

2 Attitudes and dispositions: The foundations of lifelong learning

This chapter presents evidence on the effectiveness of different education systems in promoting lifelong learning attitudes (LLAs) in children. Teachers and parents play a key role in encouraging children to develop lifelong learning attitudes. Using data from the Programme for International Student Assessment (PISA) on 15-year-old students, the chapter shows that socio-economically disadvantaged students, boys and students with an immigrant background often lag behind their peers in developing lifelong learning attitudes. Such disparities, however, can be reduced. The chapter considers the role lifelong learning attitudes play in general, as well as their unique value in promoting learning during the disruptions to regular schooling produced by the COVID-19 pandemic.

Lifelong learning attitudes

The need for workers to reskill and upskill throughout life – particularly in a context of rapid digital transformations – has put lifelong learning at the forefront of the political agenda in most industrialised countries. Lifelong learning has become even more vital in the context of the COVID-19 pandemic, which induced large shocks to labour markets and societies worldwide, accelerating structural transformations that will force populations to acquire new skills. However, encouraging individuals to become lifelong learners is a complex task, and many obstacles hinder the effective engagement of adults in training programmes (see Chapter 4). Governments can tackle some obstacles – such as time or financial constraints – using short term measures. However only adopting a lifelong perspective can enable them to overcome other obstacles related to the disposition to learn and a lack of foundation skills originating from previous stages of an individual’s education.

Becoming an effective lifelong learner involves a cumulative process, which starts in infancy and is influenced thereafter by the institutional arrangements that provide opportunities to learn (OECD, 2019^[1]). Learning at any stage of the life cycle builds on learning and skills acquired at previous stages (Cunha et al., 2006^[2]). Hence, setting strong foundations early in life is essential to cultivate lifetime learning. While developing strong cognitive skills – such as literacy or numeracy – is important, previous work by the OECD has shown that non-cognitive skills, as well as strong attitudes and dispositions to learn, constitute the necessary foundations for future learning (OECD, 2019^[1]). Some emotional skills and personality traits, such as conscientiousness and openness, can create a favourable disposition to learn later in life. Likewise, some attitudes, such as self-efficacy and intrinsic motivation, help individuals set goals for their learning endeavours.

While individual attitudes and dispositions to learn mostly develop early in life – starting with kindergarten and evolving throughout the schooling years – their benefits carry over into adulthood. In fact, individuals who have positive learning attitudes are more prone to engage in further learning throughout life (OECD, 2019^[3]; Tuckett and Field, 2016^[4]). Early education and compulsory schooling are therefore critical stages, where all students are given the chance to develop strong lifelong learning attitudes (LLLAs) and close monitoring of individual progress ensures that any arising gaps are rapidly identified and closed through timely interventions.

Building on this knowledge, this chapter examines the impact of students’ lifelong learning attitudes on their achievement in school, as well as on their educational and career expectations. The chapter also sheds light on how teachers, school systems and families can inspire positive lifelong learning attitudes, and how governments can best support them in this endeavour.

The analysis mainly relies on data from the 2018 Programme for International Student Assessment (PISA) survey of 15-year-old students. This focus on teenage students stems from the evidence that learning attitudes reported by adolescents tend to be substantial predictors of future outcomes, including university attendance and employment in high-skilled occupations (OECD, 2018^[5]). Students who have developed high levels of intrinsic motivation and self-efficacy by the time they are 15 are more likely to seek learning opportunities at future stages of the life cycle than students who have not. Non-cognitive skills and learning attitudes develop until the age of 20 (unlike cognitive skills, which are fairly well settled in the first ten years of life), and are therefore still malleable at age 15. Hence, analysing lifelong learning attitudes among adolescents, and identifying those who are lagging in their development, helps target at-risk individuals at a time when interventions can still effectively improve their lifetime learning opportunities (Cunha and Heckman, 2008^[6]). For example, research has shown that policies aimed at improving lifelong learning attitudes among disadvantaged adolescents may substantially narrow the gap in educational achievement observed at age 16, reducing disparities in future outcomes (Chowdry, Crawford and Goodman, 2011^[7]). While secondary school represents a critical time for developing positive learning attitudes, it should be noted that attitudes formed by young adulthood are not only developed during adolescence, but also at

earlier stages. Some sections of this chapter will therefore highlight practices and interventions that should be applied to early childhood contexts to help children develop strong lifelong learning attitudes.

The chapter focuses on six lifelong learning attitudes, measured with indicators constructed from data collected through the PISA student questionnaire. The *PISA 2018 Technical Report* provides details on indicator construction (OECD, 2020^[8]).

These attitudes reflect the main traits observed among individuals who show a high propensity to engage in lifelong learning. Examining the various characteristics of lifelong learners is important to develop educational practices that bolster students' development of crucial lifelong learning attitudes. Among the attributes of lifelong learners, Canday (1991^[9]) identified motivation to gain new knowledge and curiosity, a sense of personal efficacy and information literacy (i.e. the ability to research and evaluate information). Knapper and Cropley (2000^[10]) found self-directed learning and willingness to learn – both in formal and non-formal settings, and from peers, teachers or mentors. The lifelong learning attitudes identified and analysed reflect different temporal and contextual processes. Some are specific to the school context and hence more likely to create short-term benefits. Others occur in more general contexts and, if maintained throughout adulthood, can produce long-term benefits. The lifelong learning attitudes are presented below in ascending order, from the more specific to the more general:

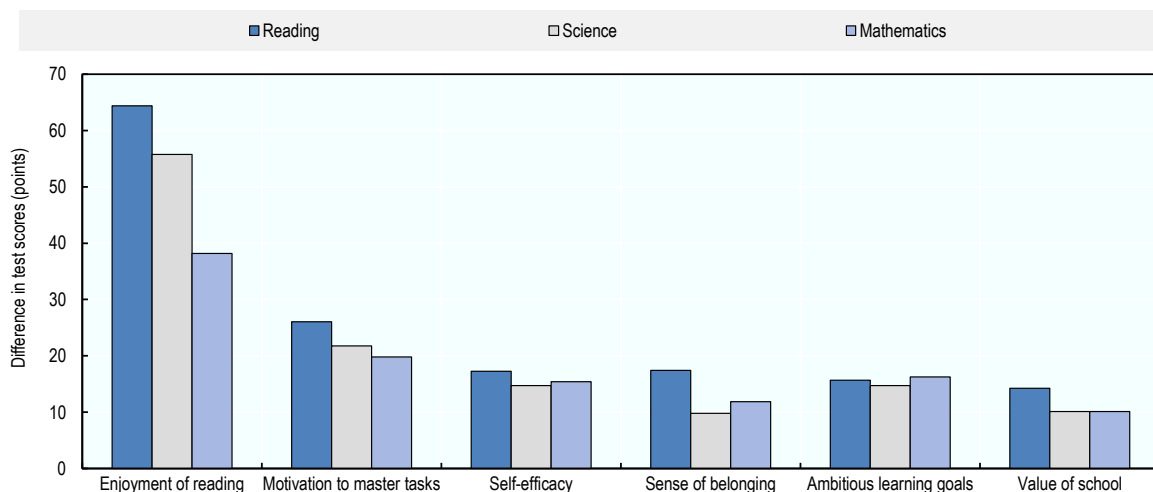
- sense of belonging to the school community (*sense of belonging*)
- relevance students attribute to school for their future professional careers (*value of school*)
- students' commitment to work hard and improve performance (*motivation to master tasks*)
- students' ambition to learn and understand as much as possible (*ambitious learning goals*)
- students' ability to overcome difficulties on their own (*self-efficacy*)
- satisfaction students obtain from learning and reading (*enjoyment of reading*).

Student attitudes towards learning and contemporaneous achievements

Figure 2.1 illustrates the relationship between students' lifelong learning attitudes and contemporaneous achievements in reading, science and mathematics. The results indicate that students who have higher levels of lifelong learning attitudes (as represented by values in the top quartile of the national distribution of each attitude) display greater proficiency compared to pupils with weaker attitudes (as represented by values in the bottom quartile). For example, when comparing students with similar characteristics in terms of socio-economic status (SES), gender, age and immigration status, as well as a school's socio-economic background and type (private/public, rural/city), and the type of programme attended (general/vocational), the scores obtained in the reading test by students with the highest levels of enjoyment of reading are 66 points higher than those of students with the lowest levels of enjoyment of reading. Similarly, other things being equal, the maths results obtained by students who report a high level of motivation to master tasks are 20 score points greater than those of students reporting low levels of motivation to master tasks. While these estimates cannot be interpreted causally, they highlight strong associations that correspond with accumulated evidence on the relationship between non-cognitive skills, learning attitudes and school performance (Behncke, 2009^[11]; Heckman, Stixrud and Urzua, 2006^[12]).


These results are consistent with findings from analyses based on PISA 2000 and 2009 when reading was examined at length. Previous work found that students who enjoy reading tend to make it a regular part of their lives and enhance their reading skills through practice – in fact, enjoyment of reading explained around 20% of the variation in student reading skills across OECD countries (OECD, 2011^[13]). These estimates corroborate research showing that enjoyment of reading is an important precondition for becoming an effective learner. Importantly, research also documents a strong link between reading practices, motivation and proficiency among adults (OECD, 2011^[14]), highlighting the importance of kindling students' interest in reading to improve both short- and long-term outcomes.

Figure 2.1. Score-point difference in reading, science and mathematics performance between students in the top vs. bottom quartile of indicators of lifelong learning attitudes



Note: Bars represent score-point differences in PISA tests in reading, science and mathematics between students with LLLAs in the top vs. bottom quartiles. Regressions take into account a student's SES, gender, age, immigration status, type of school attended (socio-economic background, private vs. public, rural vs. city) and type of programme attended (general vs. vocational). Separate regressions are estimated for each attitude.

Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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Research has highlighted the importance of deriving pleasure from reading at an early age. A longitudinal study conducted in England (United Kingdom) showed that reading pleasure at age 16 is associated with contemporaneous intellectual progress in vocabulary, spelling and mathematics (even when controlling for previous cognitive skills, as measured by test scores at 6 years and 10 years of age) (Sullivan and Brown, 2013_[16]). Interest in reading is a much more important prerequisite for acquiring skills than having a parent who holds a higher education degree (as compared to no qualification). Sullivan and Brown (2013_[16]) suggest that independent reading can promote a self-sufficient approach to learning overall, with positive implications for achievement in other subjects.

Reading pleasure also yields positive associations with more general indicators of personal and educational development. Individuals who enjoy reading tend to exhibit greater reading comprehension and writing abilities, as well as higher levels of general knowledge (Cullinan, 2000_[17]), which are important foundations for future learning. They also develop positive reading attitudes (Guthrie and Alvermann, 1999_[18]). Research has shown that children who enjoy reading at a young age continue to read for pleasure at future stages of the life cycle, with positive implications for lifetime reading habits (Sanacore, 2002_[19]).

Although enjoyment of reading seems to be the strongest predictor of academic achievement among the attitudes considered, students' motivation to master tasks and self-efficacy are also strongly associated with academic performance. A large body of research has focused on self-efficacy – generally defined as beliefs and judgements about one's ability to accomplish specific tasks – as a crucial attribute of proficient and lifelong learners. Self-efficacy generally influences students' choices, as well as the effort and perseverance they put into learning tasks (Pajares, 1997_[20]), resulting in greater learning and academic performance (Mone, 1994_[21]). Previous literature has also demonstrated the linkages between motivation and academic success (Robbins et al., 2004_[22]; Hattie, 2008_[23]; Wigfield, Tonks and Lutz Klauda, 2016_[24]).

The results of these studies suggest that certain lifelong learning attitudes (particularly those that are less specific to the school environment, and hence more likely to be carried over into adulthood) are strongly connected to contemporaneous achievement in school, and may help develop crucial skills that will underpin future learning. Based on the literature, pupils who possess stronger cognitive skills in adolescence and young adulthood are more likely to seek additional learning opportunities later in life, and to reap larger returns from investments in additional education.

The role of positive learning attitudes during the COVID-19 pandemic

Developing strong attitudes towards learning is even more important and urgent in the context of the COVID-19 pandemic, which has caused major disruptions to school activities across the OECD region. Many countries around the world halted face-to-face teaching in response to the pandemic: in April 2020, 1.6 billion learners were affected by physical closures of schools and other educational institutions¹ (UNESCO, 2020_[25]). Education policy makers had to find alternatives to guarantee children's right to education, with many systems switching to distance learning combining online teaching with other remote learning materials, such as television or radio.

Although remote schooling and distance learning are desirable options compared to no schooling at all – which causes major interruptions to student learning, with long-lasting consequences for the affected cohorts (Burgess, 2020_[26]; Hanushek and Woessmann, 2020_[27]) – they will probably slow progress in achievement and widen existing social disparities in learning compared to a business-as-usual scenario. According to emerging evidence, the rapid and unexpected transition from regular schooling to forced remote learning during the pandemic has sometimes led to large learning losses, notably among pupils from disadvantaged backgrounds and younger cohorts (Box 2.1).

While the available evidence points to slower progress due to distance learning – particularly among younger cohorts – the pandemic will probably have very heterogeneous effects across countries. Among the many factors affecting student progress are the duration of distance learning, the interventions put in place by education systems to support learning, and different systems' level of preparedness for such a situation. Indeed, most pupils, parents and teachers were unprepared and faced major challenges while trying to adapt to the new circumstances so abruptly. This may explain the variation in learning gains observed across and within countries.

Besides major infrastructural issues (such as insufficient broadband connectivity or information and communication technology [ICT] equipment at home) that prevented some students from attending online classes regularly during the first wave of the pandemic, other factors may have impeded the learning process and the pace of skill accumulation. Some teachers and pupils may have been completely unprepared for online instruction, whereas others may have been using digital tools for school-related activities for some time. Figure 2.2 shows great variations in 15-year-olds' use of technology for schoolwork in 2018 – both across countries and across socio-economic groups within countries – heightening the concern that students who were less experienced in ICT may have suffered the most from the shock caused by remote learning during the pandemic. Disparities among socio-economic groups were particularly large in Australia, Mexico, Korea and the United States. Similar differences were observed between public and private schools, with students in private schools using digital technologies more frequently for schoolwork.

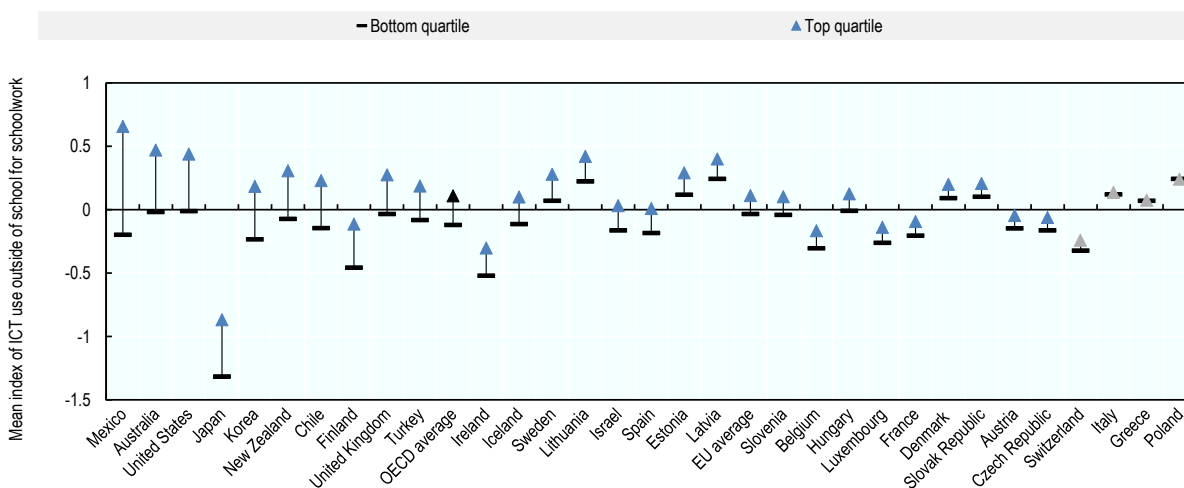
Box 2.1. Did school closures during the COVID-19 pandemic slow learning?

A study conducted in **Switzerland** in 2020 compared learning gains during the eight weeks of school closures related to the COVID-19 pandemic with learning gains in the eight weeks preceding the closures. Tomasik, Helbling and Moser (2020^[28]) analysed the performance in mathematics and German (the instructional language) of 28 685 pupils from grades 3 to 9 (14 134 children in primary school and 15 551 in secondary school). The study indicated that learning significantly slowed for primary school pupils (who learned more than twice as fast in the classroom than through distance education); additionally, heterogeneity in their learning progress increased considerably, possibly reflecting differences associated with socio-economic backgrounds. By contrast, the learning pace of secondary school pupils was not significantly affected. The authors suggest that the increased variance and decreased pace of learning in primary schools can be explained by cognitive, motivational and socio-economic factors. Younger pupils rely more on cognitive scaffolding during instruction, as their capabilities for self-regulated learning and autonomy might not be fully developed (Tomasik, Helbling and Moser, 2020^[28]).

A study from the **Netherlands** analysed the effects of school closures on primary school performance over a period of eight weeks, using rich data on 350 000 pupils from grades 4 to 7. As national assessments in the Netherlands take place in January-February and May-June, (Engzell, Frey and Verhagen, 2020^[29]) were able to compare students' performance in mathematics, spelling and reading comprehension immediately before and after the nationwide school closures; they also compared this performance with learning gains measured in the three previous years. Using a difference-in-difference design, they showed that students learned less during the lockdown than in a typical year, with evidence of losses in all grades and subjects. The learning losses amount to 3 percentile points in the national distribution relative to a typical year, equivalent to 0.08 of a standard deviation on average (i.e. one-fifth of a school year), suggesting that students made little or no progress while learning from home. The results also showed that students from disadvantaged backgrounds were particularly affected, with a 55% larger learning slide than in the general population (Engzell, Frey and Verhagen, 2020^[29]).

A study from **Belgium** uses panel data on a large sample of primary school pupils in grade 6 from 2015 to 2020. The analysis is based on standardised tests in mathematics, language (Dutch), social sciences, science and French, which are administered annually in the last year of primary school by the network of catholic schools in Flanders (Belgium). Exploiting the panel data structure and performing a difference-in-difference estimation, (Maldonado and De Witte, 2020^[30]) show that school closures resulted in significant learning losses and a substantial increase in educational inequality. More specifically, school averages for standardised test scores decreased by a 0.19 standard deviation for mathematics and a 0.29 standard deviation for Dutch compared to previous cohorts. The study also showed that educational inequalities increased both within and across schools. The increase in learning losses across most indicators of SES explained some of the variation within and across schools (Maldonado and De Witte, 2020^[30]).

Figure 2.2. Mean index of ICT use outside of school for schoolwork, by socio-economic group



Note: The index of ICT use outside of school for schoolwork measures how frequently students do homework on computers, browse the Internet for schoolwork, use email for communications related to school, visit the school website and/or upload or download materials on it. Higher values of this index correspond to more frequent and more varied uses. Socio-economically disadvantaged/advantaged students are defined as students in the bottom/top quartile of the PISA index of socio-economic status. Countries are ranked in descending order based on the magnitude of the difference in the index between the top and the bottom quartile of economic, social and cultural status. Symbols in grey indicate that the difference between the top and the bottom quartile is not statistically significant (5% level).

Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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Similarly, teachers differed greatly not only in their experience with digital tools, but also in their motivation to develop pedagogically effective instruction in the digital space. This may have resulted in large variations in the quality of remote instruction across schools (Tomasik, Helbling and Moser, 2020_[28]).

The home learning context also exposed learners to unique challenges. The absence of a teacher supervising students' learning behaviours (as in traditional classroom teaching), together with the lack of peer effects, may have prompted some younger or more vulnerable students with limited capabilities for self-directed learning to pay less attention during instruction and devote less effort to assignments. The specificities of home schooling forced pupils to rely considerably more than usual on their intrinsic motivation to learn and self-regulating learning skills, as well as on parental regulation and support. These attributes and dispositions to learn are crucial if pupils are to remain focused and motivated in difficult learning environments and students who lacked such attitudes might particularly suffer from learning losses associated with online instruction.

Teachers interviewed in a Finnish study reported that one of their main challenges was to engage students with weaker attitudes towards schoolwork. These pupils perceived digital assignments as less important than tangible assignments, and were therefore unmotivated and unwilling to put effort into them (Iivari, Sharma and Venta-Olkkonen, 2020_[31]).

The probability that students with stronger attitudes will thrive in the difficult circumstances induced by large-scale online instruction underscores the importance of ensuring that education systems support all students – especially at-risk and vulnerable students – in developing such crucial attitudes. Lifelong learning attitudes enabled some students to adapt to new circumstances during the pandemic, rather than suffer the negative consequences of profound structural changes. Lifelong learning attitudes are also likely to prove essential for individuals to thrive and prepare for new potential transformations in a post-pandemic world. The next sections explore the most effective practices through which teachers, schools and families can stimulate the formation of such important attributes.

Lifelong learning attitudes and children's educational and career expectations

Positive attitudes towards learning can be crucial for students to keep learning at a similar pace during the COVID-19 pandemic as during regular classroom instruction. Even in normal times, strong attitudes and dispositions to learn can augment students' efforts and performance in school. Importantly, the benefits of strong learning attitudes often carry over into adulthood, encouraging individuals to seek further learning opportunities throughout life.

In addition, when students have strong intrinsic motivation and set ambitious learning goals for themselves, they are more likely to develop high educational and career expectations compared to students with less positive attitudes. During adolescence, when students start to think seriously about their future, expectations often determine future outcomes (Guyon and Huillery, 2020^[32]). They can even be self-fulfilling, as students may only invest enough effort to meet their own expectations (OECD, 2017^[33]; OECD, 2012^[34]). When comparing students with similar performance in school and similar socio-economic origins, those who expect to complete tertiary education are more likely to meet their objectives than those with lower expectations (Beal and Crockett, 2010^[35]). In the same vein, students who expect to drop out of school are more likely to do so (Morgan, 2005^[36]).

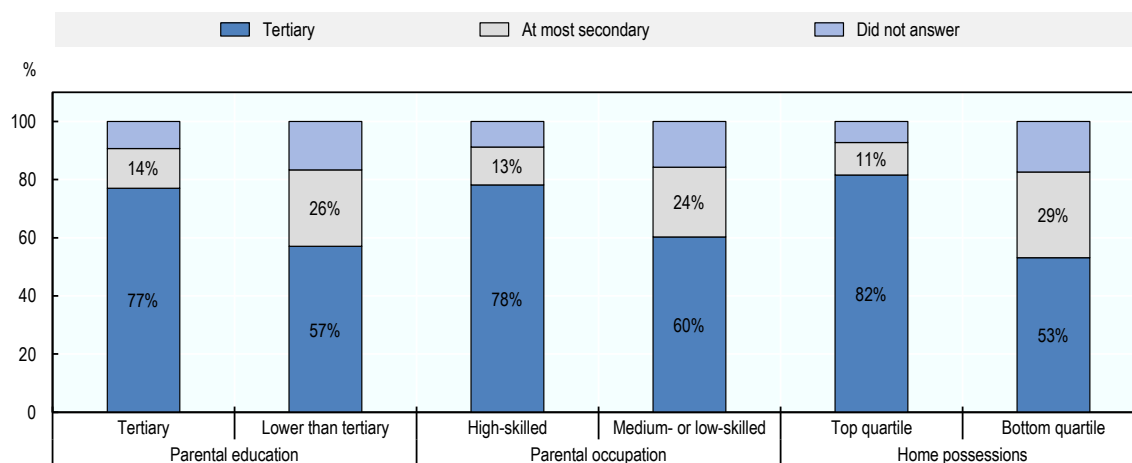
The psychological literature has highlighted different factors shaping students' expectations, including their personal experiences in school, their past and present academic achievements, and the influence exerted by the learning environment and the people surrounding them as they grew up (e.g. families, peers and teachers) (Buchmann and Dalton, 2002^[37]). The influence of these factors on students' expectations varies substantially. This section illustrates significant differences in young students' educational and career expectations, both across countries (with regard to the institutional context) and within countries. It shows how the development of specific lifelong learning attitudes is associated with higher educational and career expectations.

Educational and career expectations among 15-year-old students: Gaps by socio-economic background

Students' expectations for their educational and occupational prospects tend to differ across socio-economic backgrounds. More-advantaged students are more likely to expect to continue their studies for a longer period of time and to work in a managerial or professional occupation by the age of 30 than their socio-economically disadvantaged peers (Box 2.2). Figure 2.3 shows the percentage of 15-year-old students who expect to complete tertiary education, do not expect to obtain tertiary qualifications and did not respond, by SES. More specifically, their SES is measured through three distinct indicators, based on the information collected in the PISA survey: i) parental educational attainment; ii) parental occupational status; and iii) availability of resources in the household, including educational and cultural resources.

According to all three measures, high-SES students are more likely to expect to complete university than their less-advantaged peers. For example, nearly 77% of students with at least one parent who completed tertiary education expect to complete university, compared to only 57% of their peers whose parents have lower education levels. Such gaps in expectations between socio-economic groups could reflect, for instance, a lack of financial resources to engage in further education or a paucity of role models in the family, undermining children's aspirations (OECD, 2017^[33]).

Figure 2.3. Percentage of 15-year-old students who expect to complete tertiary education or secondary education, by SES group



Note: Bars represent the percentage of advantaged or disadvantaged students who expect to complete university or at most secondary education. SES groups are defined according to three indicators: parental education, parental occupation and home possessions. Home possessions refers to an index constructed in PISA (HOMEPOS); quartiles are computed relative to the national distribution. Shares in light blue represent missing information.

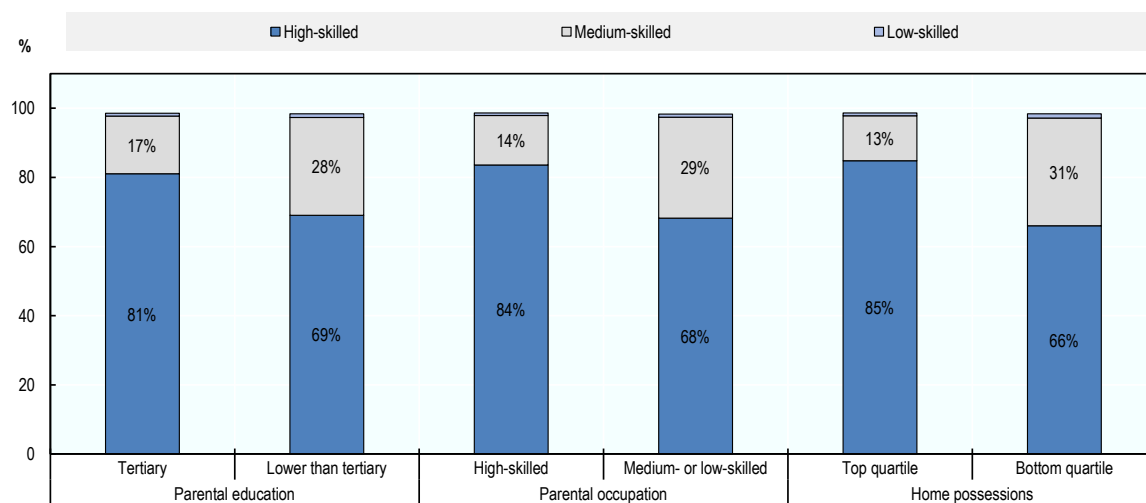
Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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The PISA 2018 survey asked students which occupation they expected to be working in at the age of 30. Answers to this open-ended question were coded into four-digit International Standard Classification of Occupations (ISCO) codes and classified into high-skilled, medium-skilled and low-skilled occupations, based on the one-digit ISCO-08 classification. For example, managerial or professional professions were classified as high-skilled, whereas clerical support workers or service and sales workers were classified as middle-skilled occupations.

Figure 2.4 shows the percentage of 15-year-olds who expect to be working in high-skilled, medium-skilled or low-skilled occupations at age 30, according to their SES. Large proportions (up to 84%) of students whose parents work in high-status occupations also expect to be employed in high-skilled occupations, whereas fewer students from disadvantaged backgrounds have such ambitions. These gaps in career expectations probably reflect the existence of different role models in their households. Interestingly, Figure 2.4 suggests that irrespective of SES at age 15, virtually no student expects to work in a low-skilled occupation by age 30. This is consistent with the literature, which has found that adolescents' career expectations are often misaligned with the opportunities available in the job market. According to a study by Mann et al. (2013_[38]), the career aspirations of British teenagers aged 13-18 had little in common with the expected patterns of labour-market demand.

Figure 2.4. Percentage of 15-year-old students who expect to be employed in a high-, medium- or low-skilled occupation, by quartile of SES indicators



Note: Bars represent the percentage of students who expect to be employed in a high-, medium- or low-skilled occupation according to their SES, measured by three indicators: parental education, parental occupation status and household possessions. Home possessions refers to an index constructed in PISA (HOMEPOS); quartiles are computed relative to the national distribution.

Source: OECD calculations based on OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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This evidence of social gaps in young people's expectations corroborates past findings that adolescents' expectations for their further education and career are strongly influenced by their family's history and aspirations for them, or the type of school and programme they attend (Dupriez et al., 2012^[39]; Howard et al., 2015^[40]). Previous studies also point to a significant misalignment between education and career expectations among students in PISA 2018, particularly among socio-economically disadvantaged students compared to advantaged students (OECD, 2019^[41]). Such misalignments can be detrimental to students' prospects. Longitudinal studies conducted in the United Kingdom have shown that adolescents who underestimate the education level required to enter their desired profession are more likely to end up not in education, employment, or training before the age of 20 (Musset and Kurekova, 2018^[42]).

Previous studies have also shown that social differences in educational and career expectations and aspirations persist even when comparing students from similar socio-economic backgrounds who achieve the same proficiency levels in school. Such differences across SES groups represent a concern for policy makers, since young students' aspirations determine their choices and educational investments – and hence, their future outcomes (Box 2.2). Conversely, immigrant students tend to exhibit higher educational and career expectations than their peers with similar academic performance and SES, possibly as a result of stronger attitudes and greater optimism (Box 2.3).

Box 2.2. The role of socio-economic background in shaping young students' expectations

Previous OECD analyses (Mann et al., 2020^[43]) have suggested that the family's socio-economic background is a key determinant of adolescents' educational and career expectations. Indeed, when focusing only on high-achieving students – defined as those who have attained at least minimum proficiency (Level 2) in the three PISA core subjects and are high performers (Level 4) in at least one of the subjects – students who intend to pursue tertiary education are highly concentrated among advantaged students. Among high-performing students, those who come from an advantaged background are more than twice as likely to have high expectations than students from disadvantaged backgrounds across OECD countries. Similarly, high-performing students from advantaged backgrounds are significantly more likely than their disadvantaged peers with equal academic ability to expect to be working in a professional or managerial activity by the age of 30.

A recent study by Guyon and Huillery (2020^[32]) provides empirical evidence from 14-year-old French students that adolescents' aspirations are socially biased because of psychological factors stemming from social stereotypes, and that such biases reinforce social inequalities in educational attainment. The authors focus on a sample of French students in grade 9, at which point they must choose whether to pursue their schooling in an academic or vocational track. Guyon and Huillery (2020^[32]) devised a survey to measure students' educational and professional aspirations at the beginning of the 9th grade, and determine the underlying mechanisms for setting these aspirations. The authors asked students to list all the academic tracks they know of, which tracks they feel capable of pursuing and which tracks they would prefer to pursue. They also measure students' scholastic self-esteem and beliefs about the influence of social origin on future academic success. Such investigations allow them to analyse the role of social stereotypes in educational aspirations.

The authors' findings show that regardless of their scholastic performance, low-SES students underestimate their current academic ability compared to their high-SES classmates, and all students overestimate the influence of social origin on future academic success. Students with lower SES are also less aware of the academic tracks available to them. These two mechanisms show that social inequalities in educational aspirations are not driven by differences in professional aspirations, nor can they be explained by students' different expectations of labour-market returns or preferences for professions linked to their social identity. Guyon and Huillery (2020^[32]) conclude that educational aspirations are socially biased. This is important because they affect later school outcomes, including annual average grades and test scores upon completion of grade 9, as well as the probability of entering an academic high school in grade 10. Overall, such biases prevent low-SES students from reaching their best educational outcomes in ways that are not compatible with maximised utility (Guyon and Huillery, 2020^[32]).

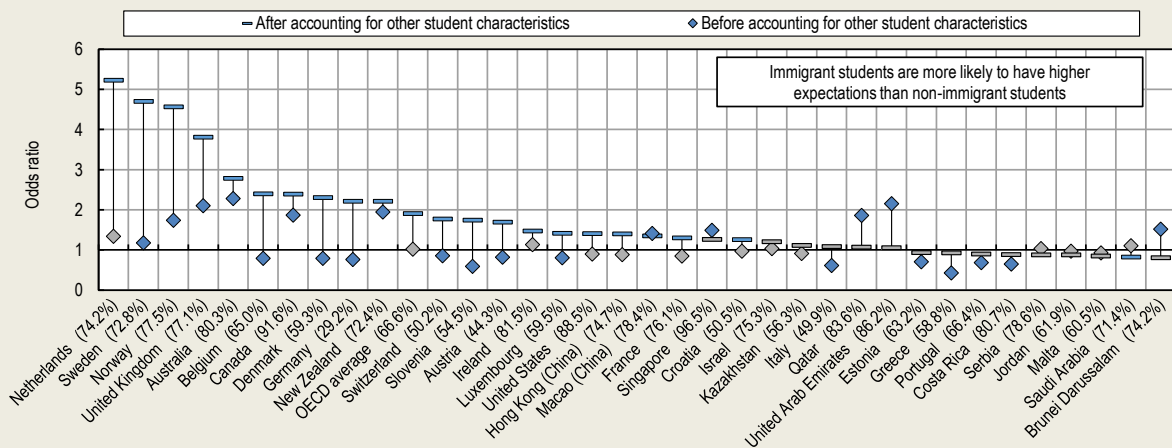
Box 2.3. Immigrant students' expectations

Several studies conducted from both a national and an international perspective have documented that immigrant students perform less well in school than their native-born peers (Marks, 2005^[44]). Confirming these findings, analyses of 2018 PISA data revealed a large gap in reading performance between immigrant and native students across OECD (OECD, 2019^[41]). This gap is likely related to different factors. For example, immigrant students tend to lack the same resources as their native peers, as their parents are generally less educated, work in lower-status jobs, earn lower incomes and are less proficient in the language of the destination country.

Despite these gaps in performance, previous studies have shown that young immigrants – especially those from disadvantaged families – often hold higher educational or career aspirations than their native peers. Heath and Brinbaum (2007^[45]) suggested that this gap may reflect immigrant students' optimism and expectations of upward social mobility. For example, a German study showed that Turkish students were more ambitious than their native classmates, probably owing to different mechanisms driving students' expectations. While German students were mainly motivated by a desire for social status, Turkish students' high educational ambitions were motivated by their desire for upward social mobility (Salikutluk, 2016^[46]). OECD analyses of PISA 2018 confirmed these results (Figure 2.5).

Figure 2.5. Students' expectations of completing tertiary education, by immigrant status

Likelihood that immigrant students expect to complete a tertiary degree compared to non-immigrant students, before and after accounting for students' SES and performance in reading



Note: The percentage of immigrant students who expect to complete a tertiary degree is shown in parentheses next to the country/economy name. Countries where less than 5% of students have an immigrant background are not represented in the figure. Statistically insignificant coefficients are marked in grey.

Source: OECD (2019^[41]), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, <https://doi.org/10.1787/b5fd1b8f-en>; OECD, (2019^[41]), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, Table, II.B1.9.5, <https://doi.org/10.1787/b5fd1b8f-en>; OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

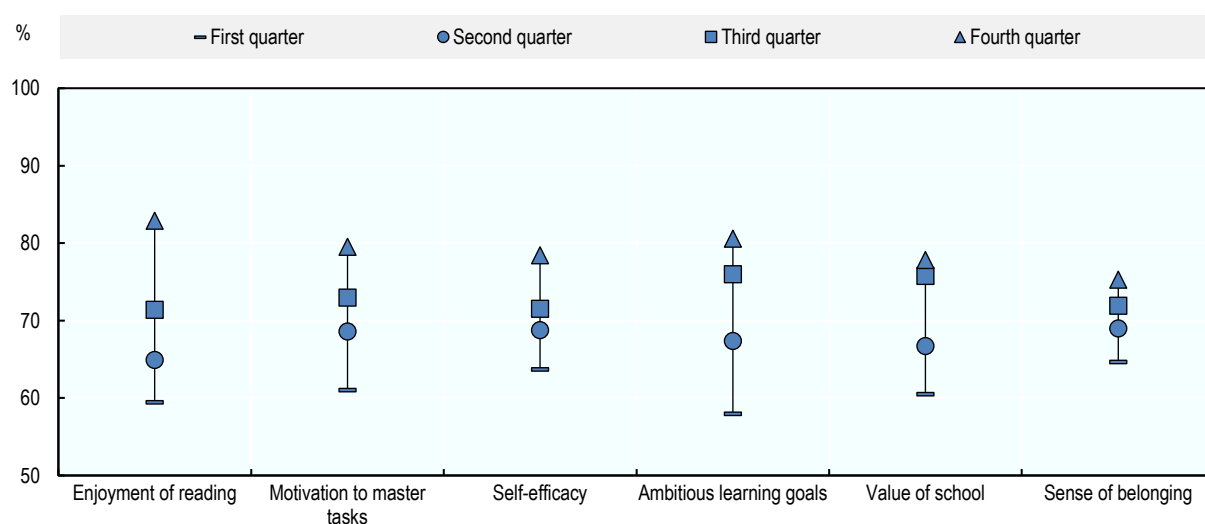
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Figure 2.5 shows that in many OECD countries – e.g. Australia, Belgium, Canada, Denmark, Finland, Germany and the Netherlands – students with an immigrant background are more than twice as likely to expect to complete tertiary education than their native counterparts, after factoring in students’ SES and performance in reading, and schools’ socio-economic profile. This suggests that once academic performance is factored in, immigrant students’ higher aspirations may reflect stronger attitudes and personal attributes. For example, further analyses of PISA data indicated that academically resilient immigrant students (i.e. those who managed to reach the top quartile in the national distribution of reading performance) have greater enjoyment of reading, motivation to master tasks and goal orientation. Importantly, they are significantly (27%) more likely to expect to complete tertiary education than their less-resilient peers. This may be because immigrant students who are capable of overcoming adversity are more likely to exhibit positive attitudes towards their own education, possibly resulting in higher educational aspirations (OECD, 2019^[41]).

Students’ lifelong learning attitudes and their educational and career expectations

Figure 2.5 shows the percentage of 15-year-old students who expect to complete tertiary education by quartile of each index of lifelong learning attitudes. Students in the fourth quartile have the highest levels of attitudes, and those in the first quartile have the lowest. The figure indicates that expectations of obtaining a tertiary degree are consistently higher among adolescents who report higher levels of lifelong learning attitudes. For example, 85% of 15-year-old students with high enjoyment of reading expect to complete a tertiary degree, compared to only 60% of students with low enjoyment of reading. Similarly, 80% of 15-year-old students with ambitious learning goals expect to complete a tertiary degree, compared to only 60% of students with less ambitious learning goals.

Figure 2.6. Percentage of students expecting to complete tertiary education by quartile of lifelong learning attitudes, OECD average



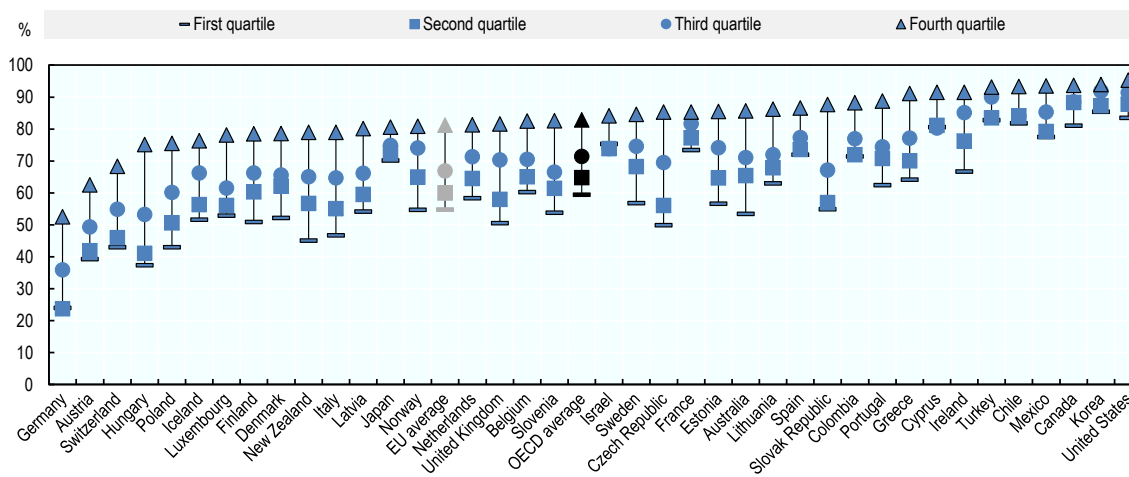
Note: The figure displays the percentage of students who expect to complete tertiary education by quartile of each attitude. Quartiles of attitudes are constructed relative to the within-country distribution of the attitude indexes. Students in the fourth quartile have the highest values of attitude, and students in the first quartile have the lowest values of attitudes.

Source: OECD calculations based on OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

StatLink  <https://stat.link/kdv9p8>


While this pattern applies to all OECD countries, some heterogeneity is observed in the strength of this association. Figure 2.7 shows the relationship between students' expectations to complete tertiary education and quartiles of the index of enjoyment of reading² by country.

Figure 2.7. Percentage of students expecting to complete tertiary education, by quartile of joy of reading index and by country



Note: The figure displays the percentage of students who report that they expect to complete tertiary education, by quartile of the index of joy of reading and by country. Values corresponding to the OECD average and the EU average are reported in different colours.

Source: OECD calculations based on OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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In some countries – such as Canada, Chile, Korea, Turkey and the United States – the percentage of students who expect to complete tertiary education ranges from 80% in the bottom quartile of enjoyment of reading to over 90% in the top quartile. Students in Austria, Germany, Hungary, Poland and Switzerland, on the other hand, appear to have lower expectations. In Germany, for example, only 24% of students in the bottom quartile of enjoyment of reading and 53% of students in the top quartile expect to complete university. These estimates suggest that students' expectations of further education may be influenced by the structure of education systems (OECD, 2017^[33]). In highly differentiated education systems that stream students early into vocational education – as happens in Germany, Switzerland and Czech Republic – adolescents' expectations tend to be more aligned with their educational paths. Thus, students may have developed low expectations by age 15 because such systems have already determined whether or not they are likely to qualify for admission to university. In comprehensive education systems, pupils can more easily change their minds and update their expectations, which might induce them to develop less realistic expectations (Sikora and Saha, 2007^[47]; Buchmann and Park, 2005^[48]).

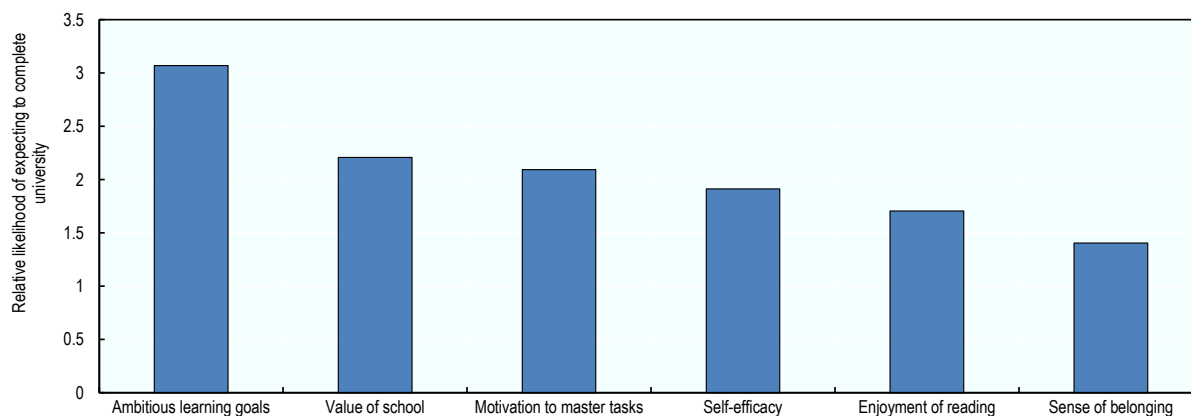
Students' educational expectations are also high in Chile and Mexico, where national education systems are not as standardised and differentiated. This may corroborate previous evidence indicating that all other things being equal, pupils tend to have higher educational and occupational expectations in countries with lower socio-economic development and higher economic inequalities. Perceptions of economic inequality may create a climate in which the urge to move to the top, and the fear of not making it, boost expectations (Sikora and Saha, 2007^[47]).

Figure 2.7 also suggests that in some countries (such as Australia, Czech Republic, Hungary, Italy, New Zealand and the Slovak Republic), differences in educational expectations across groups of students with different levels of enjoyment of reading are very pronounced, sometimes amounting to 40 percentage points between the top and bottom quartiles. In other countries (e.g. Israel, Japan, Korea, Turkey and the United States), such differences amount to fewer than 10 percentage points. This again suggests that in countries that adopt early tracking of student performance (e.g. Czech Republic, Germany and Hungary), students with weaker levels of enjoyment of reading (and weaker lifelong learning attitudes more generally, as the results hold across all attitudes) experience larger gaps and significantly lower expectations – possibly because their expectations are more aligned with their achievements and attitudes (OECD, 2019^[41]).

Students with strong lifelong learning attitudes differ on a number of dimensions that are also associated with educational ambitions. Figure 2.8 illustrates the differences in students' expectations to complete a tertiary degree after considering differences in their SES, gender and performance in reading tests, as well as their school's socio-economic background. All other factors being equal, students with stronger lifelong learning attitudes tend to develop higher educational aspirations. This association is particularly strong when considering ambitious learning goals, motivation to master tasks and the value of school. For example, when comparing students with strong similarities in terms of their SES, academic performance and type of school attended, those who have developed stronger learning goals are more than three times as likely to expect to pursue tertiary education than their peers with weaker learning goals. Similarly, otherwise comparable pupils who have strong motivation to learn or attach great value to school are more than twice as likely to develop ambitious educational aspirations than pupils with weaker attitudes.


Figure 2.8. Adolescents' expectations to complete tertiary education and lifelong learning attitudes

Odds ratios of expecting to complete tertiary education for students in the top quartile relative to the bottom quartile of LLLAs, OECD average



Note: Bars represent the likelihood that students in the top quartile of each index of LLLAs expect to complete tertiary education relative to students in the bottom quartile. These are the odds ratios from logistic regressions. Separate regressions have been estimated for each attitude. Estimates factor in a student's SES, gender and cognitive skills, as well as the school's socio-economic background.

Source: OECD calculations based on OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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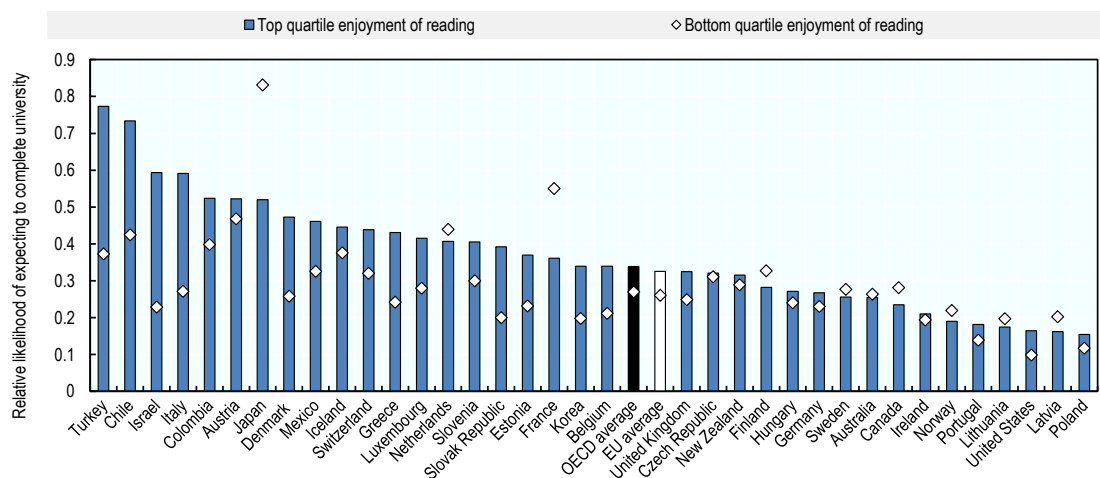
The strong positive relationship between certain lifelong learning attitudes and a student's expectation to complete tertiary education could mean that developing strong attitudes towards learning may help reduce gaps in educational expectations between pupils from different socio-economic backgrounds. Further analyses of PISA data have investigated whether lifelong learning attitudes play a role in closing such gaps

between adolescents with high and low SES. They show that among the lifelong learning attitudes considered, students' enjoyment of reading – and, to a lesser extent, ambitious learning goals – are associated with significant reductions in the gaps observed across socio-economic groups.

Figure 2.9 shows the relative likelihood (odds ratios) of expecting to complete tertiary education vs. lower education levels for students with low SES relative to students with high SES, as represented by students in the bottom and top quartiles of the PISA index of economic, social and cultural status (ESCS). A value of 1 means that students with high and low SES report an equal probability of expecting to complete tertiary education. A value above 1 means that low-SES students have a higher probability of expecting to complete tertiary education; a value below 1 means that they have a lower probability of expecting to complete tertiary education. Estimates of these gaps cover students in the top and bottom quartiles of the index of enjoyment of reading.

Figure 2.9. Gaps by SES in expectations to complete tertiary education and students' enjoyment of reading

Odds ratios of expecting to complete tertiary education for low-SES students relative to high-SES students, computed in the bottom and top quartiles of the index of enjoyment of reading



Note: Estimates represent the odds ratios of expecting to complete university education (rather than lower education levels) for students with low SES relative to students with high SES. Higher values mean that the probability of expecting to complete university education for low-SES students is closer to that of high-SES students. A value of 1 means that low- and high-SES students have an equal probability of expecting to complete university education. Odds ratios are computed on the subsample of students in the top (bars) and in the bottom (markers) quartiles of the index of enjoyment of reading. Regressions take into account a student's gender, age and reading test scores, and schools' socio-economic backgrounds.

Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

StatLink  <https://stat.link/ob1q37>

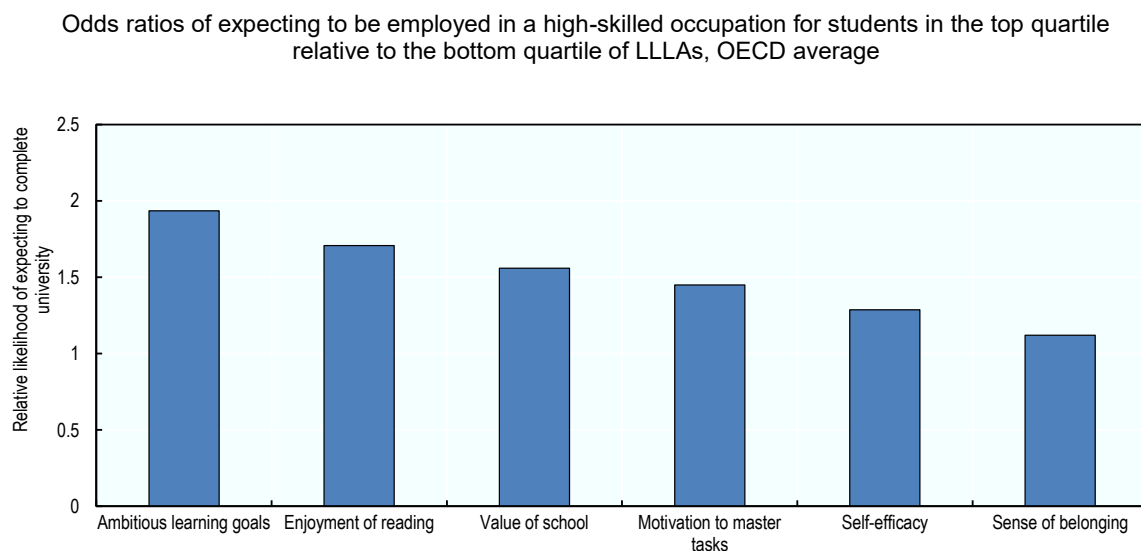
Gaps in the educational expectations of students from different socio-economic backgrounds are observed across all OECD countries. Importantly, the results indicate that with only few exceptions, these gaps shrink significantly when considering students with high levels of enjoyment of reading compared to their peers with weaker levels of enjoyment, even when factoring in students' performance in reading tests as a proxy for their performance in school, their gender and their school's socio-economic background. Very sharp reductions in the gaps are observed in several countries, including Chile, Israel, Italy and Turkey. On the other hand, enjoyment of reading seems to be only mildly associated with decreases in gaps in Austria, Czech Republic, Germany and Hungary – all countries whose education systems do early

tracking, and where expectations may therefore be shaped more by the institutional context than by individual characteristics. A similar picture emerges when decomposing this gap over quartiles of the index of students' ambitious learning goals. In this case, differences in expectations across SES are particularly small in Estonia, Japan, the Netherlands and Turkey.

These results indicate that students who have been encouraged to develop a stronger sense of enjoyment of reading and more ambitious learning goals are more likely to develop higher educational aspirations than their peers with weaker attitudes. They further suggest that these lifelong learning attitudes may help mitigate the otherwise strong influence of socio-economic backgrounds on students' educational expectations.


The association between students' lifelong learning attitudes and their career expectations is, however, more modest. Figure 2.10 depicts the relative likelihood of students with attitudes in the top quartile of indices of lifelong learning attitudes expecting to be employed in a high-skilled (rather than a low-skilled) occupation at the age of 30 relative to students in the bottom quartile. As before, estimates consider a student's age, gender, SES and reading test scores, as well as the school's socio-economic background.

Figure 2.10. Adolescents' expectations to work in a high-skilled occupation at age 30 and lifelong learning attitudes



Note: Bars represent the odds ratios of expecting to work in a high-skilled occupation (rather than a low-skilled occupation) at age 30 for students in the top quartile of LLLAs relative to those in the bottom quartile of LLLAs. Higher values in the odds ratios mean that the probability of expecting to complete university education for students with high values of LLLAs is closer to that of students with low values of LLLAs. Logistic regressions take into account a student's gender, age, reading test scores and SES, and the school's socio-economic background.

Source: OECD calculations based on OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

StatLink  <https://stat.link/hig2cp>

Unlike students' educational expectations, which are closely related to their attitudes towards learning, career expectations are only mildly associated with lifelong learning attitudes. Only students' learning goals appear somewhat related to their career expectations, suggesting that teenage students are influenced by other factors. For example, the role models to which they are exposed in their family, network and neighbourhood may help explain their career expectations.

Based on the evidence above, acquiring strong lifelong learning attitudes seems essential for developing higher educational expectations and (to a lesser extent) career expectations. A comparison of students from similar backgrounds with similar performance levels in school shows that those with more positive attitudes and stronger dispositions to learn (especially enjoyment of reading and the ability to set ambitious learning goals) tend to develop significantly higher educational expectations than their peers who lack such attitudes. Strong attitudes can also help reduce current gaps in aspirations between SES groups. These findings highlight the importance from a policy-making standpoint of understanding how these attitudes are developed and which interventions can best spur them, particularly among the most vulnerable and disadvantaged students.

Students' development of lifelong learning attitudes

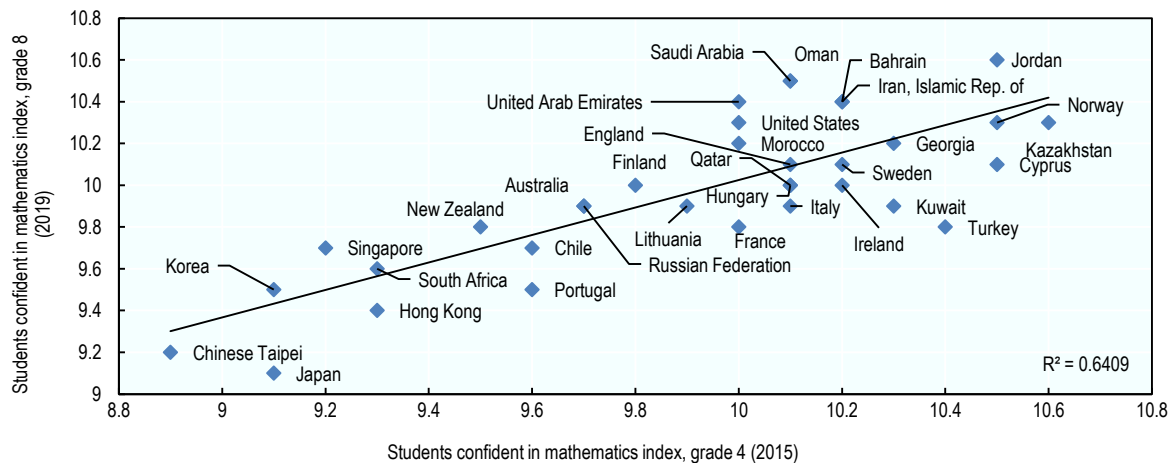
The previous sections have shown that 15-year-old pupils who are endowed with stronger attitudes and dispositions to learn tend to perform better at school. They also develop higher educational and career expectations than their peers with weaker attitudes. This, in turn, could exert a positive influence on their choice to enrol in further education, and on their labour-market outcomes later in life. In the context of the COVID-19 pandemic, students' self-directed learning ability and intrinsic motivation have proved crucial to continue learning at a regular pace, despite the challenges associated with massive online schooling. It follows that gaps in learning progression are likely to arise between students with stronger lifelong learning attitudes and those with weaker attitudes.

Developing strong attitudes and dispositions to learn does not exhaust its benefits in the short run – it is also crucial from a lifelong perspective. Lifelong learning attitudes are usually carried over into adulthood, so that individuals with stronger dispositions to learn are more prone to keep learning throughout their lives. Hence, creating a lifelong learning society means that education policy makers should also focus on early stages of an individual's life, with the aim of creating strong foundations – both in terms of cognitive skills and attitudes towards learning – as fertile grounds for future learning. This requires understanding how education and training systems can incentivise the development of students' lifelong learning attitudes throughout schooling. This particularly applies to students from socially disadvantaged backgrounds, who are less likely to receive support from their families and are more likely to begin compulsory schooling with pre-existing gaps in non-cognitive skills compared to their peers from advantaged backgrounds.

According to the model of skill accumulation proposed by Cunha and Heckman (2008^[6]), non-cognitive skills are cumulative, in that skill development in future stages builds on the stock of skills acquired earlier in life, as well as on prior investments. Viewed through this lens, the lifelong learning attitudes of 15-year-old students', as observed in PISA, may reflect more than simply just the quality of their learning environment at this specific stage. Rather, they may also reflect prior investments, as well as the emotional and social competencies the students had already acquired before entering secondary school.

To illustrate this point, Figure 2.11 and Figure 2.12 compare mean levels of students' enjoyment of mathematics and confidence in mathematics between 4th graders in TIMSS 2015 and continuing with the same cohort of 8th graders in TIMSS 2019 as measured by the indices "Students like learning mathematics" and "Students confident in mathematics" constructed in the Trends in International Mathematics and Science Study (TIMSS). Both figures show a strong correlation between levels of these attitudes in the pools of 4th graders (TIMSS 2015) and 8th graders (TIMSS 2019). More specifically, variations in the attitudes of 4th graders explain more than 70% of the variations in the attitudes of 8th graders.

Figure 2.11. Students' enjoyment of mathematics among 4th graders in TIMSS 2015 and 8th graders in TIMSS 2019

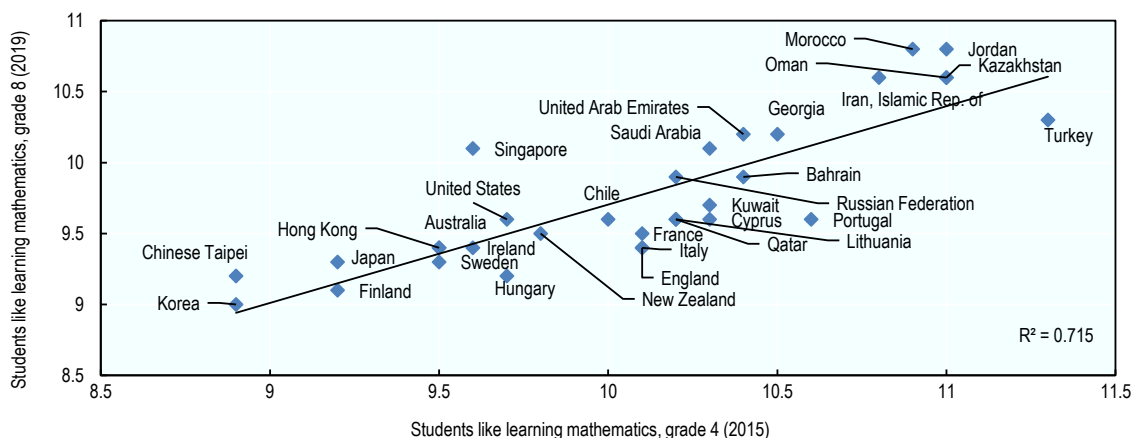


Note: The figure shows the correlation between the “Students like learning mathematics” index computed on 4th graders in TIMSS 2015 and 8th graders in TIMSS 2019.

Source: TIMSS 2015 Assessment Frameworks (2015₍₄₉₎), <https://timssandpirls.bc.edu/timss2015/frameworks.html>.

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Figure 2.12. Students' confidence in mathematics among 4th graders in TIMSS 2015 and 8th graders in TIMSS 2019



Note: The figure shows the correlation between the “Students confident in mathematics” index computed on 4th graders in TIMSS 2015 and on 8th graders in TIMSS 2019.

Source: TIMSS 2015 Assessment Frameworks (2015₍₄₉₎), TIMSS 2015 International Database, <https://timssandpirls.bc.edu/timss2015/international-database/>.

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This evidence seems to confirm the existence of a strong link between stocks of attitudes that are accumulated at different stages of the education process. Hence, a greater endowment of lifelong learning attitudes in adolescence probably results from both contemporaneous efforts and interventions by teachers

and families, and prior investments. Therefore, education policy makers should design comprehensive strategies targeting different stages of the learning process (starting with early education) to promote positive lifelong learning attitudes throughout schooling. This section focuses on the development of lifelong learning attitudes during adolescence. It analyses the role that schools, teachers and families play at this stage to create favourable conditions for developing lifelong learning attitudes and compensate for gaps accumulated at previous stages.

The role of teachers in stimulating lifelong learning attitudes in secondary school students

Motivating students to become active learners has become a major concern of educators and teachers. Today, high-quality teachers are regarded as teachers who are not just adept at increasing students' knowledge, but can also provide a supportive learning environment promoting critical thinking and spurring children's socio-emotional development (Blazar and Kraft, 2017^[50]).

Previous studies have attempted to shed light on the most effective pedagogies and methods teachers can use to stimulate the development of lifelong learning attitudes, identifying different teacher practices (TPs) that motivate pupils to learn and encourage them to learn autonomously. Some practices relate to individual teachers' personality traits. A study covering primary schools in New York City indicates that teachers' extraversion, conscientiousness and personal efficacy play a significant role in enhancing students' non-cognitive skills (Rockoff et al., 2011^[51]). Similarly, teacher enthusiasm – as communicated by remarking on the value of the learning material, expressing interest in the subject and having an inspiring presentation style – can strongly influence students' intrinsic motivation (Wittrock, 1986^[52]; Long and Hoy, 2006^[53]) and their willingness to learn (Patrick, Hisley and Kempler, 2000^[54]).

Further evidence has shown that students' intrinsic motivation and willingness to learn grows when teachers promote co-operative learning environments (Brophy, 2010^[55]; Vaugham, 2002^[56]; Ghaith, 2003^[57]) and support their need to feel competent and autonomous (Roeser, Eccles and Sameroff, 2000^[58]). When students perceive their teachers as supportive, they are also more likely to engage in academic activities and pursue goals their teachers value (Wentzel, 1999^[59]). Other studies have shown that the tasks teachers assign to students, but also the messages they convey about learning, support their pupils' attitudes (Aunola, Leskinen and Nurmi, 2006^[60]). Creating situations that promote enjoyment of studying can be especially useful in investigating positive attitudes towards learning (Deci and Ryan, 1985^[61]).

Taking stock of the main findings in this literature, this section explores how specific teacher practices relate to the development of the lifelong learning attitudes analysed so far, shedding light on which policy interventions can best create suitable conditions for teachers to develop such pedagogies. Based on data from PISA 2018, this chapter investigates six distinct teacher practices, chosen to reflect some of the practices outlined above - see (OECD, 2020^[8]) for details on index construction. The literature has found these teacher practices to be significantly related to the development of students' lifelong learning attitudes. Information on such practices is based on students' perception of the support they receive from their teachers and their engagement in the classroom.

Teaching practices and lifelong learning attitudes

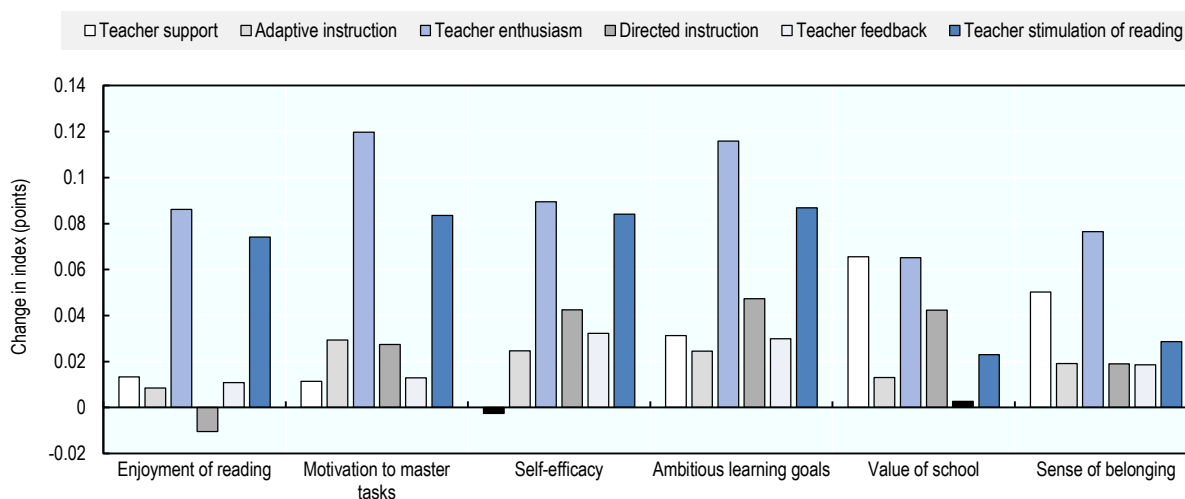
Figure 2.13 shows the correlation between the development of students' lifelong learning attitudes and different teacher practices in the classroom. The results indicate that 15-year-olds' lifelong learning attitudes are positively associated with specific teaching styles, especially teacher enthusiasm and teacher stimulation of reading. The estimates factor in students' SES, age, gender, reading performance and

parental emotional support, as well as the school's socio-economic profile, other teacher practices and the degree of classroom discipline.³

The association between teacher practices varies across lifelong learning attitudes. For instance, while teacher enthusiasm is significantly correlated with all the attitudes considered, it has a particularly strong relationship with students' motivation to master tasks and develop ambitious learning goals, as well as their self-efficacy and enjoyment of reading. Consistently across countries, the results suggest that students display higher levels of lifelong learning attitudes when they perceive their teachers as inspiring and enthusiastic about the material presented in class.⁴

Teacher stimulation of reading is also very tightly linked to most attitudes – e.g. ambitious learning goals, self-efficacy, motivation to master tasks and enjoyment of reading. The index of teacher stimulation of reading measures the extent to which a teacher promotes active learning and classroom participation, as well as enhances students' critical thinking abilities by encouraging them to express their opinions or relate the classroom reading material to their own lives or existing knowledge.

Figure 2.13. Association between lifelong learning attitudes and different teaching practices, OECD average



Note: Regressions take into account student's and school's SES, age, gender, reading performance, parental emotional support, other TPs and disciplinary climate. Regressions are estimated separately for each attitude. Statistically insignificant coefficients at the 5% level are marked in black.

Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

StatLink  <https://stat.link/jhizvm>

The way in which teachers organise the learning material and direct their class – as measured by the index of directed instruction – is also vital to developing students' lifelong learning attitudes. Teacher-directed instruction, where the teacher sets clear goals for learning, asks questions to check whether students have understood the content or presents a short summary of the previous lesson, is found to be statistically associated with students' self-efficacy, ambitious learning goals and the value they attribute to their school.

Teacher enthusiasm and teacher support seem especially important when it comes to developing students' sense of belonging to the school, although associations are modest in the OECD region. Teacher enthusiasm and support, as well as directed instruction, also help students value their school. On the other hand, providing feedback on student performance is only modestly related to most attitudes.

While these results support the view that teacher practices can boost the development of positive attitudes towards learning, great heterogeneity is observed across countries.⁵ The link between teacher practices and students' lifelong learning attitudes is particularly strong in Denmark, Finland, Italy, Sweden and Korea – perhaps because these countries allocate substantial time for regular collaboration among teachers on issues of instruction, e.g. to reflect on experiences and successes in engaging children in the classroom. This is consistent with evidence that teachers are more likely to develop inspiring and enthusiastic behaviours in schools that provide more opportunities to work with colleagues. Most of these countries also build teachers' professional development into their workday, as occurs in more than 85% of schools in Denmark, Finland, Sweden, Norway and Ireland (OECD, 2004_[62]). Research has found that when time for professional development is built into their working hours, teachers are more likely to learn how to cope with particular issues and problems in the classroom. In fact, the evidence shows that job-embedded professional learning is more effective at catalysing changes in teacher practices than generic workshops (Wei, Andree and Darling-Hammond, 2009_[63]).

Teacher enthusiasm

Among all the teacher practices analysed, teacher enthusiasm is linked to a broad range of lifelong learning attitudes. Educational environments where teachers convey enthusiasm towards both teaching and the content of instruction support the development of positive learning attitudes in students, especially ambitious learning goals, motivation to master tasks, self-efficacy and enjoyment of reading.

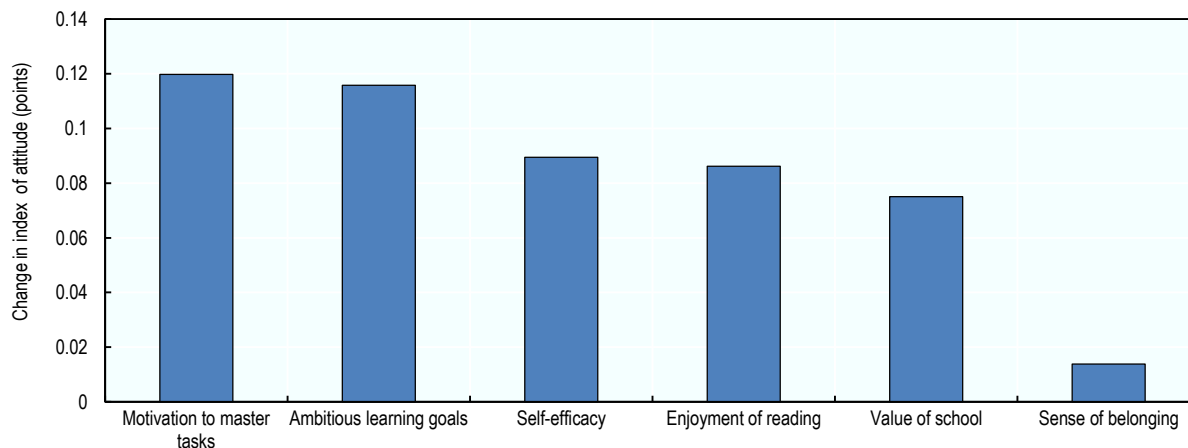
This finding corroborates previous evidence that enthusiastic teachers can improve students' educational achievements and spur the development of positive attitudes and dispositions to learn. The rich literature on the role played by teachers in the development of students' non-cognitive and socio-emotional skills indicates that enthusiasm is one of the most important traits of a good teacher (Witcher, Onwuegbuzie and Minor, 2001_[64]). More specifically, a good teacher creates a sense of enjoyment in the content of instruction, and raises students' curiosity and intrinsic motivation to learn (Patrick, Hisley and Kempler, 2000_[54]; Moè, 2016_[65]). These are all important attributes that can raise the level of effort students devote to learning tasks (Keller et al., 2014_[66]; Kunter et al., 2013_[67]).

When reviewing the mechanisms affecting students' dispositions to learn, the evidence shows that a student's interest in learning is mostly influenced by teachers' dispositional enthusiasm – a construct that comprises positive emotional expressiveness (through animation, body language or facial expression) and positive affect (i.e. the degree of enjoyment and pleasure teachers derive from their professional activities (Keller et al., 2014_[66]). Thus, enthusiastic teachers help their students develop positive subject-related affective experiences and attribute importance to the subject.

Teacher enthusiasm is also strongly and positively correlated with students' performance in school – as measured, for example, by their performance in PISA reading tests (OECD, 2019_[68]). Research has shown this happens indirectly, through the positive influence enthusiastic teachers exert on students' attitudes towards learning, particularly motivation and perseverance (Kunter et al., 2013_[67]), (Keller et al., 2014_[66]).

From a policy-making standpoint, it is important to understand how teacher enthusiasm influences each of the attitudes considered, and how transmission channels can be reinforced and supported in countries or contexts where students struggle to develop strong lifelong learning attitudes. Information in PISA 2018 allows assessing the direction and intensity of the relationships between the different items used to approximate for teacher enthusiasm (ranging from “the enthusiasm of the teacher inspired me”, “it was clear to me that the teacher liked teaching us”, “it was clear that the teacher likes to deal with the topic of the lesson”, to “the teacher showed enjoyment in teaching”⁶) and students' lifelong learning attitudes.

Figure 2.14. Change in lifelong learning attitudes associated with students reporting their teacher is inspiring, OECD average



Note: Estimates represent changes in the index of each LLLA associated with a change in the dummy variable of whether the student perceived the teacher as inspiring. Regressions are estimated separately for each LLLA, taking into account the student's and school's SES, age, gender, reading performance, parental support, other TPs and disciplinary climate.

Source: OECD calculations based on OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

StatLink  <https://stat.link/z0haku>

The results show that in most OECD countries, the positive relationship between teacher enthusiasm and students' lifelong learning attitudes stems in great part from the way teachers inspire students.⁷ Figure 2.14 shows that students who perceive their teacher as inspiring tend to develop more positive attitudes towards learning – particularly more ambitious learning goals, and higher levels of motivation and enjoyment of reading – than their peers who feel less inspired by their teachers. The link between perceived teacher enthusiasm and lifelong learning attitudes is particularly strong in Denmark, Finland, Germany, Norway and Slovenia.

It follows that identifying the right way to support teacher practices that inspire students can greatly help them develop positive learning attitudes (Box 2.4). This is certainly no easy task, as a plethora of potential practices are in principle available to achieve this result. Considering the other items composing the index of teacher enthusiasm, the analysis shows that classroom environments where students perceive that teachers like dealing with the subject are strongly associated with students' motivation to master tasks in Latvia and Portugal,⁸ while the strength of those associations is negligible in other OECD countries.

What can countries do to support effective teacher practices leading to lifelong learning attitudes?

From a policy-making standpoint, it is key to understand how governments can promote beneficial practices and pedagogies – and where such practices already exist, how they can be scaled up so that the majority of students can benefit from them, and all teachers can acquire and use them. Generally speaking, little is known about what makes some teachers more productive than others when it comes to influencing students' achievements and socio-emotional development. Previous literature has highlighted that formal qualifications are only modest predictors of a teacher's contribution to student achievements (Hanushek, 1986^[69]; Hanushek, 1997^[70]). While important, holding full certification, scoring well on teaching exams, having a regular licence or graduating from a selective teacher's college are not sufficient in themselves to explain a teacher's greater ability to influence students' non-cognitive skills (Jackson, 2012^[71]). Rather, teachers' ability to influence the development of students' lifelong learning attitudes is likely bolstered by the support they receive from schools (and education systems more broadly), for

example in the form of coaching or continuous professional development (CPD) programmes to improve teaching practices (Box 2.4).

Box 2.4. The role of continuous professional development for teachers: Evidence from the Teaching and Learning International Survey (TALIS) 2018

Previous work by the OECD in the context of the TALIS programme has recognised that promoting teachers' lifelong learning is an essential instrument to update their teaching practices. Creating a lifelong learning society requires that teachers themselves learn throughout their career. Governments and education policy makers have put much effort into encouraging teachers' participation in continuous professional development activities. Continuous professional development helps teachers develop skills that will benefit both their teacher practices and their students' development by acting on their dispositions, their classroom practices and their beliefs. The continuous professional development activities that most effectively create a shared culture of improvement across teachers are those that are embedded in the school community, thereby incorporating the teaching experience, the school context and teachers' collegiality.

Analyses of the TALIS 2018 survey (OECD, 2019^[72]) have striven to identify the most effective forms of continuous professional development, as perceived by lower-secondary school teachers. Teachers who reported participating in training on pedagogical practices were more likely to implement effective practices in the classroom than teachers who did not take these courses. Similarly, participation in training on classroom management seemed to be associated with higher levels of self-efficacy in the classroom. Asked which characteristics they valued most, teachers who reported that their training had a positive impact on their teacher practices answered that the training: i) provided opportunities to practise/apply new ideas and knowledge in their own classroom; ii) provided opportunities for active learning; iii) provided opportunities for collaborative learning; and iv) focused on innovation in their teaching.

In addition to training courses, coaching is particularly beneficial to improving teacher practices. **Brazil** created a nine-month-long coaching programme (the Ceará programme) for secondary education teachers that taught practical strategies on lesson planning, classroom management and student engagement. The programme also consisted of school-level pedagogical co-ordinators who provided feedback to teachers based on classroom observations, as well as self-help resources such as books and online videos. An impact evaluation revealed that the programme resulted in: i) more instructional time for teachers in the classroom, by reducing the time spent on classroom management; ii) more frequent use of interactive strategies to improve student engagement; and iii) an overall improvement in the academic outcomes of students in state and national tests. In **South Africa**, primary education teachers were visited by coaches, who observed their teaching, provided feedback and demonstrated corrective actions. Evaluations of this intervention showed that teachers who received coaching were more likely to implement group-guided reading (a difficult strategy to put in place), and that their students improved their reading proficiency by a considerable margin. The results also show that a structured pedagogical programme based on in-person coaching helped teachers utilise all the resources available to them and induced behavioural change in their instructional practices.

Source: OECD (2019^[72]), *TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners* (Summary), <https://doi.org/10.1787/0d310598-en>.

Previous analyses by the OECD indicated that effective teachers have two things in common: experience and continuous training (OECD, 2019^[41]). Therefore, providing teachers with opportunities for continuous professional development – especially if integrated into their workday – and incentivising collaborative environments with their colleagues can spur the adoption of positive teaching practices in schools (see examples in Box 2.5 and Box 2.6).

Box 2.5. What makes an inspiring teacher: Evidence from the United Kingdom

To identify how teachers inspire their learners, a project in the United Kingdom assessed the most common characteristics shared by 36 selected inspiring teachers. A team of external reviewers observed each teacher for 3.5 hours on average, corresponding to approximately 126 hours of direct scrutiny of the teachers' practices across a wide array of subjects in nursery, primary, secondary and sixth-form classes.

Blaylock et al (2016^[73]) collected the results in a report which suggests that inspiring teachers were able to communicate a sense of their personal joy in learning and discovery by modelling enthusiasm and inquisitiveness as part of their teaching style, and by asking intellectually challenging questions. Teachers also displayed a keen interest in each child's learning, using empathy and frequent classroom interactions as pedagogical tools to diagnose what children needed to reach the next level of knowledge and understanding. Inspiring teachers also differed from other teachers in their exceptionally high expectations for student performance and their commitment to personal improvement in order to achieve this objective. Finally, all teachers shared the desire to be as effective as possible.

Reviewers then identified a number of practices that were particularly effective to support teachers in developing inspiring behaviours. Among them, working with others – e.g. being involved in the evaluation of the others' work or having an inspirational role model to learn from – and continuing professional development related to the improvement of pedagogy have been found to be particularly effective. Inspiring teachers were also benefitting from opportunities to reflect on practice with others within their schools.

Source: Blaylock et al. (2016^[73]), "Inspiring teachers: How teachers inspire learners", <https://www.educationdevelopmenttrust.com/our-research-and-insights/research/inspiring-teachers-how-teachers-inspire-learners>.

Questionnaires administered to school principals through the 2018 PISA survey provide information on the types of measures schools offer teachers to improve their practices and effectiveness, including student assessments of teacher practices, teacher mentoring and school-based continuous professional development programmes.

Many schools rely on student assessments to guide student learning (90% of schools use them for this purpose across OECD countries) and identify aspects of the instruction or curriculum that could be improved (78% of schools). In some countries, including Germany, Italy and the United Kingdom, teachers in schools that use such assessment tools were more likely to adopt instructional practices such as self-directed learning or student feedback.

In a majority of OECD countries, however, teacher mentoring programmes did not spur more widespread adoption of the teacher practices analysed. Luxembourg and Latvia are exceptions, where the existence of teacher mentoring programmes at the school level is positively associated with widespread adoption of practices that stimulate students' reading and teachers' enthusiasm. Another exception is the United Kingdom, where teacher mentoring programmes appear strongly correlated with teachers' directed instruction.

Box 2.6. Best practices: The cases of Finland and Korea

Korea is among the countries where teacher practices are strongly associated with the development of students' lifelong learning attitudes. Many factors could explain this result. First, all teachers are held to high standards, thanks to targeted policies that give teachers a highly respected status in society, along with high wages and positive working conditions (OECD, 2018^[74]). Second, teachers spend only 35% of their working time teaching pupils. They devote the remaining time to continuous professional development and sharing instructional resources and ideas with colleagues (Wei, Andree and Darling-Hammond, 2009^[63]). This is especially helpful for new teachers (Kang and Hong, 2008^[75]), and is generally found to promote enthusiastic and inspiring teacher behaviours (Blaylock et al., 2016^[73]). An additional feature of the Korean education system is its rotation scheme, which transfers teachers to a different school every five years. The rotation exposes teachers to novel challenges, providing them with the necessary tools to adapt and respond rapidly to different children's needs with innovative pedagogies.

Finland is another country where teacher practices appear to promote lifelong learning attitudes very effectively. Many Finnish schools provide substantial time for regular collaboration on issues of instruction: teachers meet every week for one afternoon to jointly plan and develop curricula, and schools in the same municipality are encouraged to share materials and best practices (OECD, 2004^[62]).

Finally, another way to ascertain the value of different teaching strategies is to determine which are more frequently used in the schools where principals are most satisfied with the education staff and compare these results with the schools whose principals are least satisfied (OECD, 2019^[68]). This is done by exploiting the index of staff shortage available in PISA, which measures the extent to which school principals are satisfied with their school's teaching and assisting staff.⁹ Further analysis from PISA 2018 shows that in schools where principals are more satisfied, teachers are significantly more likely to be enthusiastic, to stimulate reading and to support their students.

Importantly, while several schools have undertaken to update teachers' practices and skills, participation in continuous professional development programmes or other trainings is generally uneven across different school types. Teachers in schools with large shares of disadvantaged students are generally less experienced and less engaged with continuous professional development, so that the most effective teachers sort into schools with a prevalence of advantaged students (see Box 2.7 for evidence from PISA 2018). Given that effective teachers may help reduce socio-economic gaps in student performance (and should therefore be assigned to more vulnerable and disadvantaged students), their concentration in schools with higher socio-economic profiles may reinforce social gaps in learning, and should therefore be tackled through targeted policy interventions.

Box 2.7. Sorting experienced teachers across schools

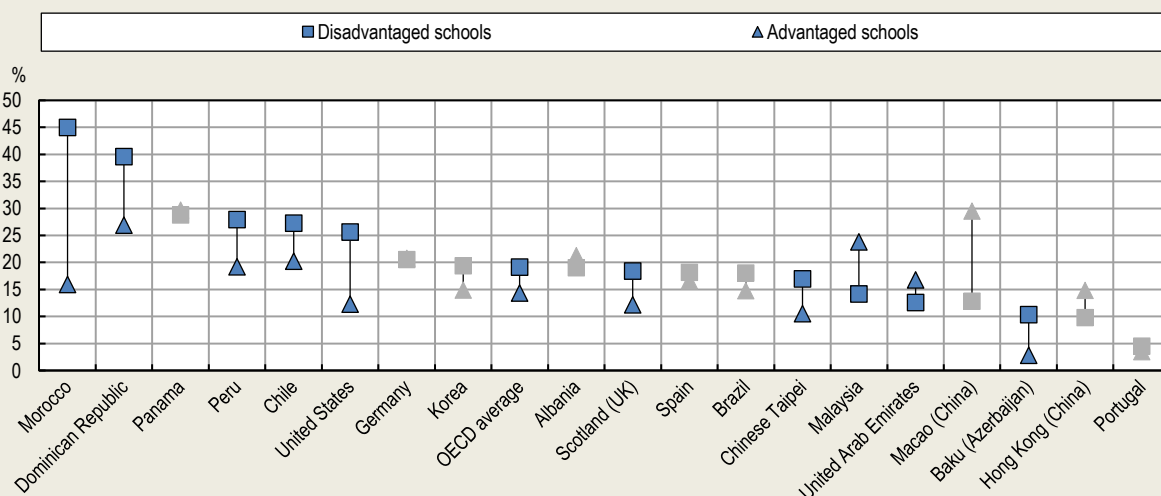
Evidence accumulated through several PISA rounds indicates that the most effective teachers usually have at least two things in common: experience and solid training. Supporting this finding, other studies have shown that each additional year of teaching experience generally corresponds to student achievements, especially during a teacher's first five years in the profession (Rockoff, 2004^[76]). Indeed, early in their careers, teachers often feel less confident in their ability to teach, their classroom management skills and their ability to use a wide range of effective instructional practices (OECD, 2019^[72]).

Attracting the most effective teachers to schools that number many struggling students may therefore be an effective way to compensate – at least partially – for their educational disadvantage. However, evidence from PISA 2018 shows that more experienced teachers (as well teachers with higher qualifications) are unevenly distributed across school types and tend to sort into schools numbering larger shares of students with high SES. This is what emerges, for example, from the analysis of optional teacher questionnaires administered as part of the PISA 2018 survey. Countries that distributed the questionnaire gained information on teachers’ professional experience, allowing them to distinguish between “novice” teachers (defined as those with fewer than five years of experience) and more experienced teachers.

In many of the 19 countries/economies that distributed the questionnaire, including Chile, Scotland (United Kingdom) and the United States, the proportion of teachers with fewer than five years of experience was larger in disadvantaged schools than in advantaged schools (Figure 2.15).


On average across the OECD countries that distributed the teacher questionnaire, around 20% of teachers in disadvantaged schools had under five years of experience – a significantly higher proportion (by 5 percentage points) than in advantaged schools. The difference between these shares was particularly large (29 percentage points) in Morocco, where almost one in two teachers in disadvantaged schools had fewer than five years of experience.

Figure 2.15. Percentage of novice teachers, by school’s socio-economic profile



Note: Proportion of novice teachers by school’s socio-economic profile, measured by the school’s average PISA index of ESCS. Disadvantaged schools are the schools in the bottom quarter and advantaged schools are in the top quarter. Statistically insignificant coefficients are marked in grey.

Source: OECD, (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>, Table II.B1.5.5.

StatLink  <https://stat.link/vhkgdu>

Employing mainly less-experienced teachers in schools with high concentrations of disadvantaged students may compound these students’ academic difficulties, as novice teachers tend to be less effective than teachers with several years of experience (Rockoff, 2004^[76]). Further evidence from PISA 2018 shows that the countries/economies where the proportion of novice teachers is larger in disadvantaged schools than advantaged schools also present greater socio-economic differences in performance (OECD, 2019^[41]).

Besides experience, participation in ongoing professional development is a crucial component of teacher professionalism. Continuous professional development aims to improve teachers' practices, self-efficacy and job satisfaction. School principals reported that, on average across OECD countries, more than one in two teachers in their school had attended such a programme, but with wide variations between and within education systems. In 18 countries, a smaller proportion of teachers working in schools serving mostly disadvantaged students had attended such a programme than in schools with a more affluent intake.

Source: OECD (2019^[41]), *PISA 2018 Results (Volume II): Where All Students Can Succeed*, <https://doi.org/10.1787/b5fd1b8f-en>.

While the debate on the best ways to help teachers develop good pedagogies and practices is relatively old, the challenges induced by the COVID-19 pandemic, and the widespread adoption of mixed models of schooling combining classroom and remote instruction, have made it even more salient. The pandemic has disrupted instructional practices and presented educators with a huge challenge, i.e. how to adapt their teaching content to distance and online instruction while stimulating children's motivation and enjoyment of learning from a distance. Many countries have rapidly taken action to help teachers overcome the numerous obstacles they are likely to have encountered, such as a lack of suitable digital skills or guidelines on the appropriate pedagogies in such circumstances. Box 2.8 provides some examples of policy interventions.

Box 2.8. How countries have supported teachers during the COVID-19 pandemic

Teachers need support to quickly adapt their instruction practices to distance learning, whether regular or ad hoc. France has mobilised its network of local digital education advisors to support the transition from face-to-face to distant learning. The network has provided online training to teachers and school principals about the availability and use of digital resources for pedagogical practice, and promoted teaching practices adapted to educational continuity and progressive school re-opening. It has also worked with local authorities to lend (and deliver) computers and learning worksheets to all students (Vincent-Lancrin, 2020^[77]).

Other countries are complementing schooling resources and teachers' efforts to deliver high-quality online classes by broadcasting home schooling on television and social media. In the United Kingdom, for example, the British Broadcasting Corporation (BBC) has begun to collaborate with teachers and education experts. It now provides daily lessons to pupils in grades 1 to 10, including videos and interactive activities aiming to keep students motivated and stimulate their socio-emotional skills (Van Lieshout, 2020^[78]).

The role of parents in developing lifelong learning attitudes in youth

Together with teachers, parents play a key role in furthering children's cognitive and non-cognitive abilities. Parental involvement in a child's education starts early in life, continuing through childhood and adolescence. Children of parents who are involved in their development tend to have greater belief in their self-efficacy, stronger intrinsic motivation to learn and higher mastery goals (Bong, Hwang and Song, 2010^[79]; Ginsburg and Bronstein, 1993^[80]).

In this section, "parental" involvement is understood to comprise all parental activities that are intentionally linked to learning (Bouffard and Weiss, 2008^[81]). Parents engage in children's education in various ways, from being actively involved in their schooling at home (e.g. helping them with homework, discussing their

experience at school, reading with them or telling them stories), to participating in scholastic activities (e.g. communicating with teachers about their child's progress or volunteering in school activities) (Avvisati, Besbas and Guyon, 2010^[82]). Parental involvement also includes behaviours and practices such as setting and conveying high expectations for their children's educational achievements and goals (Fan and Chen, 2001^[83]).

In 2018, in addition to the student and school questionnaires distributed in every country participating in the PISA survey, countries were given the opportunity to voluntarily disseminate to parents a questionnaire covering (among other things) their involvement and reading habits. Nine OECD countries distributed the parental questionnaire: Belgium, Chile, Germany, Italy, Ireland, Luxembourg, Mexico, Portugal and Korea.

This section explores how parental involvement supports the development of students' lifelong learning attitudes, using the information collected through the PISA 2018 parental questionnaire. It focuses on different indices of parental involvement: i) home involvement (academic), e.g. helping children with homework; ii) home involvement (non-academic), e.g. discussing political or social issues with children, spending time with them or going with them to bookshops and libraries; and iii) school involvement, e.g. participating in local school government and holding discussions with teachers on how best to support home learning at home (details on their construction see (OECD, 2020^[81])). This section also focuses on parents' emotional support, a construct that comprises a set of parental behaviours intending to bolster their children's confidence when facing difficulties, and to support their educational efforts and achievements.

While the development of students' attitudes and dispositions to learn starts in the first years of life, this section focuses on parental support and engagement during adolescence. Although cognitive skills tend to be settled in the first ten years of life, socio-emotional and motivational skills and attitudes are still malleable at later stages of an individual's educational career (Cunha and Heckman, 2008^[6]), which is why it is important for parents to continue supporting and accompanying their children's learning during adolescence. Box 2.9 and Box 2.10 present some evidence underscoring the importance of parental interventions at earlier moments of a child's education to underpin later learning.

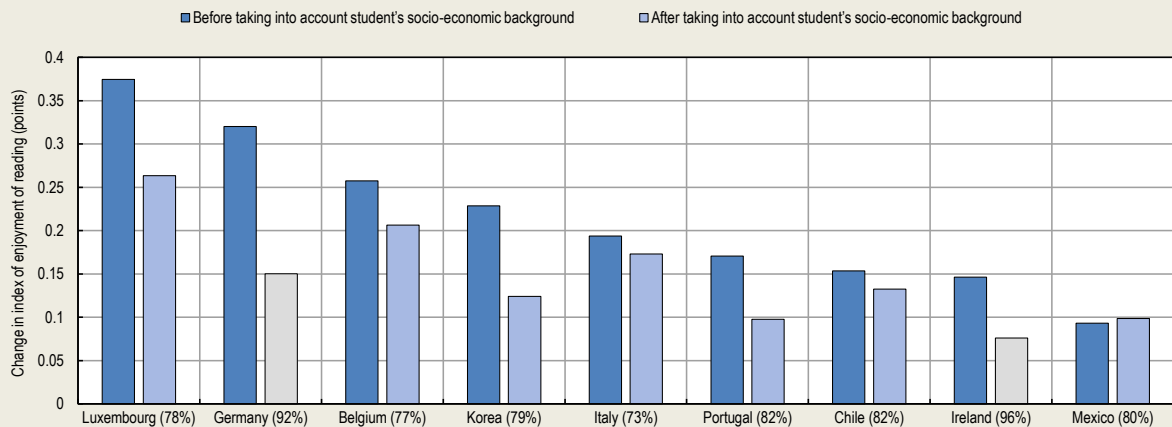
Box 2.9. Correlation between parental support at the beginning of primary school and students' enjoyment of reading in adolescence

The PISA 2018 parental questionnaire asked parents to report on their engagement in different activities with their children during the first year of primary school. For example, parents stated how often (i.e. never or hardly ever, once or twice a month, once or twice a week, every day or almost every day) they read books to their children, told them stories, sang songs with them, played with alphabet toys or played word games, and discussed their school activities with them. This information provided an indication of parental support during children's early education.

Analyses of these data indicate that some of these early parental practices (particularly reading books to young children) display strong associations with students' enjoyment of reading measured at age 15. Figure 2.16 shows the association between reading books frequently to children in primary school and the students' enjoyment of reading at age 15. Bars represent the difference in the mean value of the index of enjoyment of reading between students whose parents read books to them weekly or daily when they were in primary school, and students whose parents did not. Numbers in brackets represent the shares of parents who often read books to their children in primary school. Estimates are shown before and after factoring in the student's socio-economic background.


Figure 2.16. Students' enjoyment of reading at 15 and parental support in primary school

Difference in mean index of enjoyment of reading at age 15 between students whose parents used to read books with them often (daily or weekly) and those whose parents did not, for a subset of OECD countries



Note: Bars report the difference in the index of students' enjoyment of reading between students whose parents often read books to them (weekly or daily) in the first year of primary school and students whose parents did not. Estimates were done before and after factoring in students' SES. In both cases, regressions factor in a student's age and gender. The estimations were done only on the subset of OECD countries that participated in the parental questionnaire. Bars in grey report coefficients that are not significant at the 5% statistical level. Values under brackets report the share of parents who read books to their children often in early primary school.

Source: OECD calculations based on OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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The parents' responses show a close relationship between their own involvement in reading books to their child during the first year of primary school and the child's enjoyment of reading at age 15. Students whose parents reported they read a book with their child daily or weekly have markedly higher levels of enjoyment of reading than students whose parents read to them less regularly. The average difference across the nine countries for which data are available is 0.22 points (almost one-fourth of a standard deviation). However, this gap varies considerably across countries, ranging from 0.09 points in Mexico to 0.38 points in Luxembourg.

Differences in the development of attitudes associated with early parental involvement partly mirror differences in parents' socio-economic backgrounds, as students from more-advantaged backgrounds tend to receive more support from parents. However, even when comparing students with similar SES, there remains a sizeable gap in the level of enjoyment of reading between students whose parents engaged more in their early learning and those whose parents did not. When factoring SES into the regressions, the gap amounts to 0.15 points on average. These associations suggest that parental support proffered in early phases of a child's life may have a lasting influence on the development of specific student attitudes.

Box 2.10. Why is intervening in early childhood so important?

The cognitive and socio-emotional skills acquired in the first five years of a child's life have crucial and long-lasting impacts on later outcomes. While the quality of schooling matters, strong early learning accelerates later development, whereas a poor start can inhibit it. In fact, children who have not developed core foundation skills by the age of 7 typically struggle to make good progress at school, and are more likely to have social and behavioural difficulties throughout adolescence and adulthood. Hence, it is essential to understand which factors can facilitate effective early learning, and the role of parents in promoting these factors.

Protective factors that support children's development during this phase include regular, warm and stimulating interactions with their parents and other caregivers. Risk factors that impede development include exposure to stresses, such as violence in the home and poor nutrition. Children who experience supportive early learning environments develop rapidly, establishing a sound base for both ongoing and future learning and achievement.

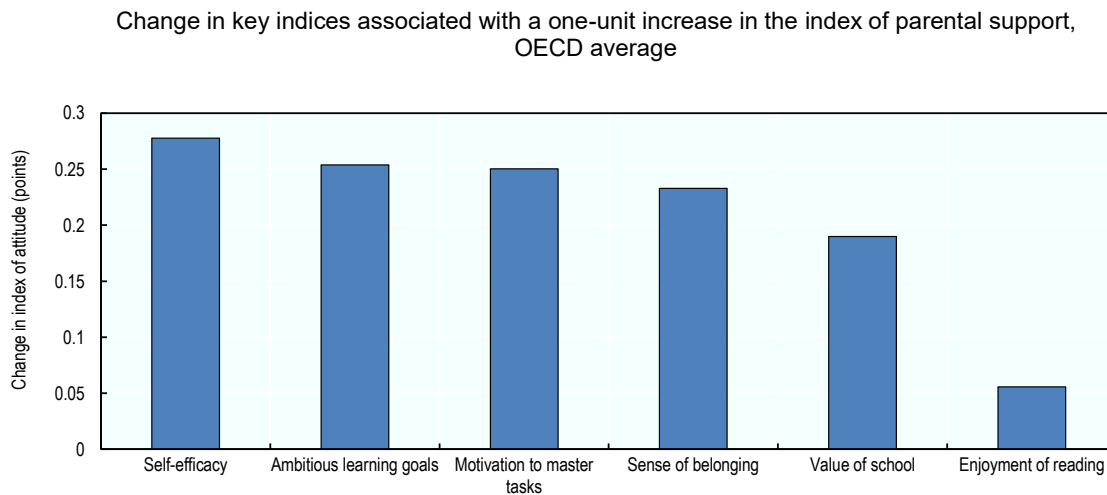
A growing body of longitudinal evidence tracking children from preschool to adulthood has consistently found a significant relationship between early experiences and later outcomes. Children who do not develop critical early skills, such as emergent literacy or self-regulation, struggle greatly to achieve learning goals at school and positive outcomes during adulthood. Importantly, the attitudes and personal attributes that are developed in these early years are generally long-lasting. Aspects of self-regulation (such as attentiveness and task persistence) developed at this stage tend to persist, and are positively associated with achievement in reading and mathematics throughout primary school.

As the first five years of life are such a critical time for developing long-lasting attitudes and foundation skills, understanding what practices can stimulate effective early learning is paramount. Previous findings from the OECD have shown that strong home environments provide a great start for every child (Borgonovi and Montt, 2012^[84]). In addition to parental education and SES, parenting behaviours and parental well-being largely contribute to children's experience of the home environment, and are therefore crucial to their early-learning outcomes. The activities parents perform with their children, such as reading to them and engaging them in warm and responsive interactions, combined with the frequent use of complex language, create a home learning environment that supports children's development of cognitive skills, self-regulation and social-emotional skills, as well as their sense of well-being.

Source: OECD (2020^[85]), *Early Learning and Child Well-being: A Study of Five-year-Olds in England (United Kingdom, Estonia, and the United States)*, <https://doi.org/10.1787/3990407f-en>.

Parental emotional support and the development of lifelong learning attitudes in students

Figure 2.17 shows the average association across OECD countries between parents' emotional support and students' attitudes and dispositions to learn, factoring in the student's age, gender and SES, and the school's socio-economic profile. The results suggest that higher levels of parental emotional support, as reflected in parental behaviours that support children's efforts and encourage them to be confident, are strongly related to all the lifelong learning attitudes. The only exception is students' enjoyment of reading,¹⁰ where the association is modest.

Figure 2.17. Students' lifelong learning attitudes and parents' emotional support

Note: Bars represent changes in the indexes of LLLAs associated with a one-unit increase in the index of parents' emotional support. Regressions take into account students' and schools' socio-economic backgrounds, age and gender. All changes in the index are statistically significant at the 5% level.

Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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A particularly strong association is observed between the index of parental emotional support and the indices of self-efficacy, learning goals, motivation to master tasks and sense of belonging to the school community. More precisely, a one-unit increase in the index of parental support is associated with a 0.25-point increase in these indices.¹¹ These associations are particularly strong in Korea across all lifelong learning attitudes, possibly reflecting the effectiveness of different initiatives recently implemented by the Ministry of Education, Science and Technology to include parents in their children's education (Box 2.11).

The association between parental emotional support and student self-efficacy is also strong in Sweden, the United States and Turkey. The relationship between parental emotional support and students' learning goals is especially strong in Sweden and Norway.

Box 2.11. Korea: School support for parental involvement

In Korea, the Ministry of Education, Science and Technology has put in place a comprehensive system to reinforce parental participation in children's education. The initiatives include school monitoring programmes (where parents visit their children's school to gain a sense of its activities and curriculum, and provide feedback), as well as parental support centres (OECD, 2014_[86]). All these initiatives aim to help parents understand their children's progress, become more aware of school resources and get involved (e.g. by joining a parents' group) (OECD, 2012_[87]). Parental support centres and educational institutions in each region also offer training to help parents improve their parenting skills (e.g. in communication and career guidance).

These initiatives have likely increased parents' commitment to education, as reflected in high financial investments in their children's schooling. OECD (2012_[88]) indicated that total spending on private tutoring accounts for 7.9% of the average household disposable income, meaning that parents with three children might spend one-quarter of their income on private tutoring.

Box 2.12. United States: The National Network of Partnership Schools

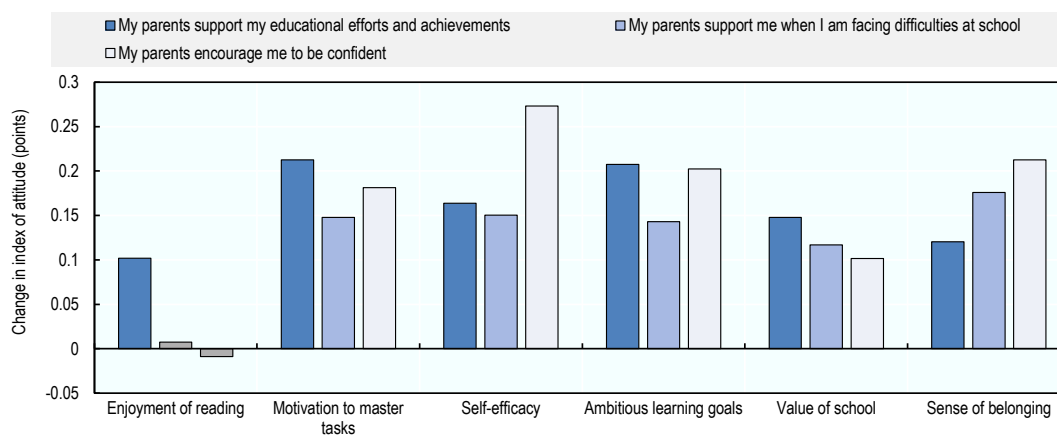
Established at Johns Hopkins University in 1996, the National Network of Partnership Schools invites schools, districts, states and organisations to use research-based approaches to organise and sustain excellent family and community involvement programmes aiming to increase student success in school.

The network has promoted several initiatives to this end. The Teachers Involve Parents in Schoolwork Interactive Homework partnership programme, for example, covers elementary and middle grades. Its activities typically consist of homework (in reading, maths or science) assigned to students according to the material they have learned in the classroom and requiring interaction with a parent at home. Parents are not asked to teach school subjects. Rather, they are required to discuss with their child how specific skills acquired in school are used in the real world, and to add questions or comments for the teacher in the section called “Home-to-School Communication”. The aim of this programme is to improve parental engagement in children’s education and strengthen school-parent communications.

Source: National Network of Partnership Schools Johns Hopkins University. (n.d.^[89]), National Network of Partnership Schools website, www.partnershipschools.org.

Figure 2.18. Students’ lifelong learning attitudes and different forms of parental emotional support

Change in key indices associated with dummy variables of whether parents adopt different forms of emotional support, OECD average



Note: Bars represented differences in the values of attitudes associated with dummy variables corresponding to whether parents provide or not different forms of emotional support. Regressions take into account the PISA index of student’s and school’s SES, age and gender. Bars in grey indicate coefficients that are not statistically significant at the 5% level. Regressions are estimated separately for each LLLA.

Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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The results reported in Figure 2.18 above show a strong and positive relationship between the emotional support provided by parents and students’ development of lifelong learning attitudes. However, they do not reveal why this relationship exists, and which forms of emotional support are especially important to developing lifelong learning attitudes. Understanding which forms of emotional support are the most suited to stimulate students’ attitudes and dispositions to learn is an essential component of education policy making. The results in Figure 2.18 present evidence on the specific forms of parental emotional

support influencing the development of positive lifelong learning attitudes among children, focusing separately on the factor items used to construct the index of parental emotional support. The factors analysed cover the extent to which parents encourage their children's educational efforts and achievements, support them when they are facing difficulties at school and encourage them to be confident.

The results show that all types of parental support positively correlate with students' lifelong learning attitudes. In particular, students are more likely to develop strong self-efficacy, motivation to master tasks and a sense of belonging to the school community when their parents encourage them to be confident. On the other hand, students' learning goals and beliefs that school is important are mostly influenced by parental support of their efforts and educational achievements.

These results indicate that parental emotional support may stimulate student attitudes such as self-efficacy, motivation and learning goals. Empirical studies have shown that students tend to form and adjust their self-efficacy beliefs by interpreting and weighting verbal messages communicated by significant others (such as parents or teachers), or emotional and affective states (Bandura, 1986^[90]; Usher, 2009^[91]). For example, they tend to develop positive self-efficacy beliefs when parents believe in their capabilities (Bandura, 1997^[92]) and value their performance (Bong, Hwang and Song, 2010^[79]). Self-efficacy beliefs towards specific academic tasks are also shaped by the learning environment in which children are raised. Learning contexts that encourage and celebrate progress and effort, usually strengthen students' self-efficacy, unlike contexts that emphasise competition (Roser, Midgley and Urda, 1996^[93]; Greene et al., 2004^[94]).

The learning environment in which children grow up can also shape their learning goals. For example, parents who maintain a firm stance on the value of learning and mastering tasks can encourage students to adopt mastery goals (Bong, Hwang and Song, 2010^[79]). Additionally, when pupils believe their parents support their educational successes, they are more likely to enjoy learning in school and develop well-defined learning goals (Wentzel, 1998^[95]). Finally, parents who celebrate good grades and support learning autonomy can boost their children's intrinsic motivation (Ginsburg and Bronstein, 1993^[80]).

While providing emotional support to children is certainly important, other forms of parental involvement that are more closely related to schoolwork and the content of instruction could further shape students' lifelong learning attitudes. The information collected through the parental questionnaire reveals three distinct forms of parental involvement:

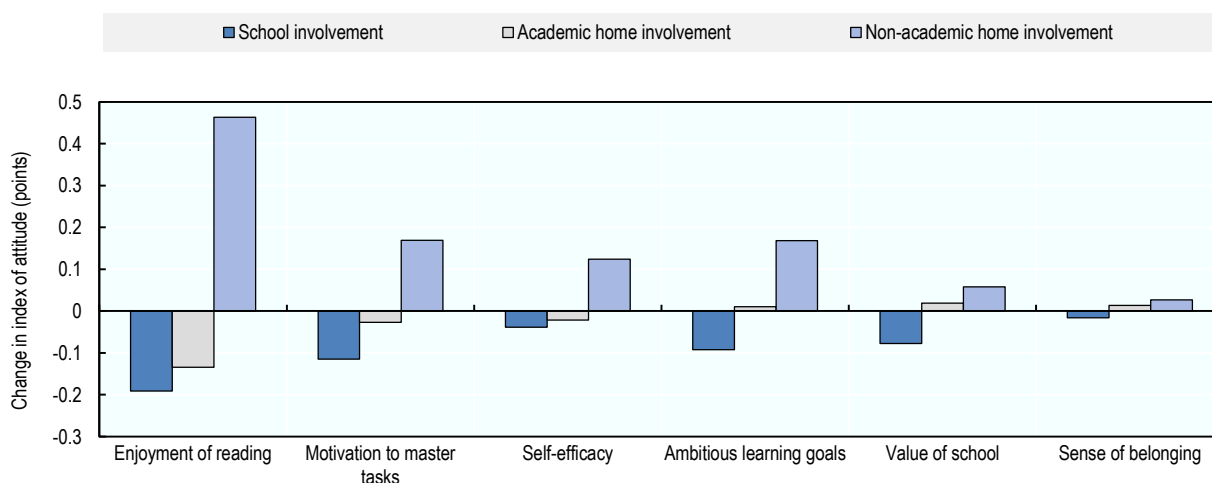
- *School involvement* measures how much (and how often) parents discuss their children's behaviour and progress with teachers, participate in local school government and school activities, and talk to teachers about how they can best support their children's learning at home.
- *Academic home involvement* measures the extent to which parents help their children with homework and discuss with them their progress at school.
- *Non-academic home involvement* measures how much time parents spend talking to their children, discussing political or social issues, going to bookstores or libraries, or questioning their children about what they read for their own pleasure.

Figure 2.19 shows the association between parental involvement and the development of students' lifelong learning attitudes. Estimates represent changes in the index of each LLLA associated with a one-unit increase in each of the indices of parental involvement after controlling for a student's age and gender, as well as the student's and school's SES. Only non-academic home involvement displays a positive association with most lifelong learning attitudes. The association is particularly strong with students' enjoyment of reading, suggesting that students whose parents are more prone to engage in social and political discussions, and spend more time talking with them, develop a stronger enjoyment of reading than their peers whose parents are less involved. On the other hand, the association of parental involvement with students' motivation to master tasks, self-efficacy and learning goals remains limited.

Neither academic home involvement nor school involvement seem to lead students to develop stronger attitudes. Rather, these two forms of parental involvement are sometimes even negatively related to students' attitudes. This result should, however, be interpreted with caution. On the one hand, it could hide potential reverse causality: some adolescents may be receiving more active parental support with their homework or through frequent meetings with teachers because they have poorer abilities or are particularly vulnerable, and therefore need more help. On the other hand, these indicators may be capturing only the quantity – rather than the quality – of parental support. And yet previous literature has highlighted that the quality of parental involvement in homework matters more than its quantity in terms of student outcomes. Accordingly, parental help with homework that is perceived as supportive generally has positive effects on students' achievements, whereas help that is perceived as intrusive has negative effects (Moroni et al., 2015^[96]).


Figure 2.19. Students' lifelong learning attitudes and different forms of parental involvement in school activities

Change in key indices associated with dummy variables of parental involvement, OECD average



Note: Calculations performed on the sample of countries with available data in the PISA parental questionnaire for a subset of countries. Regression controls include the PISA index of student's and school's SES, age and gender. Bars in grey indicate coefficients that are not statistically significant at the 5% level.

Source: OECD calculations based on OECD (2018^[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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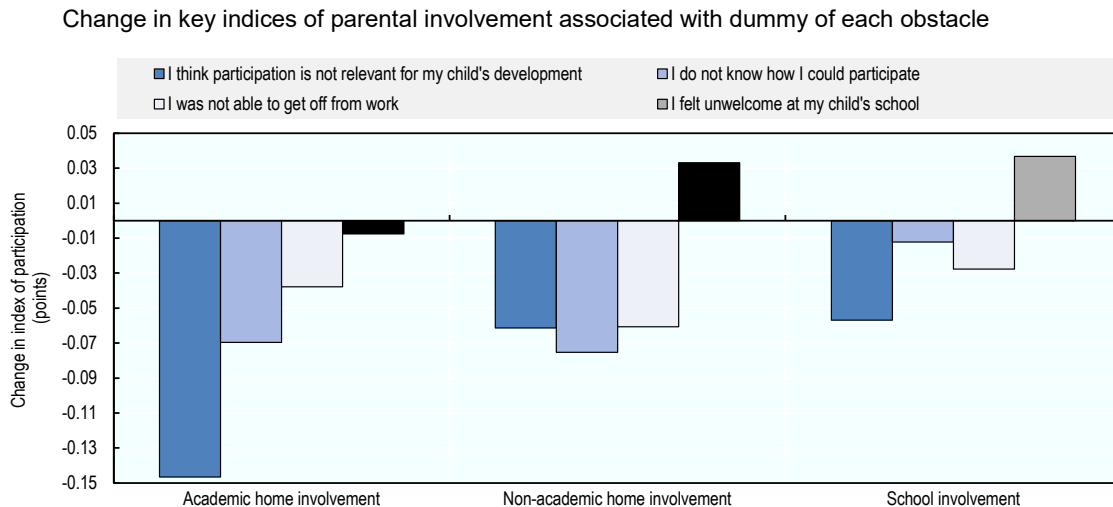
What can countries do to spur parental involvement?

Given its importance in promoting positive learning environments that stimulate the development of strong lifelong learning attitudes throughout childhood and adolescence, policy makers need to understand which actions promote greater parental involvement in children's education – and importantly, which obstacles hinder parental involvement.

Several obstacles may stand in the way of parental engagement. Many parents juggle competing demands at work and at home, and these time constraints may be especially acute for single parents. Other parents – especially those with low education levels – may also hesitate to engage with their children's schoolwork because they lack the necessary skills or familiarity with the topic. They may also have negative attitudes towards the material, which they could communicate to their children.

The information contained in the PISA 2018 survey makes it possible to analyse the extent to which parents perceive such factors as obstacles to participating in their child's education. In the PISA parental questionnaire,¹² parents are asked the following question: "During the last academic year, has your participation in activities at your child's school been hindered by any of the following issues?". They must respond by selecting items from a list of plausible factors, including "the meeting times were inconvenient", "I was not able to get off from work", "I had no one to take care of my child/children", "the way to school is unsafe", "my language skills were not sufficient", "I think participation is not relevant for my child's development" and "I do not know how I could participate in school activities".

Figure 2.20. Main factors hindering parents' involvement in school activities



Note: Calculations performed on the subsample of countries participating in the PISA parental questionnaire (i.e. Belgium, Chile, Germany, Ireland (United Kingdom), Italy, Korea, Luxembourg, Mexico and Portugal). Estimates represent the changes in the indices of parental involvement associated with changes in the dummy variables of whether parents reported their participation was hindered by each specific factor. Regression takes into account for the PISA index of the student's SES, age, immigrant status and parental education. Estimates come from the same regression. Bars in black indicate that coefficients are not statistically significant at the 5% level.

Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

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The results in Figure 2.20 indicate that parents who believe their involvement is not relevant to their child's development are significantly less likely to help their children with academic tasks at home, such as doing homework or discussing how well they are doing at school. Parents' beliefs that their participation is not relevant to their child's development display a particularly strong association with lower academic involvement in Belgium, Germany and Italy.

Parents who report a lack of knowledge and information on how to participate in their children's schooling or underestimate the importance of participation are also less likely to engage with their children at home, as reflected in lower levels of the indices of academic and non-academic home involvement. They are less likely to participate in their children's academic tasks, discuss political or social issues with them, ask them about what they read for pleasure, or accompany them on visits to bookshops or libraries. Time constraints appear to be only mildly associated with all forms of involvement.

These results are somehow consistent with psychological theories of parental involvement which hold that parental role construction is an important driver of involvement decisions. Parents generally engage with their children's education activities – especially at home – when they consider it is their role and believe that their involvement can exert positive influence on their children's educational outcomes (Hoover-

Dempsey and Sandler, 1995^[97]; Reed et al., 2000^[98]). Similarly, parents' participation in school activities is typically higher when schools and teachers invite them to participate (Deslandes and Bertrand, 2005^[99]; Green et al., 2007^[100]).

Increasing parental participation, both at earlier stages of a child's education and through adolescence, therefore requires interventions that act on parental role construction, and strengthen links and communications between schools and parents – e.g. through more frequent invitations to participate in school activities (Hoover-Dempsey and Sandler, 1995^[97]). These concerns have already been addressed through specific policy interventions in several OECD countries (see Box 2.12 and Box 2.13).

School policies and parental involvement in children's education

Many schools across OECD countries have already launched initiatives to strengthen school-parent links, with the aim of encouraging parents to become involved in their children's education and adopt supportive behaviours towards their children's learning. Evidence of the effectiveness of these initiatives is scant. However, some insights can be gained by exploiting the PISA 2018 questionnaire administered to parents and school principals, which collects information on the types of interventions devised by schools to involve parents in their children's education.

For example, the index of school policies for parental involvement is based on parents' answers to a set of questions covering the extent to which their children's school facilitated communication with families, involved parents in its decision-making process, offered parental education, informed families on the best ways to help students with homework and school activities, and co-operated with community services to strengthen school programmes and student development (Annex A.1 of PISA 2018 Volume III provides the methodological details (OECD, 2019^[68])).

Figure 2.21 shows the differences in levels of parental involvement and emotional support (expressed in percentages to facilitate comparability among indicators with different scales) for students who attend schools in the top quartile vs. the bottom quartile, according to the index of school policies for parental involvement. Parental involvement seems significantly more widespread in schools that are implementing more initiatives to involve parents than in schools that offer fewer opportunities for families. The association is particularly strong with parental school involvement and (to a lesser extent) parental emotional support.

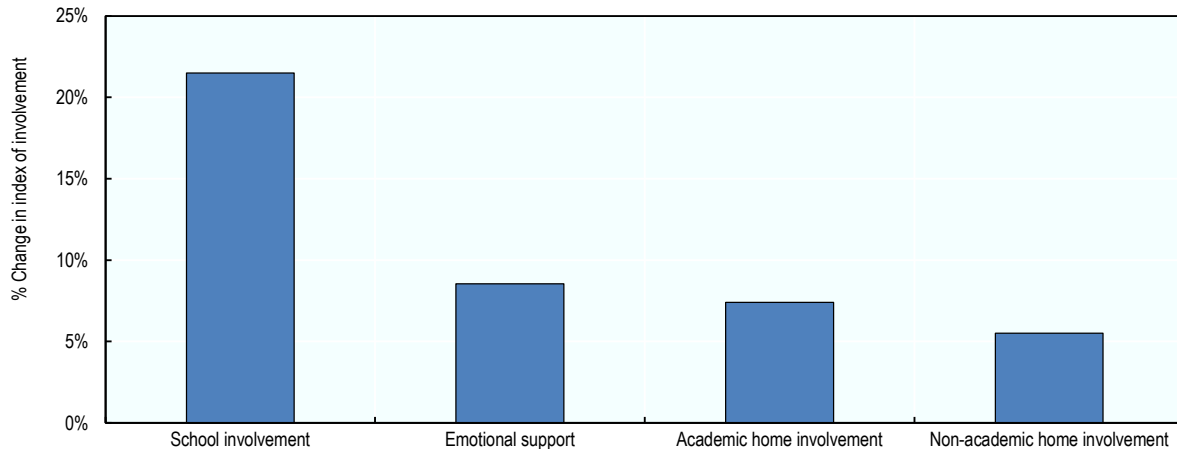
Further investigation of the data indicates that most of these associations across all forms of involvement occur through school initiatives that provide information to parents on how they can best support their children's learning. In schools that launched such initiatives, parents are significantly more likely to engage with their children's activities at home and provide higher levels of emotional support than in schools that do not. Providing parents with opportunities for education and training is also very positively linked to their children's academic tasks at home.

Previous studies have also documented that school staff who display positive attitudes towards students' families and communities promote parental empowerment and involvement. Schools' commitment to working effectively with families (e.g. engaging parents in meaningful roles and offering substantive, specific and positive feedback on the importance of parental contributions) has been identified as a critical component of effective school practices (Hoover-Dempsey et al., 2005^[101]). The evidence also shows that parents respond well to teachers' invitations to become involved. Teacher invitations and school programmes are particularly effective in raising home and school-based participation, because they respond to parents' expressed need to know how to support their children's learning, and assure them that their efforts are useful and valued (Epstein and Van Voorhis, 2001^[102]).

School interventions may therefore help address some of the main issues encountered by parents when engaging with their children's learning, thereby increasing parental involvement. Box 2.13 documents a successful programme involving parents in the French suburbs.

Figure 2.21. School policies for parental involvement and levels of parental support

Percentage difference in key indices of parental involvement and emotional support between students attending schools that score in the top quartile vs. the low quartile of the index of school policies for parental involvement



Note: Each bar represents the percentage difference in key indices of involvement or emotional support between parents whose students attend schools in the top and bottom quartiles of school policies for parental involvement. Calculations are performed on the subset of countries that participated in the parental questionnaire. Regressions take into account students' age, gender and SES, as well as the school's socio-economic background. All coefficients are statistically significant at the 5% level.

Source: OECD calculations based on OECD (2018_[15]), *PISA database 2018*, <http://www.oecd.org/pisa/data/2018database/>.

StatLink  <https://stat.link/zkod25>

Box 2.13. The case of France: Effective school policies supporting parental involvement

In 2008/09, a field experiment was conducted among French middle schools in the educational district of Créteil, which includes all the suburbs located east of Paris. The interventions targeted disadvantaged families. This district – an urban and suburban area with the highest density of immigrant populations in France and some of the most deprived areas in the Paris region – tested a programme aiming to improve parental involvement in school, as it was strongly perceived that disadvantaged parents had inadequate knowledge of and confidence in schools. The programme targeted families of children in the 6th grade (i.e. 11-year-olds), the entry grade in middle school. Families were randomly invited to attend a sequence of three meetings with the school head, organised every two or three weeks and lasting two hours each. The first two meetings provided parents with precise guidelines on how to help their children and participate in their education, both at school and at home. The last session, which took place after the first class council and end-of-term report card, offered parents advice on how they could adapt to the results of the first term. Parents were encouraged to ask questions, explain their problems and share their own experiences. The meetings were framed as “discussions” – both between school representatives and parents, and between parents – rather than “information sessions”. At the end of the third session, participants were asked whether they wanted to attend additional sessions covering parenting issues (following up on the first three meetings/discussions) or the use of (school-related) internet, or sessions specifically designed for parents who were not fluent in French. Exploiting a robust experimental setting, evaluations of the programme found that it significantly improved parental attitudes and increased levels of parental involvement, both at home and at school. Over the course of a school year, the programme produced

a net improvement in the behaviour and attitudes of children whose parents were invited, as well as among all other children belonging to the same class. Conversely, no gains on achievements tests were observed for pupils whose parents were in the control group, and therefore did not participate in the meetings. The existence of spillovers on non-treated children provides a positive argument for implementing this kind of policy as it extends at least some of the benefits (namely lifelong learning attitudes) to all children, even though only a fraction of all parents are actually involved. The programme cost between EUR 1 000 and EUR 1 500 per school (i.e. EUR 8-12 per student).

Source: Avvisati, F. et al. (2014_[103]), "Getting parents involved: A field experiment in deprived schools", <https://doi.org/10.1093/restud/rdt027>.

Parental support for home schooling in the context of the COVID-19 pandemic

The role of parental involvement in children's learning has grown in the context of the COVID-19 pandemic. During home schooling, parents are required to engage significantly more than usual in their children's academic activities. Parents must ensure that their children follow the curriculum, supervise their learning without a teacher in attendance, support them emotionally, and sustain their motivation and goals in a situation where they might easily become discouraged from learning autonomously.

Parental involvement during this phase has been crucial in helping students address the main challenges posed by online learning, and spurring their active and autonomous learning. However, many obstacles may hamper their effective engagement. They may struggle to engage in their children's schoolwork while performing their job or other family obligations, a challenge that may be especially acute for single parents. Parents may also feel incapable of supporting their children owing to a lack of digital skills or familiarity with the content, or negative attitudes towards the material. Differences in parents' educational levels may create further inequalities in educational attainments, which should be of great concern to policy makers.

A recent study from the Netherlands has shown, for instance, that less-educated parents have been less supportive of their children's efforts during the lockdown, partly because they feel less capable of helping them (Bol, 2020_[104]). Parents with low education may also hold negative attitudes towards learning and underestimate the importance of supporting their children's skill development, so that they help them less than highly educated parents. Another concern is that gender differences in maths attitudes and achievements can deepen during home schooling, when mothers are the main parent helping many children with schoolwork (Del Boca et al., 2020_[105]; Farré and González, 2020_[106]; Sevilla and Smith, 2020_[107]). Yet many women have high levels of mathematics anxiety, and previous research has shown that girls may internalise this anxiety when exposed to it through adult women (Beilock et al., 2010_[108]). Box 2.14 describes some rapid actions governments have implemented to help families deal with these challenges while adapting to distance schooling.

Box 2.14. Supporting parents when schools are closed: Policy practices across OECD countries

Based on the difficulties encountered by working parents in caring for their children and helping them with schoolwork while performing their job obligations, most OECD countries have intervened to extend family leave opportunities. In Slovenia, working parents who are unable to reconcile work and family obligations are entitled to up to three months of leave, paid by the government at 80% of their wages. In Germany, parents of children under 12 years of age are entitled to 6 weeks of paid leave at 67% of their earnings, up to a ceiling of EUR 2 016 per month. In the United States, under the Families First Coronavirus Response Act, parents with children under 18 whose school has closed are entitled to up to 12 weeks of family leave, paid at two-thirds of their earnings, up to a maximum of USD 200 per day and USD 12 000 for the duration. Other countries – e.g. Canada, France, Italy, Switzerland and the United Kingdom – have put in place similar provisions and will maintain them while schools remain closed. Such measures are crucial to allow parents to stay involved in their children’s learning while preserving their jobs.

Providing information to parents about how they can best support their children’s learning may also improve educational outcomes, both during a lockdown and under normal conditions. Wide Open School, a web platform created in the United States, offers resources for educators and families of students from preschool to upper-secondary education. Some of these resources aim to develop disciplinary and technical skills, along with creativity and critical thinking. Other resources help lower-income families secure electronic devices and better broadband internet, or provide guidance on social-emotional well-being. Beyond offering access to curated resources, the platform also suggests a daily schedule to help students and families maintain a good balance of activities (Vincent-Lancrin, 2020^[109]).

Education systems have also intervened to strengthen school-parent links by providing parents with appropriate information and guidance on practices that will help them support their children’s learning. In Latvia, the educational television channel Tava Klase delivers high-quality educational material tailored to different age groups (van der Vlies, 2020^[110]).

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Annex 2.A. Supplementary tables

Annex Table 2.A.1. List of online tables for Chapter 2

Table number	Table Title
Attitudes and performance in reading, science and mathematics	
Table 2.1	Score-point difference in performance in reading between students in the top vs. bottom quartile of enjoyment of reading, motivation to master tasks and self-efficacy
Table 2.2	Score-point difference in performance in reading between students in the top vs. bottom quartile of ambitious learning goals, value of school, sense of belonging
Table 2.3	Score-point difference in performance in science between students in the top vs. bottom quartile of enjoyment of reading, motivation to master tasks and self-efficacy
Table 2.4	Score-point difference in performance in science between students in the top vs. bottom quartile of ambitious learning goals, value of school, sense of belonging
Table 2.5	Score-point difference in performance in mathematics between students in the top vs. bottom quartile of enjoyment of reading, motivation to master tasks and self-efficacy
Table 2.6	Score-point difference in performance in mathematics between students in the top vs. bottom quartile of ambitious learning goals, value of school, sense of belonging
Students' educational and career expectations	
Table 2.7	Percentage of 15-year-old students who expect to complete tertiary education, by indicators of SES (parental education, parental occupation, household possessions)
Table 2.8	Percentage of 15-year-old students who expect to complete at most secondary education, by indicators of SES (parental education, parental occupation, household possessions)
Table 2.9	Percentage of 15-year-old students who expect to be employed within a high-skilled occupation, by indicators of SES (parental education, parental occupation, household possessions)
Table 2.10	Percentage of 15-year-old students who expect to be employed within a medium-skilled occupation, by indicators of SES (parental education, parental occupation, household possessions)
Table 2.11	Percentage of 15-year-old students who expect to be employed within a low-skilled occupation, by indicators of SES (parental education, parental occupation, household possessions)
Table 2.12	Percentage of students expecting to complete tertiary education by quartiles of enjoyment of reading
Table 2.13	Percentage of students expecting to complete tertiary education by quartiles of motivation to master tasks
Table 2.14	Percentage of students expecting to complete tertiary education by quartiles of self-efficacy
Table 2.15	Percentage of students expecting to complete tertiary education by quartiles of ambitious learning goals
Table 2.16	Percentage of students expecting to complete tertiary education by quartiles of value of school
Table 2.17	Percentage of students expecting to complete tertiary education by quartiles of sense of belonging
Table 2.18	Odds-ratios of expecting to complete tertiary education for students in the top relative to the bottom quartiles of enjoyment of reading
Table 2.19	Odds-ratios of expecting to complete tertiary education for students in the top relative to the bottom quartiles of motivation to master tasks
Table 2.20	Odds-ratios of expecting to complete tertiary education for students in the top relative to the bottom quartiles of self-efficacy
Table 2.21	Odds-ratios of expecting to complete tertiary education for students in the top relative to the bottom quartiles of ambitious learning goals
Table 2.22	Odds-ratios of expecting to complete tertiary education for students in the top relative to the bottom quartiles of value of school
Table 2.23	Odds-ratios of expecting to complete tertiary education for students in the top relative to the bottom quartiles of sense of belonging

Table number	Table Title
Teacher support	
Table 2.24	Association between students' enjoyment of reading and different teacher practices
Table 2.25	Association between students' motivation to master tasks and different teacher practices
Table 2.26	Association between students' self-efficacy and different teacher practices
Table 2.27	Association between students' ambitious learning goals and different teacher practices
Parental support	
Table 2.28	Change in key indices of attitudes associated with a one-unit increase in the index of parents' emotional support
Table 2.29	Change in indices of students' ambitious learning goals, value of school and sense of belonging associated with a one-unit increase in the index of parents' emotional support
Table 2.30	Change in key index of motivation to master tasks associated with whether parents adopt different forms of emotional support, OECD average
Table 2.31	Change in key index of self-efficacy associated with whether parents adopt different forms of emotional support, OECD average
Table 2.32	Change in key index of ambitious learning goals associated with whether parents adopt different forms of emotional support, OECD average
Table 2.33	Change in index of enjoyment of reading associated with parents' involvement
Table 2.34	Change in index of ambitious learning goals associated with parents' involvement
Table 2.35	Change in index of motivation to master tasks associated with parents' involvement
Table 2.36	Change in parents' academic home involvement associated with each obstacle
Table 2.37	Change in parents' non-academic home involvement associated with each obstacle
Table 2.38	Change in parents' school involvement associated with each obstacle
Table 2.39	Percentage difference in key indices of parental involvement and emotional support between students attending schools that score in the top vs. low quartiles of the index of school policies for parental involvement

StatLink  <https://stat.link/lgabk0>

Notes

¹ Number of learners enrolled at pre-primary, primary, lower-secondary and upper-secondary levels of education (ISCED levels 0 to 3), as well as at tertiary education levels (ISCED levels 5 to 8).

² Similar patterns are observed for the other LLLAs.

³ Disciplinary climate is an indicator constructed from students' answers to the PISA questionnaire that measures the degree to which noise and disorder are kept to a minimum, and students listen to teachers during classes.

⁴ On average across OECD countries, a one-unit increase in the index of teacher enthusiasm is associated with a 0.09-point increase in the indices of both students' motivation to master tasks and ambitious learning goals. Indices are standardised, so that one unit of an index corresponds to one standard deviation.

⁵ Country-specific estimates are presented in the supplementary online tables to Chapter 2. See Annex Table 2.A.1.

⁶ Students' answers are then mapped into dummy variables, taking value 1 when students agree with the statements or 0 otherwise.

⁷ The item related to whether students agree or strongly agree that the "enthusiasm of the teacher inspired me".

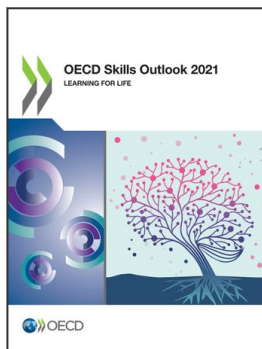
⁸ The other items do not seem to yield positive or statistically significant associations with the attitudes in most OECD countries, despite a few exceptions.

⁹ The PISA survey interviews school principals, collecting information on their perception of whether the school's capacity to provide instruction was hindered by the following issues: "a lack of teaching staff, "inadequate or poorly qualified teaching staff", "a lack of assisting staff" and "inadequate or poorly qualified assisting staff". It then combines answers to create the index of shortage of education staff, whose average is 0 and whose standard deviation is 1 across OECD countries. Positive values reflect principals' concern that a shortage of education staff hinders the capacity to provide instruction more than the OECD average.

¹⁰ To disentangle the specific association between parental support and LLLAs, estimates consider students' SES, age, gender and cognitive abilities, as well as the school's socio-economic background and all the TPs described in the previous section.

¹¹ This corresponds to one-quarter of a standard deviation. All the indices of LLLAs and parental emotional support are standardised, so that one unit of an index corresponds to one standard deviation.

¹² Nine OECD countries distributed the parent questionnaire: Belgium, Chile, Germany, Ireland, Italy, Korea, Luxembourg, Mexico and Portugal.



From:
OECD Skills Outlook 2021
Learning for Life

Access the complete publication at:
<https://doi.org/10.1787/0ae365b4-en>

Please cite this chapter as:

OECD (2021), "Attitudes and dispositions: The foundations of lifelong learning", in *OECD Skills Outlook 2021: Learning for Life*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/3b47638c-en>

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