was successfully implemented by most municipalities despite some regional differences. Students are offered additional support early in their learning career. In fact while traditional SEN support is most prominent in lower secondary education, Tier 1 and Tier 2 is often used by primary schools to provide personalised support to their students (see Figure 3.2). Trends in pupils' enrolment in Tier 2 and Tier 3 supports between 2011 and 2013show as intended by the policy a decline in the number of students in Tier 3 as more students are offered an intermediate level of support, Tier 2 (see Figure 3.3).

Figure 3.2. Number of students receiving Tier 2 and Tier 3 support in Finland (2011-2016)



Source: Adapted from Statistic Finland (2018), Suomen virallinen tilasto (SVT): Erityisopetus [verkkojulkaisu]. ISSN=1799-1595. Helsinki: Tilastokeskus, (http://www.stat.fi/til/erop/index.html) (accessed 15 June 2018).

Figure 3.3. Share of students receiving Tier 2 and Tier 3 support in 2016 by gender



Source: Adapted from Statistic Finland (2018), Suomen virallinen tilasto (SVT): Erityisopetus [verkkojulkaisu] [Official statistics of Finland (SVT): Special Education –online publication]. ISSN=1799-1595. Helsinki: Tilastokeskus, (http://www.stat.fi/til/erop/index.html) (accessed 15 June 2018).

Sources: Thuneberg et al., 2014[167] , Conceptual change in adopting the nationwide special education strategy in Finland, http://dx.doi.org/10.1007/s10833-013-9213-x; Ahtiainen et al., 2012[168], *Tehostettua ja erityistä tukea tarvitsevien oppilaiden opetuksen kehittäminen 2007–2011. Kehittävän arvioinnin loppuraportti [Development of Teaching Improved and Special Needs Students 2007-2011. Final report of the development assessment]*,http://julkaisut.valtioneuvosto.fi/bitstream/handle/10024/79219/okm05.pdf?sequence=3&isAllowed=y.

Tutoring and mentoring programmes

Research has shown that targeted academic support and mentoring of students most at risk of dropping out is effective in reducing dropout and improving learning outcomes (Wilson et al., 2011[61]). Tutoring or remedial programmes in small groups are common across schools in OECD countries. The OECD Programme for International Student Assessment (PISA) reveals that on average across OECD countries, 66% of students were enrolled in schools offering mathematics lessons in addition to those offered during regular school hours. Out of these, 33% were enrolled in schools offering only remedial classes, and 54% in schools offering both remedial classes and enrichment classes (OECD, 2013[68]). While most programmes do not have a particular gender dimension, boys tend to be disproportionally represented in the target group due to their over-representation in the treatment population of at risk students. Some programmes such as the "Targeted Tutoring" in Chicago, USA include both an academic tutoring component in small groups and a non-academic counselling or mentoring component based on cognitive behavioural therapy focusing on problem solving and socio-emotional skills (see Box 3.8). Some programmes may however target the needs of boys, in particular those from low socio-economic background more explicitly. These programmes often aim at addressing behavioural problems in school and re-engaging the students in their learning environment. Becoming a Man (BAM) is a programme from the United States that started in Chicago public schools before influencing several similar programmes across the country. BAM is a mentoring programme targeting boys from low socio-economic background in neighbourhoods with large shares of minority populations. BAM aims at teaching teenage boys self-regulation, problem solving and impulse control through a series of activities. BAM had a positive impact on participants learning outcomes and retention in school (see Box 3.9).

Schools in Norway are encouraged by the counties and municipalities to introduce targeted interventions to help low achieving students. The schools met by the review team had for instance organised extra-tutoring hours for students at risk of falling behind; others had organised extra-curricular activities for recent immigrant students to help improve their sense of belonging in the school. However, counties and municipalities in Norway do not seem to have processes in place to evaluate the impact of school targeted interventions and help disseminate evidence-based interventions across schools. Best practices are shared in networks of schools without a formal evaluation of their success. While the role of the school networks in disseminating best practices is a positive feature of the Norwegian education system as it empowers school actors and creates a culture of mutual support for improvement, it needs to be reinforced with more rigorous external evaluations of school interventions in some key policy areas such as dropout prevention. In the United States, evaluation of impact is a key component of the Response to Intervention model. Targeted interventions as part of Tier 2 of the model are required to be evaluated to prove their positive impact on improving learning outcomes for students (Jahnukainen and Itkonen, 2016[69])

Strategies and policies to encourage the evaluation and dissemination of school level interventions will be discussed in more depth in section 3.5 of this report.

Box 3.8. Targeted tutoring in Chicago, USA

The policy

Targeted tutoring is an intervention implemented in the Chicago public schools in 2012. The program includes a bundle of academic and non-academic interventions targeted at students who are at risk of dropping out.

The core of the academic intervention is an individualised mathematics tutoring program in small group settings. It is implemented as daily, one-hour maths tutoring session with one instructor for two students. The tutors are recent college graduates with strong maths and communication skills without formal teacher training. The small group setting makes it possible to target the tutoring at students' individual needs.

The non-academic intervention is similar to Becoming a Man (BAM) discussed in Box 3.9. It is based on cognitive behavioural therapy with the goal to enhance problem solving, impulse control, and decision-making. The intervention is administered over 27 one-hour weekly sessions during the school day over the school year. Each session includes a small group of about 15 students with two adults who administer the training. Trainers are college-educated adults without specialised training who are briefed on the scripted program. The intervention consists of different elements including character or values education, training in specific social or social cognitive skills, and problem-solving skills.

Evaluation

Cook et al (2014[70]) evaluated this program based on a sample of 106 9th and 10th grade boys enrolled in Chicago public schools in the school year 2012-13. They conclude that "participation increased maths test scores by 0.65 of a control group standard deviation (SD) and 0.48 SD in the national distribution […] and seem to have increased expected graduation rates by 14 percentage points." (Cook et al., 2014[70]). In response to the promising results, the City of Chicago scaled-up the programme by increasing the number of Chicago public schools students participating in this high-dosage tutoring intervention. An evaluation of the extension of this program has not been published.

Sources: (Cook et al., 2014[70]) *The (surprising) efficacy of academic and behavioral intervention with disadvantaged youth: Results from a randomized experiment in Chicago*, http://dx.doi.org/10.1017/CBO9781107415324.004; (Heller et al., 2017[71]) Thinking, fast and slow? Some field experiments to reduce crime and dropout in Chicago, http://dx.doi.org/10.1093/qje/qjw033

Box 3.9. Becoming a Man (BAM) in Chicago and Mentoring for R.E.A.L in New York City, USA

The policy

Becoming a Man (BAM) is a programme targeted at boys to reduce crime and dropout by changing the decision making of economically disadvantaged youth. The programme, introduced in 2009 has been highly effective in reducing impulsive, automatic reactions that can lead to problems in school-related activities including violence. The programme supplements normal school instructions and is a school level intervention targeted at supporting students who disrupt the learning process and thereby help to improve the overall school and learning environment. The programme was initially implemented with two different groups of students in Chicago. The first group included 2 740 boys in grade 7 to 10 from 18 public schools in Chicago and the second included 2 064 boys in 9th and 10th grade from 9 different Chicago public schools. Youth participate in 27 one-hour, once-per-week group sessions during the school day and use cognitive behavioural therapy to help youth slowdown in high-stakes situations and avoid impulsive, automatic responses that can lead to violence.

Mentoring for R.E.A.L (Resiliency, Education, Attendance, and Leadership) is a similar programme to BAM implemented in New York City in 2011 as part of the city's Young Men Initiative. The programme provides mentoring for Black and Latino boys in high school and targets students who had contact with the juvenile justice system, have previous school suspensions, or are at risk of school suspension and dropout.

Evaluation

The BAM programme underwent rigorous evaluations based on randomised controlled trials. The findings show that the programme substantially reduces violent-crime arrests among youth and boosts the high school graduation rates of participants by nearly 20 per cent (Heller et al., 2017[71]). The positive evaluations were key to the adoption of similar programs in President Obama's My Brother's Keeper initiative (see Box 3.17) as well as the targeted tutoring programme in the Chicago Public School district described above which is scaling up the programme as part of the city's initiative to reduce violence and school dropout (see Box 3.8).

Source: (Heller et al., 2017[71]) Thinking, fast and slow? Some field experiments to reduce crime and dropout in Chicago, http://dx.doi.org/10.1093/qje/qjw033

3.3.4. *Policy lever 2.3: Integrating services to improve learning, students' well-being and prevent early school leaving*

Given the national scale of early school leaving, schools cannot act on their own. They often need to work in co-ordination with external actors to identify students at risk and implement the necessary interventions to keep them in school. In fact, multiple factors outside of the schools realm such as economic, family and health factors may influence a student's experience in the school, his learning, attitude and engagement in school, his and well-being and ultimately his decision to drop-out. Addressing these factors thus require a multi-sectoral approach. Moreover, once students have dropped out of school,

co-ordination between schools, local and national services is necessary to ensure that they are provided a second chance at finishing upper secondary education.

In-school multi-professional teams

Ensuring that students receive adequate pedagogical, psychological and health support is necessary to creating a good learning environment and giving every child a chance to succeed in school. Such services not only help address student well-being but also help with their learning performance and attitude towards school (OECD, 2017[72]). As is the case in most Nordic countries, Norway has a long history of providing health, social, psychological and pedagogical support to schools to complement the work of teachers. But some parts of this support are located at the municipal level instead of in the school itself. For instance, the school psychologists of the city of Oslo visit schools regularly but do not spend most of their time in a given school. The psychological-pedagogical service (known as PPT) is indeed located at the municipal level requiring students to leave the school environment to be assessed for referral into SEN support (Nordahl, 2018[67]).

An alternative model with embedded support to students in schools through multi-professional teams has proven to be more impactful in addressing students' needs (Vainikainen et al., 2015[73]). In Finland, multi-disciplinary teams embedded in the school meet regularly to address school level issues and provide teachers with support and advice on how to meet the needs of all students. These teams include professionals of the health sector, school psychologist and teachers trained in SEN education (see Box 3.10). This model allows for a more systematic approach to dropout prevention, looking at the school level factors while still addressing the individual students' needs (Hjörne and Säljö, 2014[74]). Research also shows that for such model to work, the multi-professional team needs to meet regularly, look beyond each disciplinary practice and demonstrate a high level of reflexivity (Hjörne and Säljö, 2014[74]).

Box 3.10. In-school multi-professional teams in Finland

The policy

Almost every school in Finland has multi-professional support teams that help address the pedagogical, developmental and social needs of students in the school (Vainikainen et al., 2015[73]). These teams are led by the school principal and include psychologists, social workers, school nurses, special educators and occasionally speech therapists and medical doctors. The composition of the team and the intensity of the work vary to some extent by school size and location. In bigger cities and towns, the core team is present at school every week, which makes it easy to have regular meeting times. In remote areas, some professionals may be present only once or twice a month and not necessarily at the same time with the other professional groups (Koskela, 2009[75]; Vainikainen et al., 2015[73]). In those cases, more responsibility lies on the regular school personnel who need to select more carefully, which topics to discuss with the rarely seen team members.

In the majority of the Finnish schools, the teams meet weekly or bi-weekly to design and co-ordinate school- and class-level preventative work and general interventions (Ahtola et al., 2011[76]). The team also monitors the situation of each class in the school to identify students at risk of falling behind in their learning. In practice, every class teacher or class supervisor attends the team meeting at least once a year to go through the situation of their class and the individual students in it in detail. The team discusses the implementation and the effectiveness of the individual level learning plans and makes the necessary adjustments.

Evaluation

This policy has not been evaluated in Finland. However, the high level of take-up among schools can be used as a measure of its success. A study conducted in more than 1 000 Finnish basic education schools in 2012 showed that nearly every school participating in the study had a school-based multi-professional team structure (Vainikainen et al., 2015[73]). Research in other Nordic countries such as Norway and Sweden where the take-up of such models is much lower shows overall positive effects of based multi-professional teamwork compared to an external service centre model (Anthun and Manger, 2006[77]; Hjörne and Säljö, 2014[74]).

Multi-sectoral co-ordination

Once the contact with the school has been broken, intervention of other local services is often necessary to re-orient the young person back to the education system. This requires a strong co-ordination between various actors such as labour agencies, local authorities, health and welfare services and schools (European Commission, 2013[49]). Some OECD countries choose to clearly identify a co-ordinator in charge of ensuring alignment and complementary of action across services. In France, such co-ordination is ensured through the local networks of Follow-up and Support to Early School leavers Platforms (see Box 3.11). The French model is similar to the Follow-up services in Norway in that it serves as a co-ordination platform for social and employment support. The Follow-up

services in Norway uses a similar model by which information is shared across services to identify early school leavers and offer either continuation of studies or employment (Norwegian Directorate for Education and Training, 2016[58]).

Box 3.11. Follow-up and support to early school leavers platforms in France

The policy

The Follow-up and Support to Early School Leavers Platforms (PSAD) were established in 2011 to co-ordinate the work of local actors from education, labour, youth affairs and justice departments. The goal of PSAD is to provide a personalised and rapid response to the needs of every young person aged 16 or older without a diploma and not in the education system nor employed. PSAD are co-ordinated by the head of the local Information and Guidance Centre and a steering committee. PSAD gather information from the French inter-ministerial information exchange system twice a year and information collected from partner organisations. This information is used to identify early school leavers and additional checks are made with the school to get more information on the pupil. The early school leaver is then invited to an interview to identify the reasons behind the dropout, understanding his or her aspirations and jointly defining a course of action for re-integration in the education system.

Evaluation

A study of the PSAD in Cergy-Pontoise in 2012 shows that the model does not work for all pupils. The take-up rate in Cergy-Pontoise was 10%. Of the early school leavers identified by the platform, 30% were unreachable, 60% had already found education programmes through other means. The study shows indeed that the PSAD is particularly useful for those students with no other means to find a solution. The study also highlights key advantages of the sectoral co-operation such as improved information exchange and sharing of practices.

Source: (European Commission, 2016[78]) Peer Learning Activity (PLA) Reducing early school leaving in France, http://ec.europa.eu/assets/eac/education/experts-groups/2011-2013/esl/france-esl_en.pdf

3.4. System level policies: Transition from early childhood education and care to primary

The National Commission on Gender Equality in Education has asked the OECD to examine more specifically the transition between early childhood education and care (ECEC) and primary education. How the transition from ECEC to primary is handled can have a differentiated impact between boys and girls.

3.4.1. *Context*

Transition from early childhood education and care (ECEC) to primary education is considered as one of the critical moments in education (Pianta and Kraft-Sayre, 1999[79]). Increased awareness of the long term cognitive gains from enrolment in ECEC and government efforts have led to almost universal enrolment in pre-primary education in most OECD countries. However, the positive impact of ECEC on learning in primary

grades can decrease or disappear in later grades if the transition into primary is mishandled, what has been referred to in the literature as "fade-out effects" (Wößmann, 2008[80])

For some boys, especially those from low socio-economic or immigrant backgrounds, the transition from pre-primary to primary can be a source of anxiety and distress as they move from a play-centred setting into a more structured learning setting (Hausken and Rathbun, 2002[81]; Sylva et al., 2004[82]). In fact, school transitions tend to affect more negatively boys than girls in particular when associated with a change in peers (Andrew and Flashman, 2017[83]). One possible explanation for why boys tend to adapt more slowly to the primary classroom setting is their capacity to self-regulate at this age tend to be lower than for girls. Ensuring a smooth transition to primary education that addresses the developmental needs of all students is therefore key to maximising learning gains for all students and decreasing the gender gap in achievement.

3.4.2. *Policy lever 3.1: Transition from early childhood education and care to primary education*

Different factors may influence the quality of the transition from ECEC to primary. The availability of pedagogical and professional continuity between ECEC and primary schools, the quality of co-ordination across levels between teachers, institutions, parents, and local authorities, and an adapted curriculum and flexible structure meeting the developmental needs of a diverse group of children have been identified by the OECD as some key factors to facilitate the transition into primary (OECD, 2017[84]).

In Norway, the new ECEC curriculum framework addresses specifically transition between ECEC and primary and gives guidance to schools and ECEC institutions on how to make this transition run more smoothly. Norway is also currently debating the possibility of providing parents more flexibility in delaying their children's entrance in compulsory education. While these proposals and reform are steps in the good direction, other alternative models that have shown better results than the current policies explored in Norway are worth testing and evaluating in the Norwegian school context.

Pedagogical continuity between ECEC and primary school

In most education systems, the transition from ECEC to primary education involves a change in the approach to learning. Often pedagogy in ECEC is centred on play whereas primary education introduces teacher-lead instruction and formal learning (OECD, 2017[84]). An abrupt transition between these two settings may lead to anxiety and disengagement from the learning process. To avoid this, an increasing number of OECD countries are introducing integrated or aligned curriculum frameworks for ECEC and the early grades of primary education (see Table 3.1). Pedagogical continuity between ECEC and primary along with adequate training for teachers of the transition years has indeed proven to lead to better academic outcomes in later grades (Ahtola et al., 2011[76]).

Curriculum continuity can be achieved by creating a unique curriculum framework covering at least the last years of ECEC and the first years of primary school. Such approach views the transition as a coherent cycle of learning and incentivises close co-ordination between ECEC providers and primary schools (OECD, 2017[84]). In Wales, the Foundation Phase curriculum launched in 2009, introduced a single curriculum that provides guidance for ECEC and primary schools for learning between the ages of 3 and 7. The Foundation Phase aims to meet the developmental needs of all learners and ensures continuity in pedagogy across 6 key competency domains (see Box 3.12). In

Norway, the current curriculum reform is a step towards increased curriculum continuity between ECEC and primary school and should be pursued to make the transition a little smoother and give time to students to adapt to the new learning setting. For improved continuity, Norway may consider introducing a single framework for the last years of ECEC and first years of primary school without compromising the play-centred spirit of its ECEC curriculum.

Table 3.1. Curriculum types in ECEC and primary across jurisdictions

Type of curriculum				Jurisdiction
Separate curriculum in place for ECEC and primary	No curriculum for early childhood educational development and care (ISCED 01)	Curriculum for pre-primary education	Curriculum for primary education	Czech Republic, Greece, Portugal, Slovak Republic, Spain
Separate curriculum in place for ECEC and primary	Curriculum for early childhood educational development and care (ISCED 01)	Curriculum for pre-primary education	Curriculum for primary education	Belgium-Flemish Community, Canada - Saskatchewan and Quebec, Japan, Korea and Turkey
Separate curriculum in place for ECEC and primary	Integrated curriculum for ECEC		Curriculum for primary education	Australia, Austria, Belgium-French Community, Chile, Colombia, Denmark, Finland, France, Hungary, Mexico, **Norway,** Slovenia, United Kingdom -England
Integrated or aligned curriculum for at least the last year of pre-primary and the first year of primary				Canada, Italy, the Netherlands, Ireland, Poland, Luxembourg, Poland, Sweden, Switzerland, United Kingdom – Scotland, United Kingdom - Wales

Source: Adapted from (OECD, 2017[84]) http://dx.doi.org/10.1787/9789264276253-en.

Box 3.12. The Foundation Phase curriculum in Wales, United Kingdom

In Wales (United Kingdom), pedagogical continuity between ECEC and primary school rests explicitly on one extended curriculum, the 2009 Foundation Phase curriculum that covers three to seven year-olds. In practice, children transfer from ECEC to primary school at the age of five under the guidance of this one curriculum, reflecting full integration between ECEC and primary school. The Foundation Phase curriculum is planned as a progressive framework to meet the diverse needs of all children, including those at an earlier stage of development and those who are more capable. The Foundation Phase curriculum is flexible, with a broad range of activities, learning and development skills set out for the following areas of learning that support the development of children and their skills: 1) Personal and Social Development, Well-being and Cultural Diversity; 2) Language, Literacy and Communication Skills; 3) Mathematical Development; 3) Welsh Language Development; 4) Knowledge and Understanding of the World; 5) Physical Development; and 6) Creative Development. The areas of learning need to complement each other and should not be approached in isolation, thus emphasising children's holistic development. Pedagogy and principles are scaled to each age group to meet their specific needs. Further guidance for this is provided locally. During the implementation phase of the Foundation Phase curriculum in 2009, support was provided by a national training programme and training modules. Nowadays guidance is provided on specific areas of learning and delivery of the Foundation Phase curriculum is supported by a range of guidance documents and other resources, for instance related to active learning. Alongside the Foundation Phase curriculum, the delivery of the literacy and numeracy elements is tied to a more general approach by a national Literacy and Numeracy Framework that sets out specific outcomes for children on literacy and numeracy from age 3 to 14.

Source: (OECD, 2017[84]) Starting Strong V: Transitions from Early Childhood Education and Care to Primary Education, http://dx.doi.org/10.1787/9789264276253-en.

Transmitting students' information

A successful transition from ECEC to primary requires that primary teachers know the profile and developmental needs of each individual student entering their class (OECD, 2017[84]). In some OECD countries, like Norway, a diagnostic assessment is carried out at the start of primary education to understand the learning levels of students and adapt teaching. In Norway, schools can use mapping tests in grades 1 to 3 to assess students' learning in mathematics and reading (Nusche et al., 2011[85]). However, these assessments are not sufficient to capture all the developmental and learning needs of students. Most diagnostic assessments focus on identifying students' cognitive skills and their maturity to handle information processing. However, a successful transition from ECEC to primary school depends not only on students' readiness to handle abstract information in the context of more teacher directed instruction, but also on their socio-emotional development and their ability to display conscientiousness and self-regulation. To get a full picture of students' developmental and learning needs and ensure a smooth transition, many OECD countries have been exploring ways to encourage the transmission of more complete information on children from ECEC institutions to primary school. In some

countries, transfer of information on children's learning is mandatory. This is the case for instance in Northern Ireland, United Kingdom where pre-primary institutions are required to liaise with the primary schools and pass on the pre-school transition records and forms which summarise the child's progress in ECEC (O'Kane and Murphy, 2016[86]). In other countries, such as Australia and Ireland, record models and templates are provided to schools to ensure that minimum standards are met in the information transmitted to schools (O'Kane and Murphy, 2016[86]). In Ireland, the National Council for Curriculum Development and Assessment (NCCA) is reviewing current school practices for transmitting pupils' record in order to introduce a national standard of what information is to be provided. The template that will be introduced in September 2018 will include information on student's language and communication skills, self-help and thinking skills, motor skills and background information about the child (see Box 3.13).

Exploring the development of record templates in Norway can help harmonise transition practices between municipalities and ensure that schools access the necessary information about children's cognitive and socio-emotional development. Such practice is not in contradiction with the data privacy requirements enforced in most OECD countries. Similar to Norway, many countries require parental consent for the transmission of a child's record. This is the case for instance in Australia where the "Transition Learning and Development Statement" template includes information on data privacy and a consent form (see Box 3.14).

Box 3.13. Transition templates to share students' information, Ireland

The policy

In Ireland, a ruling requires all schools and state-funded ECEC settings to provide written reports of children's progress and achievements in a standard format to their new schools and settings (following their admission). The new national transition initiative, being undertaken by the National Council for Curriculum Development and Assessment (NCCA), will integrate information transfer between the ECEC and primary school sectors. Transition templates to record and monitor transitions for each child between ECEC and primary schools are currently being piloted by the NCCA with a variety of ECEC settings and primary schools, and in consultation with children, parents and other key stakeholders, such as primary school principals and ECEC managers. They will be published and in use by September 2018. Additional proposed activities of the wider transition initiative include the establishment of local networks, the dissemination of information to families, reciprocal visits by primary and preschool staff and children to schools and preschools, and the development of materials and books to support children during the transition process.

Evaluation

As this policy is still in its planning phase, no evaluation has been undertaken yet. The NCAA commissioned an audit of policies across 14 countries and an audit of transfer documentation in Ireland to inform its work. The audit of international practices concluded that among the 14 jurisdictions studied, a variety of policies are used. While some countries like Australia and New Zealand provide national or stat-wide templates, in most countries, templates are developed locally following national guidelines.

Sources: (OECD, 2017[84]), Starting Strong V: Transitions from Early Childhood Education and Care to Primary Education, http://dx.doi.org/10.1787/9789264276253-en (O'Kane and Murphy, 2016[86]) Transitions from Preschool to Primary School: Audit of Policy in 14 Jurisdictions, https://www.ncca.ie/en.

Box 3.14. Transition Learning and Development Statement in Australia

The policy

Across Australia, a number of initiatives aim to improve communication between schools and early childhood education and care services. The Transition to School Statement, for example, was introduced in New South Wales in 2014 to improve communication between early childhood services, families and schools (NSW Government, 2016). The statement records a child's strengths, interests and learning, in line with the Early Years Learning Framework. Its aims are to help school teachers prepare for children entering kindergarten by planning appropriate and individualised learning and teaching programmes.

Evaluation

A preliminary qualitative evaluation of the policy found that both parents and kindergarten teachers who had received them felt better informed about the child's strengths and interests, as well as of ways to help their transition to school, than respondents who did not receive statements (NSW Government, 2015). Most families surveyed felt that their children made a smooth transition to school, and felt that their child was well supported in their transition. The evaluation found that although the statement was seen as a valuable resource by early childhood educators, workload and time constraints made it challenging to complete.

Source: (OECD, 2017[84]) Starting Strong V: Transitions from Early Childhood Education and Care to Primary Education, http://dx.doi.org/10.1787/9789264276253-en.

Alternative models for more flexible starting age of primary education

As entry into compulsory education in most OECD countries is subject to a single cut-off date, the relative age of a student compared to his class peers may impact his learning outcomes. International evidence shows that the youngest students in early grades of primary tend to have lower learning outcomes than the oldest students in a class – although the size of this effect varies depending on the study (Solli, 2017[87]). Some studies have also found that young boys tend to have a higher probability of being low performers than young girls (Cascio and Schanzenbach, 2016[88]). This finding seems in line with the gender differences in maturity development hypothesis and boys' higher sensibility to peer effect (Solli, 2017[87]). Results are more mixed however in later years of schooling where some studies find a persistent impact while others find that the relative performance advantage of older students fades-out in lower and upper secondary (Bedard and Dhuey, 2006[89]). Some studies also show that the gender difference in relative age effect may also fade out after grade 8 (Cascio and Schanzenbach, 2016[88]). In Norway, a recent study has shown that relatively young boys among a class cohort are less likely to complete upper secondary education by age 19 and more likely to have low learning outcomes (Solli, 2017[87]).

Several policies and practices have been introduced to mitigate the negative impact of a strict age cut-off for the youngest children in a grade cohort. Some countries like Denmark and Norway have strict age of entry into primary education (6 year-old in

Norway and 7 year-old in Denmark). In Denmark, parents and school practitioners can ask for a student to be retained one additional year in ECEC but the decision needs to be approved by the local authority. A cognitive test is used as part of the validation process (Ministry for Children and Social Affairs, 2017[90]). However, as is the case in Norway, these measures are rarely used. In some states in the United States, rules are more flexible and parents may choose to delay entry of their child in compulsory education by one year. This practice known as "redshirting" has shown positive learning gains for students delayed but raises concerns of equity as it is mostly used by well-off parents (Harandi and Tepperel, 2013[91]; Solli, 2017[87]). Studies based on Norwegian and Nordic countries data have also shown that redshirting has limited to very little impact on long-term earnings (Black, Devereux and Salvanes, 2011[92]; Fredriksson and Öckert, 2014[93]). Delaying entry may also have a negative impact on the child socio-emotional development and generate anxiety as the child will be separated from his peers who moved to primary and may live the delay as a failure. Studies have shown that school transitions tend to be harder for boys than for girls in particular if they are coupled with a change in school peers (Andrew and Flashman, 2017[83]).

Another more flexible model is however possible. Some schools in the Netherlands have introduced multiple entry points into primary education or use a modular approach in which a student can spend some hours in a day in ECEC and others in grade 1 of primary school (see Box 3.15). As Norway is debating the possibility of providing more freedom to parents in choosing to delay entry into primary school, this alternative model may be worth exploring and evaluating as it can help address the needs of a various pool of students and avoid the psychological stigma of being kept behind their grade cohort. These modular approaches would require in Norway a high level of co-operation between ECEC institutions and primary schools. In the Netherlands, this is made possible by the integration of the last years of ECEC and primary school into a same structure. In Norway, the municipalities would need to play the co-ordination role which may create a higher transaction cost.

Box 3.15. Flexible and modular transition initiatives in the Netherlands

In the Netherlands, children attend "elementary schools" from the ages of four to twelve. Attendance of pre-primary education (grade 1) for students under the age of five is not compulsory but enrolment is almost universal. As students transition from pre-primary to primary education (starting at grade 2) in the same institutions, schools are given some flexibility on how they arrange this transition. Some schools are experimenting with more modular and flexible approaches for organising the transition of students from ECEC to the first grade of primary. The Dutch Ministry of Education summarised examples of these approaches in a brochure to schools. These approaches are:

- Students spend part of the school week in ECEC and the rest in primary school so that they can experience the learning environment in primary and go back to the safe playing environment of ECEC. The number of hours in primary education varies depending on the development and growth of the child. The Ministry provides in the Brochure the testimony of a primary school in Uden. The school staff reported being very satisfied with this approach in which students that developed faster or slower than their age peer have the opportunity of receiving learning adapted to their needs while still socialising with students of their age group.
- Increasing the number of entry points into primary during the school year from one to two or more. Some schools divide their education in 16 half year periods instead of 8 years. Students can thus be retained for half a year in pre-primary instead of a full year. A primary school in Culemborg was among the pioneers of this model introduced over 40 years ago. In this school, students can move up grades either in August or February depending on their learning progress. The Dutch Inspectorate of Education stated that the system of half year periods highly contributed to the high performance of the school.
- ECEC and grade 1 of primary school are combined in one grade. Pupils who are relatively young can during the day switch easily from ECEC activities to grade 1 of primary activities. They can for example learn in the morning lessons and play in the afternoon lessons. This system is for example used in primary school n Nijmegen which specialises in education for gifted students and offers personalised educational programs for each student.

Source: (Ministry of Education, Culture and Science of the Netherlands, 2016[94]), Doorstroom von Kleuters [Children Transitioning] https://www.poraad.nl/files/themas/onderwijsinhoud-_en_opbrengsten/brochure_doorstroom_van_kleuters.pdf

3.5. System level policies: Providing incentives to policy-makers and schools to build and disseminate evidence

Central governments play an important role in incentivising evidence building and disseminating findings to policy-makers and practitioners. As evidence on policies' impact on reducing the gender gap remain limited among OECD countries, it will be

important for Norway to ensure that national evidence is available and readily accessible to inform a national co-ordinated effort to reduce the gender gap.

3.5.1. *Context*

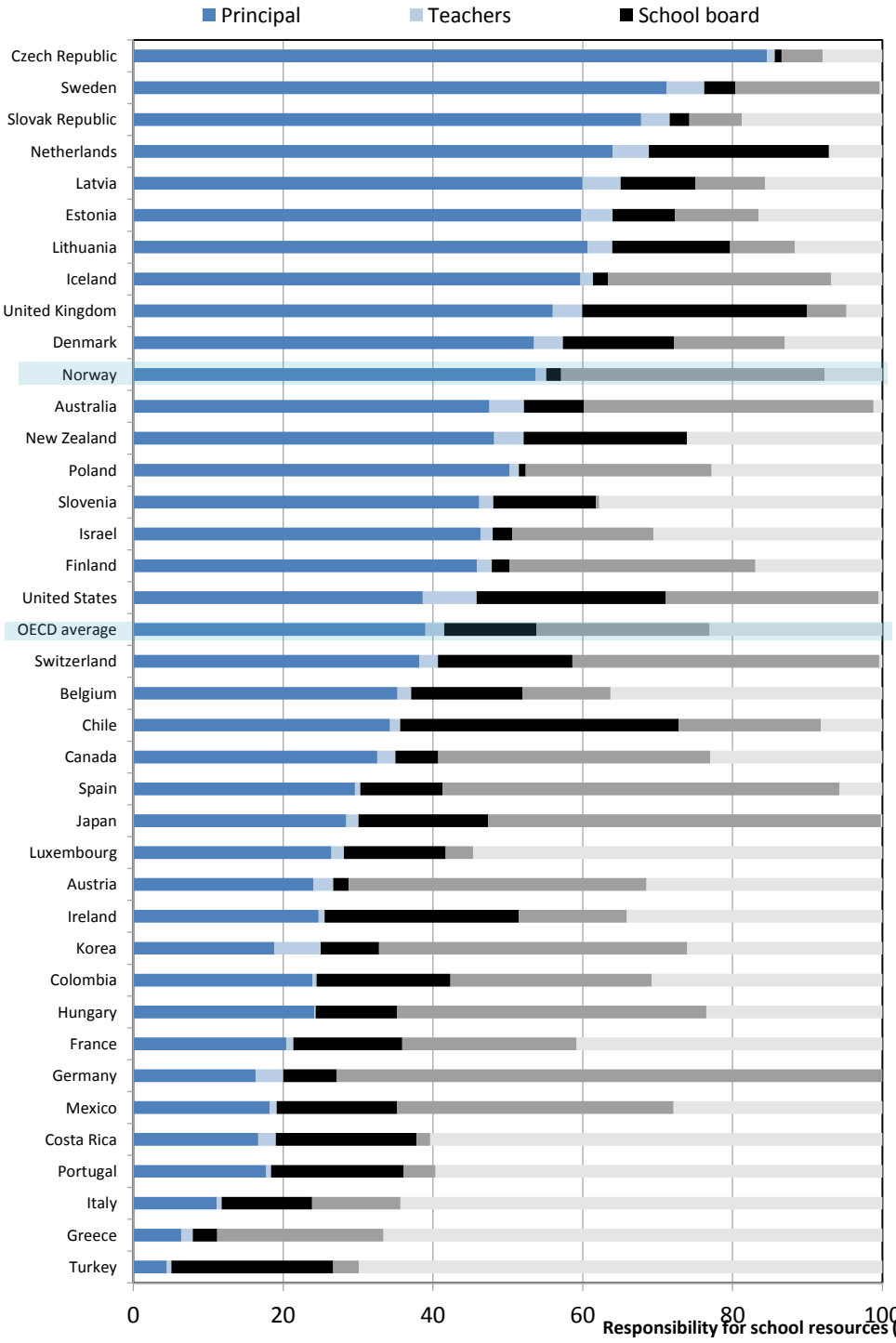
While the gender gap in achievement has been well documented in recent years, understanding of factors leading to boys' underachievement and impact of policies to mitigate or prevent this gap remain very limited internationally. Most targeted interventions to help improve boys' achievement in school tend to be small in scale (i.e. in a given school or school district) and in a small set of countries with a strong culture of policy evaluation (i.e. the United Kingdom, the United States and the Netherlands). Little is known about applicability of these interventions in other education system contexts or their impact once scaled-up to the wider education system. It is therefore important that policy-makers and educators approach the question of applicability of these policies with caution and complement it with building national evidence and encouraging evaluation of school interventions and dissemination of best practices nationally.

Norway faces the dual challenge of building evidence on policies to prevent and mitigate boys' underachievement in a highly decentralised education system with a limited policy evaluation culture at the local and school level. Schools in Norway have relatively more autonomy and flexibility in making decision on use of resources as well as curriculum and pedagogy than the OECD average (see Figure 3.4 and Figure 3.5). The high level of trust given to school practitioners in designing and implementing interventions most adapted to their school context is a key feature of the Norwegian education system and contributed to the high level of professionalism and innovation in its schools. However, this system is not conducive at the moment to building evidence-based policies and disseminating best practices selected for their impact and efficiency. Municipalities and cities do not have always have systems in place to evaluate schools' interventions and disseminate best practices. Instead, policy sharing happens through networks of schools but the quality of policies shared within these networks is unclear.

Efforts are made at national level to strengthen policy monitoring and evaluation. The Directorate for Education and Training uses national assessments and statistics to monitor the education system and reports on policy trends (Nusche et al., 2011[85]). The Directorate is also currently reinforcing its policy evaluation tools by encouraging policy-makers build evaluation designs in their policy implementation frameworks.

Figure 3.4. Distribution across the education system of responsibility for school resources

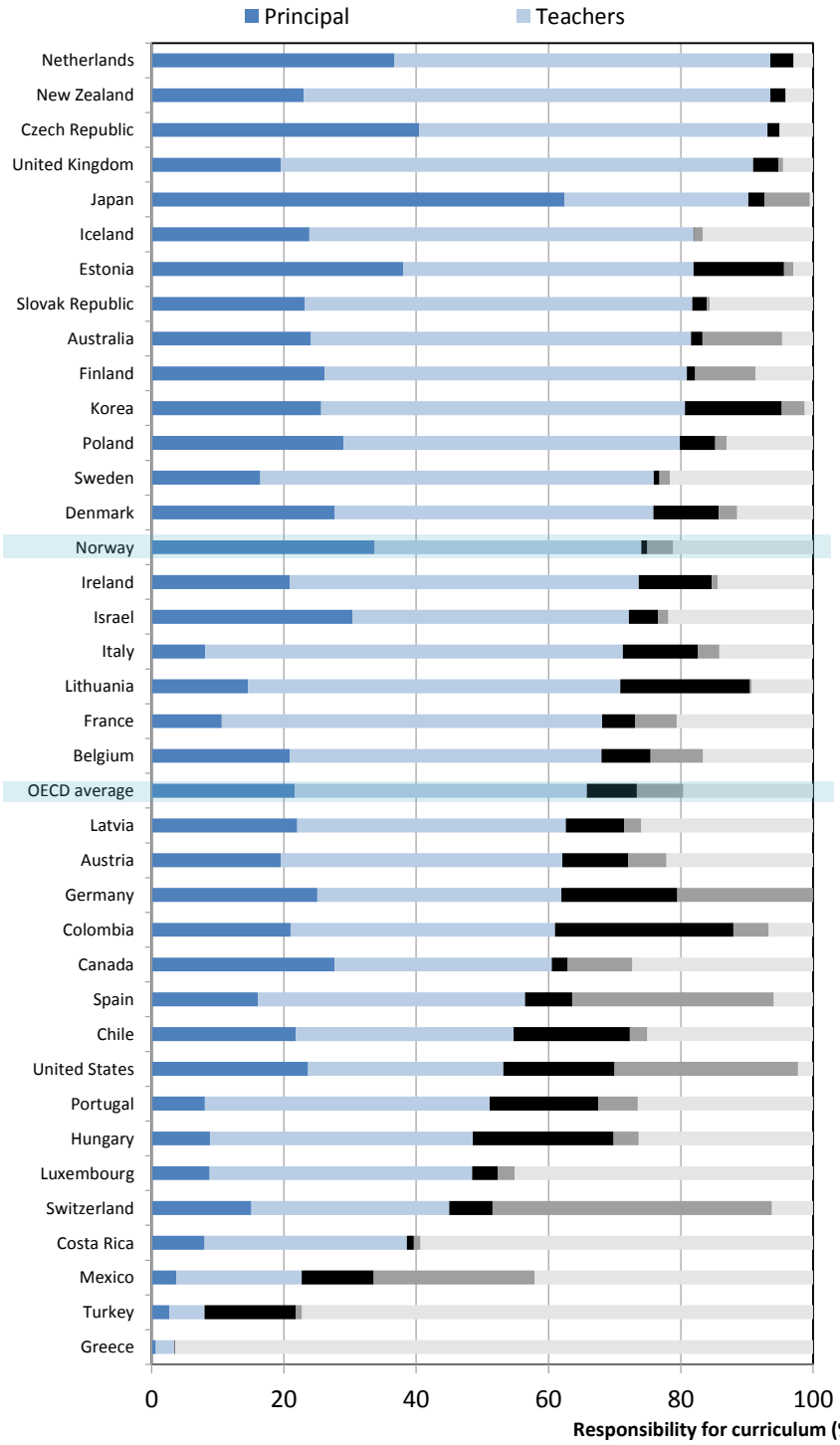
Assuming the responsibilities of the five actors combined amount to 100%



Note: Countries and economies are ranked in descending order of the responsibility held by school principals and teachers.
Source: Adapted from OECD, PISA 2015 database, (http://dx.doi.org/10.1787/888933435864) (accessed 15 June 2018).

Figure 3.5. Distribution across the education system of responsibility for the curriculum

Assuming the responsibilities of the five actors combined amount to 100%



Note: Countries and economies are ranked in descending order of the responsibility held by school principals and teachers.
Source: Adapted from OECD, PISA 2015 database, (http://dx.doi.org/10.1787/888933435864) (accessed 15 June 2018).

3.5.2. *Policy lever 4.1: Encouraging evidence-based policies at local and school level*

Given the limited availability of evidence-based policies to reduce the gender gap in schools, Norway would benefit from investing in building such evidence nationally before introducing large-scale policies. In decentralised systems where schools and local governments have a lot of autonomy to design and implement their own policies, national governments need to play an even more active role in disseminating results of impact evaluation to inform decisions and create incentives for local authorities and schools to introduce interventions in the priority policy area.

Effective dissemination of findings about policies and programmes that help to reduce the gender gap in learning and attainment is key to increasing good practices in schools. While this is important in all countries, it is critical for education systems like Norway where schools have more flexibility in how to implement national regulations. For example, the United States and the United Kingdom created similar online platforms where educators and local authorities can browse evaluations of policies and interventions based on their impact (see Box 3.16). Both models use rigorous evaluation methodologies to select the interventions showcased. Information displayed is presented in an accessible non-technical way in easy to navigate and frequently updated databases.

In Norway, the Knowledge Centre for Education has the potential to play a similar central role in producing and disseminating evidence from education research. It synthesises results from national and international research and makes it accessible to the larger public through reviews and reports available on its website. However, contrary to the above mentioned examples, it does not have a database where national policy interventions can be easily compared to one another based on clear and systematic criteria.

Box 3.16. What Works Clearinghouse in the United States and the What Works Centre for Education in the United Kingdom

The Institute of Education Science (IES), the research arm of the United States Department of Education has set up a web portal called the What Works Clearinghouse (WWC) to help policy-makers, researchers and education practitioners find policies and interventions that have a proven impact on improving students' outcomes. The WWC collects evidence through a rigorous systematic review methodology. Results are presented in an interactive portal where users can sort by type of intervention; desired outcomes and effectiveness of the intervention (see Figure 3.6).

Similarly, the Education Endowment Foundation (EEF) was set up in 2011 by The Sutton Trust and Impetus Trust, with a £125m grant from the United Kingdom Government, and is the UK 'What Works' centre for education outcomes. The EEF provides information to help policy-makers, commissioners and practitioners to make evidence-based decisions. The web portal called Teaching and Learning Toolkit include both information about impact of interventions and their cost to guide decisions (see Figure 3.7).

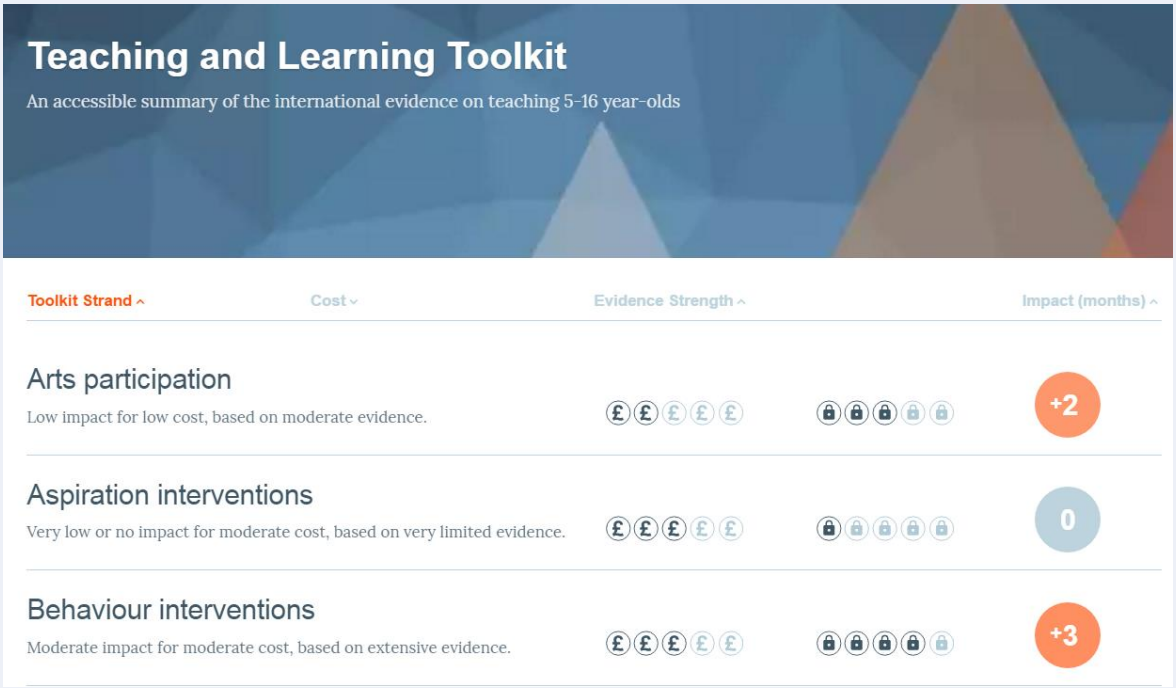
Figure 3.6. Snapshot view of comparison of intervention in the area of student behaviour from the What Works Clearinghouse

Compare Interventions

	Caring School Community (CSC)	Coping Power	First Step to Success	Social Skills Training
Grades Examined	K-6	4-5	K-3	PK
Program Type	Supplement	Supplement	Supplement	Practice
Delivery Method	School	Small Group	Individual	Whole Class
Behavior Outcomes				
	Caring School Community (CSC)	Coping Power	First Step to Success	Social Skills Training
Behavior	++	Not Measured	Not Measured	Not Measured
Emotional/internal behavior	Not Measured	Not Measured	+	Not Measured
External behavior	Not Measured	++	++	Not Measured
Knowledge, attitudes, & values	++	Not Measured	Not Measured	Not Measured
Other academic performance	Not Measured	Not Measured	+	Not Measured
Social outcomes	Not Measured	0	+	Not Measured

Source: IES, "what works clearinghouse website", https://ies.ed.gov/ncee/wwc/FWW/Results?filters=,Behavior (accessed 22 June 2018).

Figure 3.7. Snapshot view of comparison of evidence in various policy areas related to teaching and learning from the Education Endowment Foundation



Source: EEF (2018), Education endowment foundation website https://educationendowmentfoundation.org.uk/, (accessed 22 June 2018)

3.5.3. *Policy lever 4.2: Targeted funding to reduce the gender gap*

Targeted funds to schools and local authorities are often used by central governments to steer policy priorities at local and school level and promote monitoring and evaluation of school interventions (OECD., 2017[95]). This is particularly important in highly decentralised or federal education systems where targeted funding tend to be the main entry point of central governments to shape school policy. While such schemes are often used by OECD countries to address various policy priorities such as improving equity in education or preventing dropout, very few have a clear gender dimension. The United States' 2014 initiative My Brother's Keeper (MBK) is one of the rare examples of targeted funding towards improvement of outcomes for boys from a minority background. MBK aimed to provide more learning and social opportunities for boys and young men of colour and provided funds to local governments and schools to introduce initiatives to improve outcomes of boys of colour in six identified priority areas (see Box 3.17).

Targeted funding is more commonly used to help schools serving disadvantaged communities. While boys are not the direct target group of such policies, they may benefit more from improvement of school resources than girls. In fact, studies have shown that boys tend to be more sensitive to school resources than girls (Legewie and

Diprete,(n.d.)[25]). Thus, the gender gap in learning performance tend to be higher in the most disadvantaged schools (see Part I of this report). Finland introduced in 2016 targeted funding to schools serving socio-economically disadvantaged communities and high numbers of low achieving students. Funds were used primarily to hire and train teachers and support staff to organise co-teaching and learning in small groups (see Box 3.18). Similarly, in England the Department of Education provides additional funds to schools serving disadvantaged students. While schools receiving the pupil premium have autonomy in using the funds as they see fit, Ofsted, the English inspection agency, monitors progress in students' attainment in the schools receiving the targeted funds to help schools improve their use of funds (see Box 3.19).

Target funding is often associated with rigorous monitoring and evaluation of impact. Such requirements help build the policy knowledge base. For example, schools receiving the Pupil Premium in England have to monitor improvement and report it to the school inspection authority. The Department of Education uses school reports to highlight best practices and disseminate information (see Box 3.19). However, excessive reporting demands may put a lot of pressures on the schools and decrease programme take-up (OECD., 2017[95]).

Norway uses grants and funding to the municipalities to incentivise action in priority policy areas. It would therefore be relatively easy to introduce similar targeted funding - on top of the block grant provided to municipalities- to encourage actions to reduce the gender gap. To be effective, such funding would require to be targeted at schools serving the boys most at risk of dropping out: immigrant boys or boys from low socio-economic background. It would also need to encourage evaluation of the intervention to build the national knowledge base and inform scale-up decisions.

Box 3.17. My Brother's Keeper Challenge in the United States

The policy

The Obama White House launched in 2014 a federal initiative called the My Brother's Keeper (MBK) initiative to address the opportunity gaps faced by boys and young men of colour from ECEC to the labour market. The policy included the President's My Brother's Keeper Community Challenge, a funding scheme to communities and states leveraging federal grants and private sector and philanthropic donations. Policy interventions included afterschool and tutoring programmes, mentoring, early year learning programmes The initiative also included the establishment of a Task Force responsible for disseminating evidence-based and leverage data to inform interventions. MBK funded interventions which positively impact:

1- Entering school ready to learn;

2- Reading at grade level by third grade;

3- Graduating from high school ready for college and career;

4- Completing postsecondary education or training;

5- Successfully entering the workforce; and

6- Reducing violence and providing a second chance to justice-involved youth.

Evaluation

According to a review done by the White House in 2016, the MBK challenge helped reach 250 communities in all US states and 600 million USD in private sector and philanthropic grants and in-kind resources and 1 billion USD in low-interest financing were allocated to project across the country.

Source: (Obama White House, 2016[961]) My Brother's Keeper 2016 Program Report: Two Years of Expanding Opportunities and Creating Pathways to Success, https://obamawhitehouse.archives.gov/sites/whitehouse.gov/files/images/MBK-2016-Progress-Report.pdf.

Box 3.18. State funding to promote equity in Finland

The policy

Since 2016, state funding for promoting educational equity in disadvantaged schools is provided to municipalities to support schools in areas with low attainment rates, high unemployment and high shares of low achieving students and students receiving SEN support. In 2017, 16 million EUR was issued to 234 organisers of education (mainly municipalities) for supporting 1174 schools. The funding per school ranged from a few thousand euros to 63 000 EUR. These schools that had been categorised as disadvantaged based on the indicators listed above, could use the additional funding for teacher or teaching assistant resources to diminish class sizes, organise co-teaching, or divide larger classes in smaller groups for the most crucial lessons.

Evaluation

A similar model of targeted funding was introduced by the City of Helsinki in 2008. Helsinki allocated additional resources for schools in disadvantaged areas of the city. A recent evaluation showed that these additional funds in Helsinki had a positive impact on low-performing students (e.g. decrease in risk of dropout by 3 percentage points for native students and 6 percentage points for immigrant students). Of student subgroups, the effects were the largest among low achieving native boys (a 30% reduction in upper secondary drop-out rates compared to 10% for boys of immigrant background.

Sources: (Silliman, 2017[97]) Targeted funding, immigrant background, and educational outcomes: Evidence from Helsinki's "positive discrimination policy" http://vatt.fi/documents/2956369/4541479/wp91.pdf/d0921f09-baba-4120-a5cd-dc25243da4b6/wp91.pdf.pdf, (Ministry of Education and Culture (Finland), 2017[98]) Schools Receiving Additional Funding in 2017, http://minedu.fi/documents/1410845/4039556/Valtionavustuksen-saajat-2017/dc61401f-6296-440d-ab5d-3c8b2cd834d8/Valtionavustuksen-saajat-2017.pdf.

Box 3.19. Pupil premium in England, United Kingdom

The policy

In England (United Kingdom), the Department for Education has established an additional funding scheme provided to schools attending disadvantaged students (Pupil Premium). Pupil Premium funds are provided on a per-student basis and schools have autonomy on how these resources are spent. Schools are expected to spend these resources on strategies that better support learning for disadvantaged students and close the achievement gap between disadvantaged and advantaged students. Since 2012 schools are required to publish online information about how the Pupil Premium is used and the interventions they are implementing to address the needs of disadvantaged students as well as the impact they are having.

Evaluation

Schools receiving the Pupil Premium are required to monitor and report achievement of all students and to report achievement specifically of disadvantaged students. Ofsted, the English inspection agency, monitors closely the attainment and progress of disadvantaged students and how schools are addressing the needs of disadvantaged students. If the inspection identifies issues regarding the provision for disadvantaged students, then a more thorough review (the pupil premium review) is conducted. The purpose of this review is to help schools to improve their pupil premium strategy so that they "spend funding on approaches shown to be effective in improving the achievement of disadvantaged pupils". The Department for Education uses information reported by schools to highlight and reward those schools reaching good results for disadvantaged students.

Sources: (OECD, 2017[99]) The Funding of School Education: Connecting Resources and Learning, http://dx.doi.org/10.1787/9789264276147-en; (Santiago et al., 2017[100]) OECD Reviews of School Resources, http://dx.doi.org/10.1787/9789264285637-en.

3.5.4. *Policy lever 4.3: Addressing information gaps*

Some important information gaps prevent a full understanding of the underlying issues leading to the gender gap in school achievement. In the case of Norway, more research on the impact of assessment design on boys' achievement is necessary given the prevalence of classroom assessment in decisions of student progression and the use of national and international assessment data to inform policy decisions. Moreover, information about early cognitive and non-cognitive development is lacking which limits our understanding of how and when the gender gap develops in early years.

Assessment and the nature of the gender gap

Student assessments are the main source of information used to observe and provide analytical insight about the nature of the gender gap in learning achievement. For instance, the majority of papers looking at the gender gap in achievement internationally have used the OECD Programme for International Student Assessment (PISA) or other similar international studies. However, research shows that both the nature of the

assessment and moment in time in which the assessment takes places, may have an impact on the size of the gender gap.

Studies show that the size of the gender gap varies with the nature and stakes associated with the assessment. For instance, as described in Part I of this report, the gender gap in achievement of 15 year-olds participating in PISA seems wider than that of 16 year-old students in the OECD Survey of Adult Skills (PIAAC) (see Box 3.20). One hypothesis is that the environment in which the test is taken – school for PISA, home for PIAAC- may impact differently boys and girls (see Part I). In Norway, studies have also shown wider gaps in classroom assessments than in national standardised examinations. These differences might be related to the stakes associated with the assessment – classroom assessments taken separately are lower stake than national exams-. Boys tend indeed to put more effort in assessments that have higher stakes. These results are also observed in PISA where boys reported putting less effort than girls in the PISA test which is a low-stake international assessment. Another explanation to the difference in results between classroom assessments and national emanations in Norway has also pointed out at teachers' bias towards boys (Falch and Naper, 2013[19]; Bonesrønning, 2008[101]). Teachers grading of classroom assessments may not reflect solely the students' performance in a given test but also the teacher's overall perception of the students' learning level and his/her behaviour in the classroom (Cornwell, Mustard and Van Parys, 2013[102]).

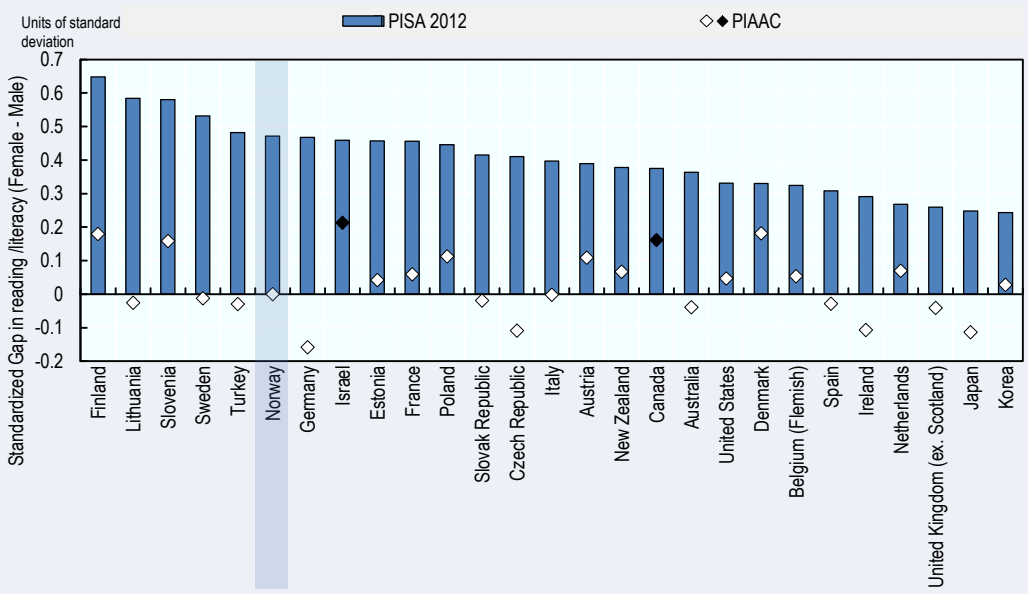
A better understanding of the impact of different types of assessment is necessary to ensure that policy decisions are based on accurate results and that assessment design does not unfairly disadvantage boys' progression in the education system. The latter is particularly important in the Norwegian context where students' progression into upper secondary and into higher education depends heavily on their grades in classroom assessments.

Box 3.20. Investigating the impact of assessment design on gender gap

Preliminary comparisons of outcomes in two OECD surveys, PISA and the Adult Skills Survey (PIAAC) show stark difference in the size of the gender gap in learning outcomes. The PISA and PIAAC tests share some commonalities. They are both used to support inferences about the preparedness of populations to participate in societies. They target similar constructs: "reading" and "mathematics" in PISA, and "numeracy" and "literacy" in PIAAC. They share similar frameworks to define these constructs, and they use the same scaling methods to interpret scores. They have adjacent and partially overlapping populations: PISA measures the skills of students aged between 15 years and 3 month and 16 years and 2 months, while PIAAC measures people between age 16 and 65. Both instruments are therefore designed to be adequate for 15-to-16-year-olds.

Although the studies are not directly linked, rough comparisons of results can be obtained using PISA 2012 data (since PIAAC data was mostly gathered in 2011) and focusing on 16-year-olds in PIAAC. Figure 6 reports the standardised gender gaps in literacy in PISA 2012 and PIAAC, for a selected group of countries. The PIAAC sample was extended to 16 to 20 year-olds, to have a sample size that was large enough to draw meaningful inferences. In all countries girls significantly outperformed boys in the PISA literacy assessment, while in only two countries they scored higher also in PIAAC. In Norway the gender gap in PISA was almost half of a standard deviation, while in PIAAC it was null. Similar results are observed with numeracy scores: the gender gap shifts significantly in favour of boys when looking at PIAAC as opposed to PISA data.

Figure 3.8. Standardised gender gaps in reading in PISA and literacy in PIAAC



Note: Statistically significant gender gaps are marked in a darker tone.
Sources: Adapted from OECD, PISA 2012 database, (http://www.oecd.org/pisa/data/) and PIAAC 2012 and 2015 databases (http://www.oecd.org/skills/piaac/) (accessed 15 June 2018).

While the age effect may be linked to the wider age group in PIAAC – 16 to 20 year-olds instead of 15 year-olds in PISA-, it is not sufficient to explain the magnitude of the difference in results. Other factors are likely to be driving the results. For example, the gender gap might vary because of differences in testing conditions between the two assessments. PISA is a school-based assessment administered to groups, while PIAAC is household-based and individually administered. Respondents sit the PISA test before completing the background questionnaire, while the opposite is true in PIAAC. However, the validity of these results remains questionable. It is still unknown to what extent PISA and PIAAC constructs overlap and whether similarities in frameworks extend to similarities in instruments used.

The OECD and relevant stakeholders have recognised the importance of a creating stronger links between PISA and PIAAC. Proposals for an equating study between PISA and PIAAC have been raised, both in the PIAAC Board of Participating Countries and in the PISA Governing Board. A new proposal to align the two assessments is being formulated for 2021, when PISA 2021 and PIAAC II will be administered. Its primary goal is to link cognitive scales in the two assessments, to understand similarities and differences, and possibly create common reporting scales. It also aims, among other things, to better understand the influence of the context of administration (before or after the background questionnaire; as an individual or as a group administration; at home or at school) on the results. These goals could be fulfilled with a series of co-ordinated national options in the implementation of PISA and PIAAC: an option to administer PIAAC instruments to PISA students, an option to administer hybrid PISA-PIAAC booklets to a sample of PISA-eligible students, and an experimental field trial of PISA that tests for administration-setting effects.

Information about cognitive and socio-emotional development in early years

Collecting information about boys' and girls' cognitive and socio-emotional development in the early years is essential to get a better understanding of when the gender gap in achievement starts and factors that may lead to differences in learning outcomes in later grades. Both the cognitive and non-cognitive gender gaps in early years are well documented. Studies in the United States have shown that girls in early grades perform better in early reading tasks than boys (Currie and Thomas, 1999[103]). Similarly, studies in the United States, Australia and Canada find that girls develop higher levels of socio-emotional skills than boys in ECEC and early grades of primary (Nakajima et al., 2016[104]).

In Norway, very limited information is collected about children in ECEC. Students' level characteristics such as gender are not for instance reported to the Directorate for Education and Training. It was also reported to the OECD team that discussions of cognitive assessment in early grades are considered controversial and in contradiction with the principal of free play in ECEC. However, without a better understanding of early grade learning and cognitive development in Norway, it will be difficult to design and implement effective measures to improve boys learning achievement and prevent dropout in later grades.

Across OECD countries, assessing students' cognitive and socio-emotional skills in early years is a relatively recent practice in assessment policies. In most OECD countries, fear

of the "schoolification" of ECEC and strict privacy protection regulations still prevent the development of such assessments. The Early Development Instrument (EDI), a composite index looking at cognitive and socio-emotional development of children in ECEC is one of the earliest examples of such assessments and is now used in 12 of the 13 Provinces and territories of Canada and in Australia to understand children's cognitive development in early years (see Box 3.21). More recently, international surveys such as the International Early Learning and Child Well-being Study developed by the OECD (see Box 3.22) or the Measuring Early Learning Quality and Outcomes developed jointly by UNESCO-UNICEF and the World Bank aim to build-up international evidence on early years learning. These instruments will help advance the understanding of the nature of the gender gap in early years by looking at both cognitive and non-cognitive skills development.

Box 3.21. The Early Development Instrument (EDI) in Canada and Australia

The policy

First introduced in 1998 in Ontario, Canada, the Early Development Instrument (EDI) is a measurement tool that assesses the developmental status of individual children between ages of 3.5 and 6.5. EDI is a questionnaire with 103 items in five domains that kindergarten teacher fill in the second half of the year. The EDI domains are:

- Physical health and well-being
- Social competence
- Emotional maturity
- Language and cognitive development
- Communication skills and general knowledge

The survey is sample-based and data is not reported at the student level. EDI results are used by researchers, local and national governments to understand children development in ECEC. It is implemented in 12 of the 13 Canadian Provinces and territories and in Australia (the Australian Early Development Census). Other countries such as Ireland or Estonia have implemented EDI at local levels.

Source: (Offord Centre for Child Studies,(n.d.)[105]) What is EDI?, https://edi.offordcentre.com/about/what-is-the-edi/

Box 3.22. The OECD International Early Learning and Child Well-Being Study

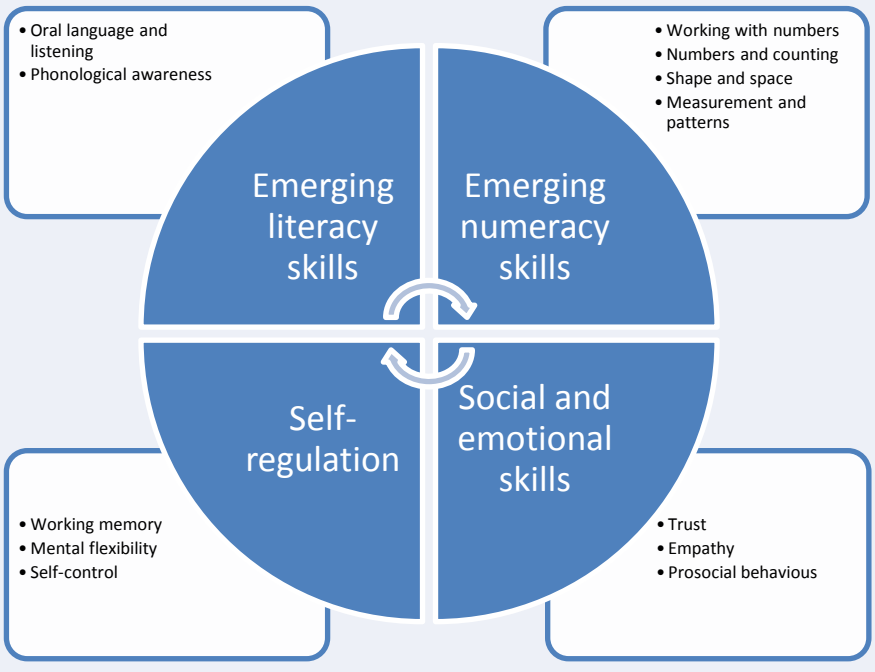
The policy

The OECD launched in 2016 the International Early Learning and Child Well-Being Study. The aim of this study is to provide countries a collection of robust empirical information and in-depth insights on children's learning development in early years. The study looks at children's early learning outcomes and development through a wide scope of domain (see Figure 3.9); the relationship between early learning and the home environment; the relationship between children's early learning and their early childhood education and care experiences; the role contextual factors such as individual characteristics (e.g. gender and ethnicity) and parental background play on children's outcomes.

The International Early Learning and Child Well-Being Study is nationally-representative and includes a direct assessment by trained administrators over two days, using stories and games of 5 year-old children in officially registered early childhood centres and/or schools. Parents and staff members are also asked to fill in questionnaires about each child, his/her home environment, early childhood experiences and ECEC experiences.

The main study will be conducted in 2018 and first results will be published in 2019. The study will sample at least 3000 children in at least 200 settings in each participating country and with up to 15 children per setting. The first edition of the survey will be carried out in the United States, England (United Kingdom) and Estonia.

Figure 3.9. The four early learning domains assessed in the study



Source: Adapted from (OECD, 2017[1106]) Early Learning Matters, http://www.oecd.org/education/school/Early-Learning-Matters-Project-Brochure.pdf

3.6. Conclusions and policy pointers for Norway

This section summarises the key conclusions of the report and provides policy pointers to Norway on what policies can be tested and evaluated to help reduce the gender gap in school achievement. Policy pointers are derived from the experience of peer countries and thus need to be contextualised and their likely impact in the Norwegian context be evaluated. Further studies of the Norwegian context would help make informed policy decisions and improve boys' achievement in Norwegian schools.

3.6.1. *Classroom practices*

Motivating students to learn and helping them develop their cognitive and non-cognitive skills is the principal mission of teachers. They are thus the first line of action in addressing boys' underachievement in reading and any behavioural problems they may have in the classroom. In Norway, boys perform at a lower level than girls in the PISA reading test and report more negative attitudes towards school (OECD, 2016[10]; OECD, 2016[107]). Addressing these issues early on is important as they are key predictors of students dropping out of school.

Norway could consider the following policies:

- **Testing and evaluating interventions to improve boy's motivation to read.** Evidence shows that boys need more than girls to be interested in the content of the reading material in order to read. Providing them with reading materials on subjects that speak to their interests and hobbies and that are adapted to their reading levels is therefore important to create the habit of reading for leisure and develop their reading skills.
- **Providing teachers with concrete tools and guidelines on how to address students' behavioural issues in the classroom.** At any age group up to the teenage years, boys are on average less likely to have acquired a high capacity for self-regulation and as a result are more likely than girls to misbehave in the classroom and to disrupt classroom. This impacts negatively their learning and that of their peers. Helping teachers better understand risk factors, prevent misbehaviour and help their students develop self-regulation skills is important to give boys a fair chance at learning.

3.6.2. *School practices and policies*

As is the case in most OECD countries, boys in Norway are more likely than girls to leave school before completing upper secondary. Boys from first-generation immigrant background are at a particular disadvantage compared to boys without an immigrant background. The report provides examples on how schools can design policies to identify students at risk, act to prevent dropout and participate in national efforts to reintegrate early school leavers in the education system.

Norway could consider the following policies:

- **Providing schools with standardised tools to identify students at risk of dropping out.** Boys, particularly those of low socio-economic background and immigrant background tend to be over-represented among the populations most at risk of dropping out -e.g. students skipping classes, low achieving students and

Special Education Needs (SEN) students. Providing schools with simple tools to identify students at risk of dropping out such as questionnaire templates and survey tools, and encouraging a stricter monitoring of school absences is a first step in any successful national strategy to reduce early school leaving.

- **Testing and evaluating the impact of a multi-tiered support system on improving students learning outcomes.** Multi-tier support meets the needs of a wider group of students than traditional SEN support. It has been proven effective in Finland in reducing referral to SEN and introducing support to students in school rather than outside. Such model can be a good alternative to Norway's current SEN model and can provide support to a bigger number of low achieving boys at risk of dropping out.
- **Encouraging schools to introduce tutoring and mentoring programmes targeting low achieving boys.** Academic tutoring programmes and mentorship programmes to help boys develop their socio-emotional skills have proven to be successful in improving boys' outcomes in school. In particular, programmes targeting boys from low socio-economic background have demonstrated significant positive impact on students' learning and school completion. Norway should consider testing similar programmes and evaluating their impact in its school context.
- **Introducing multi-professional teams in schools to provide support to teachers in adapting their teaching practices.** Multi- professional support teams (i.e. school psychologist, nurses, Special Education Needs specialists etc.) should meet regularly in the schools to discuss systemic problems encountered by teachers and help teacher develop their students learning plans. Such models are more effective than isolated support outside of the school.
- **Ensuring multi-sector collaboration to bring early school leavers back in the education system.** Once students have dropped out, the responsibility of schools in the fight against early school leaving shift purpose but continues. Schools should co-ordinate with actors from various background (e.g. ministries of labour, social affairs etc.) to identify leavers and provide them with an adapted training solution.

3.6.3. *System level policies*

Some structural policies such as how the curriculum is organised and how students are progressing in the system have a differentiated impact on boys and girls. Boys are for instance more sensitive to the transition from play-based education prevalent in pre-primary education in Norway to more structured and learning focused education, which starts in the first grade of primary. Moreover, there is no standard system in place to transmit student-level information from ECEC to primary which limits some primary teachers' capacity to have a full understanding of the developmental needs of their students.

Norway could consider the following policies:

- **Pursuing the Early Childhood Education and Care (ECEC) and primary curriculum integration**. Transitions from ECEC to primary can be source of anxiety and stress for many students, in particular boys, as they move from play-centred learning to formal teacher-lead instruction. Similar to other OECD

countries, Norway has taken steps towards a better alignment of the ECEC curriculum and that of the early years of primary. These efforts should be continued and Norway should consider introducing a common curriculum framework for the transition years.

- **Encouraging and harmonising transmission of individual student information from ECEC institutions to primary**. To ensure that primary schools are well equipped to accompany each new student in his learning, they need to receive more information about the student's time in ECEC including his socio-emotional development, behavioural development and his early language and numeracy skills. Introducing a common template for ECEC institutions to fill and provide primary school is a good practice for ensuring that a minimum of information is transmitted to the schools.
- **Testing and evaluating different models for making the starting age of primary more flexible.** A recent study has shown that relative age effect in Norway (developmental differences in a class cohort associated with differences in the month of birth) has a stronger impact on boys' learning outcomes than girls. Exploring different models to address this issue is therefore important. Modular solutions in which students are exposed to both primary and ECEC education during the transition years and models with different entry points into primary education are worth testing and evaluating in the Norwegian context.

Many gaps remain about our understanding of policies that help reduce the gender gap in school achievement. The report highlights some of these main gaps and provides examples of actions that central governments in decentralised education systems like Norway, can take to incentivise research and evidence dissemination to inform policy making at the school, local and national level.

Norway could consider the following policies:

- **Funding interventions and programmes aiming to improve boys learning outcomes, in particular boys from low socio-economic and immigrant backgrounds**. Grants to schools are used successfully by many decentralised education systems to implement a policy priority and give more visibility to an issue. In Norway, grants can be given to schools to design interventions to help low achieving boys form low socio-economic or immigrant background. These grants would benefit from being tied to having impact evaluations built in the design of the intervention to build national evidence about what works to reduce the gender gap.
- **Giving more visibility to evaluations of school level policies.** There is limited evidence in Norway and internationally about what policies work in reducing the gender gap. It is therefore central to encourage knowledge building and sharing nationally. Creating a platform where rigorously evaluated interventions can be easily accessed by policy-makers and educators would help Norway progressively develop a culture of evidence-based policy making.
- **Addressing the main gaps in research and evidence.** A better understanding on factors in early years leading to the gender gap is necessary to design and implement effective policies. Sample-based surveys can for instance be introduced to collect data on children's early cognitive and non-cognitive development. Additionally a better understanding of the impact of student

assessment design on the gender gap is necessary to make sure that boys are not unfairly disadvantaged in their progression in the education system.

3.6.4. *Conclusion*

Part II of this report aimed to provide an international perspective of the state of evidence and policies to reduce the gender gap at three main levels of policy interventions (the classroom, the school and the education system). With the creation of a National Commission on Gender Equity in Education, Norway is at the forefront of OECD countries in trying to understand and act against boys' underachievement in school. Countries such as Finland, the United States and the Netherland that have been identified as peers for this review exercise, are also introducing measures to incentivise action and research in this area. While there is much research evidence documenting the gender gap in school achievement, large gaps exist in our understanding of what factors shape such gaps and what policies are most effective in closing existing gender gaps. Moreover, not many national policies have been evaluated for their impact on the gender gap. In order to advance the debate and inform decision-making, it is central that countries like Norway develop a strong and comprehensive evidence base on what policies help reduce gender gaps. This report provides examples of policies that are worth exploring in the Norwegian context.

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Annex A. The peer review team

Francesca Borgonovi (PhD) is a Senior Analyst at the OECD where she is responsible for the "Strength through Diversity" project. Prior to her current position: she was responsible for data analysis and analytical work in the PISA and the PIAAC teams with a particular focus on: gender and socio-economic disparities in academic achievement; outcomes of migrant and language minority students; and student engagement and motivation. Her recent publications include The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence and Immigrant Students at School - Easing the Journey Towards Integration. Francesca has been Adjunct Professor at the Paris School of International Affairs at Sciences Po and held visiting positions at the Goldman School of Public Policy at the University of California, Berkeley and the London School of Economics.

Soumaya Maghnouj is an Analyst in the OECD's Directorate for Education and Skills. She is currently working on the OECD Education Policy Reviews of Evaluation and Assessment. As part of this project, she co-ordinated the evaluation and assessment review of Morocco and contributed to the reviews of Romania and Turkey. She previously worked on the annual OECD publication, Education at a Glance: OECD Indicators for which she developed the indicator on the returns on investment to education. She is also a member of the Global Relations team for the Directorate where she helps with outreach to non-OECD member countries, in particular in the MENA region. Soumaya has a master's Degree in Economics and Public Policy from Sciences Po Paris and a bachelor's in political science and Middle-Eastern and Mediterranean studies from the same institution.

Joscha Legewie (PhD) is an Assistant Professor of Sociology at Yale University. His research focuses on education, social inequality/stratification, race/ethnicity, quantitative methods, urban sociology, and computational social science. He is especially interested in understanding social processes, mechanisms and patterns of social organisation that lead to educational inequality related to gender, race/ethnicity, and socio-economic status. His current work primarily focuses on the link between the criminal justice system and educational outcomes. His research was published in the American Journal of Sociology, the American Sociological Review, Sociology of Education and other major journals.

Annemarie van Langen (PhD) is a senior researcher at KBA Nijmegen and a former senior researcher at Radboud University Nijmegen, the Netherlands. She specialises in the national and international differences in school attainment and education careers of boys and girls, including differences in participation in STEM education. She is currently also involved in the Dutch part of PISA 2018 (Programme for International Student Assessment). Her other project work is linked to school effectiveness and educational opportunities for ethnic minorities and other disadvantaged groups.

Mari-Pauliina Vainikainen (PhD) works as an associate professor and the leader of Research Group for Educational Assessment of the Faculty of Education at the University of Tampere, Finland. She has a long experience in collaborating with Finnish educational

administrators and policy developers both at national and municipal level for utilising research results in decision making. Her research focusses on the one hand on factors behind differences in educational outcomes, including the effects of gender, socioeconomic and ethnic background, and on the other hand on the support structures for disadvantaged students.