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Using school funding to achieve both efficiency and equity in education

Virtual meeting, 16 February 2022, 12:00 – 16:00 (CET, Paris time)

This background note on using school funding to achieve both efficiency and equity in education is intended to inform Session 2.B of the High-Level Seminar on Value for Money in Post-Covid Education.

Most countries worldwide have explicit goals of broadening access, quality, equity and efficiency for their education systems, and a challenge for policy makers is to pursue all these objectives at the same time. The pursuit of equity and efficiency in education has often been presented as a trade-off when it comes to the allocation of resources, but these two objectives can go hand in hand. This note examines how to bring together efficiency and equity in education, and insights and promising policies from OECD countries in four areas that can help improve both equity and efficiency, namely investing in high-quality ECEC; investing in teacher quality; reducing educational failure; and matching the school offer and adapting school networks to changing demand.

Karine Tremblay, Schooling, Teachers and Teaching Senior Analyst, Karine.Tremblay@oecd.org
Thomas Radinger, Schooling, Teachers and Teaching Analyst, author Thomas.Radinger@oecd.org

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Introduction

1. Most countries worldwide have explicit goals for their education systems of broadening access and enhancing quality, equity and efficiency. Yet school systems have limited resources with which to pursue their multiple objectives, facing different spending choices and resource trade-offs.

2. The context of the COVID-19 pandemic has provided a vivid illustration of these dilemmas, and further complexified resource allocation choices given the emergence of a new priority: containing the spread of the virus within schools as a way 1) to ensure the safety of students, teachers and other school staff, and 2) to maintain education continuity and face-to-face social interactions in the aftermath of the 2020 school closures. In addition, the episodes of school closures have heightened socio-economic disparities, thus renewing the priority on addressing the equity consequences of the pandemic. Finding the best possible allocation of limited resources among competing priorities has, therefore, only gained in importance. For instance, how are resources best allocated to support students who fell behind during the pandemic in their education recovery (e.g. large scale tutoring interventions, second chance programmes)?

3. Regardless of which areas of school spending are concerned, such as infrastructure, staff or ancillary services, school systems need to make sure that resources are used efficiently and directed where they can make the most difference for students, informed by an analysis of national and local contexts. Educational efficiency is typically conceptualised as the ability of fulfilling maximum educational potential at the lowest possible cost. In this context, improving the efficiency of a school or school system can be attained in two ways: either by maintaining identical levels of outcomes while lowering the amount of school funding, or by attaining better outcomes with the same level of funding (OECD, 2017[1]).

4. Efficiency and equity are sometimes seen as competing goals as a focus on equity in education often entails higher investment for disadvantaged student groups and this additional funding may not proportionally translate into overall higher achievement at the aggregate level. This could lead to lower efficiency and thus a potential trade-off between the two objectives. However, the relationship between efficiency and equity is not that clear-cut. Research has revealed a number of policy directions which appear to support both efficiency and equity objectives and which, therefore, warrant attention from policy makers when considering where to invest resources. These policy directions are also likely to be relevant to inform reflections in countries on how to allocate funding as they recover from the COVID-19 pandemic. Admitting that efficiency and equity can be complements to one another changes the focus in policy debates from a matter of political preference towards seeking organisational design features that best favour synergies between equitable education, better results, and the best use of the available resources (OECD, 2017[1]).

5. This background note analyses some of these policy areas that can support both efficiency and equity in school education. The note is organised around four selected key themes:

- First, the note discusses the importance of investing in high quality early childhood education and care, and in particular 1) increasing participation for children from disadvantaged backgrounds, and 2) fostering process quality in settings to enhance the quality of children's experiences and interactions.
- Second, the note analyses trade-offs in teacher policies and the critical importance of investing in teacher quality, with a particular focus on 1) making a career in schools attractive for high quality candidates, which includes adequate compensation, and 2) working towards an equitable and effective distribution of teachers across schools.
- Third, the note delves into the structural factors influencing students' transitions through the system and efforts to reduce the risk of educational failure and dropout, which typically results from a lack of co-ordination, grade repetition practices or early tracking, which can lead to inefficiencies and inequities.
- Fourth, and finally, the note concludes with a discussion of strategies to effectively manage and adapt school networks to changing demand, while safeguarding quality, equity and well-being, and the complementary strategies that are necessary to support access to educational opportunities for students in remote rural areas.

Supporting high quality early childhood education and care

Policy makers worldwide recognise the myriad of advantages of ECEC

6. Early childhood education and care (ECEC) holds tremendous potential for children, families and societies when it is of high quality. Clear evidence from fields as diverse as neuroscience and economics demonstrates that ECEC can give a strong start to all children, and particularly those from less privileged backgrounds, by providing experiences that support their development (OECD, 2021[2]; OECD, 2018[3]).

7. Children's early learning and development is closely connected across domains. Cognitive, social and emotional, and self-regulatory skills grow together during early childhood, with gains in one area contributing to concurrent and future growth in other areas (OECD, 2020[4]). Participation in high-quality ECEC supports children's development in all of these areas, with implications for learning beyond early childhood. For example, children in Denmark who participated in higher quality ECEC performed better on a written exam at the end of lower secondary schooling (ten years after their ECEC participation) than their peers whose ECEC experiences were of lower quality (Bauchmüller, Gørtz and Rasmussen, 2014[5]). Similarly, findings from the United Kingdom show that participation in higher quality ECEC is associated with stronger performance at the end of compulsory schooling, enough to generate a 4.3% increase in gross lifetime earnings per individual (Cattan, Crawford and Dearden, 2014[6]).

8. In addition to educational and economic benefits, quality ECEC also supports social and emotional well-being (see also note on non-economic returns to education). In a sample from the United States, at age 15, adolescents reported fewer behavioural and emotional problems when they had participated in higher quality ECEC (Vandell et al., 2010[7]). In the longer term, participation in ECEC positively predicts well-being across a range of indicators in adulthood, including physical and mental health, educational attainment and employment (Belfield et al., 2006[8]; Campbell et al., 2012[9]; García et al., 2020[10]; Heckman and Karapakula, 2019[11]; Heckman et al., 2010[12]; Karoly, 2016[13]; Reynolds and Ou, 2011[14]). Finally, societies benefit in the long term through greater labour market participation and earnings, better physical health, and lower involvement in criminal activity throughout the life course of individuals who participate in high-quality ECEC (OECD, 2021[2]).

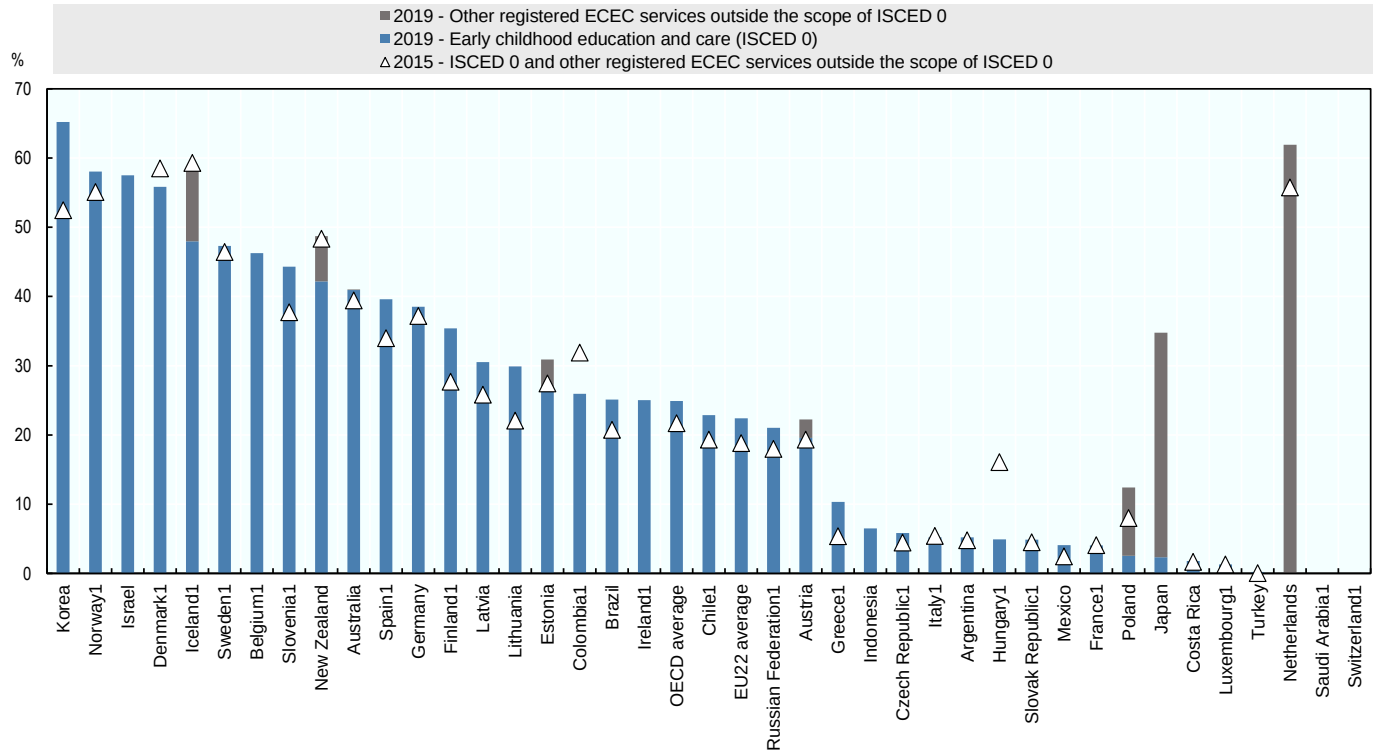
In this context, investing in high quality ECEC pays off, and ECEC enrolments have been growing…

9. Investing in high quality ECEC, while targeting it particularly to disadvantaged children, is therefore a fundamental policy lever for attaining both efficiency and equity in education (OECD, 2017[1]), although more research is needed on the specific types of investments that ensure ECEC delivers high rates of return (Rea and Burton, 2020[15]; Whitehurst, 2017[16]), and how to sustain gains in early childhood through investments in primary school and beyond (Johnson and Jackson, 2019[17]).

10. As awareness on the importance of ECEC has grown worldwide, OECD countries have expanded the provision of pre-primary education (ISCED 02) and targeted measures for children from disadvantaged backgrounds. As a result, enrolment rates in ECEC have increased, reaching universal or near-universal levels for children aged 3 to 5 in several countries, and in most countries in the year before primary school entry. ECEC enrolments of children under age 3 – who are growing and learning at a faster rate than at any other time in their lives – is also increasing across OECD countries, although enrolment rates for this age group are still more variable than for older children (Figure 1) (OECD, 2021[18]).

Figure 1. Enrolment rates of children under age 3 in early childhood education and care, by type of service (2015 and 2019)

ISCED 0 and other registered ECEC services outside the scope of ISCED 0



Note: 2015 refers to both early childhood education and care (ISCED 0) and other registered ECEC services outside the scope of ISCED 0 (except for the OECD average which only covers services within ISCED 0).
1. Data for 2015 excludes other registered ECEC services.
Countries are ranked in descending order of the enrolment rates in ISCED 0 of children under age 3 in 2019.
The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Source: OECD (2021[18]), *Education at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/b35a14e5-en, Figure B2.1.

Yet children from disadvantaged backgrounds, who stand to gain the most from ECEC, still tend to participate less in ECEC…

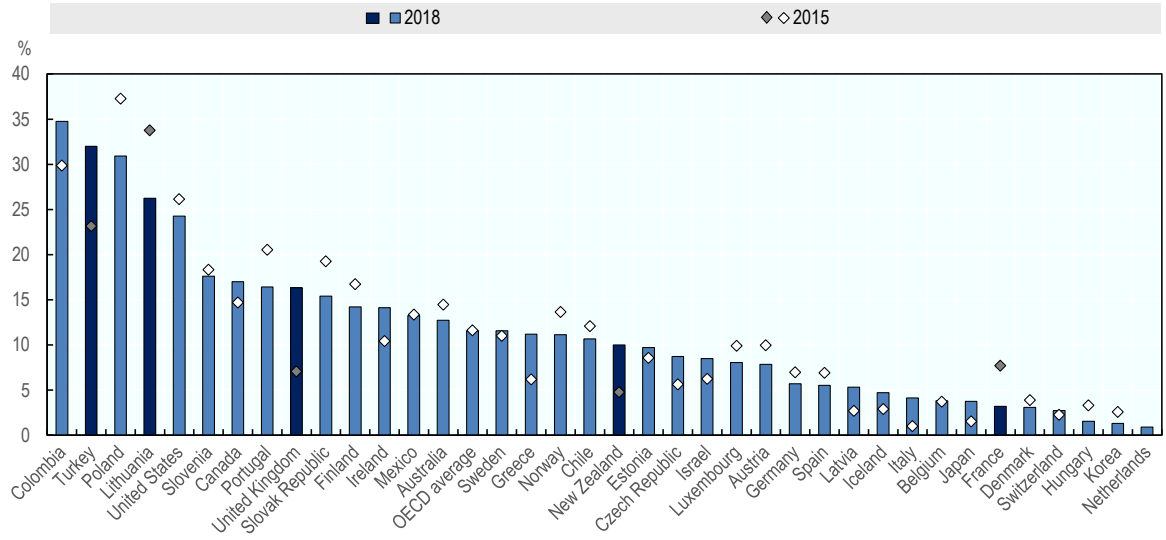
11. ECEC is a powerful policy tool to reduce inequalities and help all children have strong foundations for learning and well-being. In general, however, children from socio-economically disadvantaged families are less likely than their more advantaged peers to participate in ECEC (OECD, 2017[19]; Adema, Clarke and Thévenon, 2016[20]).

12. Data from PISA 2018 show that, on average across OECD countries, 86% of students from socio-economically advantaged backgrounds attended ECEC for at least two years, whereas this was the case for only 74% of their less advantaged peers (Figure 2). Importantly, the gap in ECEC participation between students of different socio-economic backgrounds did not change much on average across OECD countries between PISA 2015 and PISA 2018, suggesting that despite overall trends of growing participation in ECEC, equity remains an issue. Nevertheless, these data must be interpreted with care, as students reporting on their ECEC participation for PISA in 2018 attended ECEC settings more than a decade ago (OECD, 2021[2]).

13. These disparities in access mean that families may lose opportunities to raise their socio-economic profiles as parents who look after their children cannot participate in ongoing education or the labour market, while children are not afforded the benefits of participating in high-quality ECEC either. The COVID-19 pandemic may have exacerbated these issues of inequitable access, as rising unemployment in the first year of the pandemic has affected women in particular. Before the pandemic, mothers' labour market participation and enrolment rates in ECEC were already closely linked (OECD, 2021[2]).

Figure 2. Gaps in pre-primary education participation by students' socio-economic background (2015 and 2018)

Difference in the percentage of 15-year-old students who had attended pre-primary education for at least two years between the top and bottom quarters of socio-economic background



Note: Statistically significant differences between 2015 and 2018 are marked in a darker tone. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS). A socio-economically disadvantaged (advantaged) student is a student in the bottom (top) quarter of the index of ESCS in the relevant country.

Countries are ranked in descending order of the percentage point difference of students who had attended pre-primary education for at least two years between the top quarter of socio-economically advantaged and disadvantaged students
Source: OECD (2021[2]), *Starting Strong VI: Supporting Meaningful Interactions in Early Childhood Education and Care*, OECD Publishing Paris, https://dx.doi.org/10.1787/f47a06ae-en, Figure 1.6.

This requires further strategies to raise ECEC participation for disadvantaged children, such as universal free access balanced across age groups

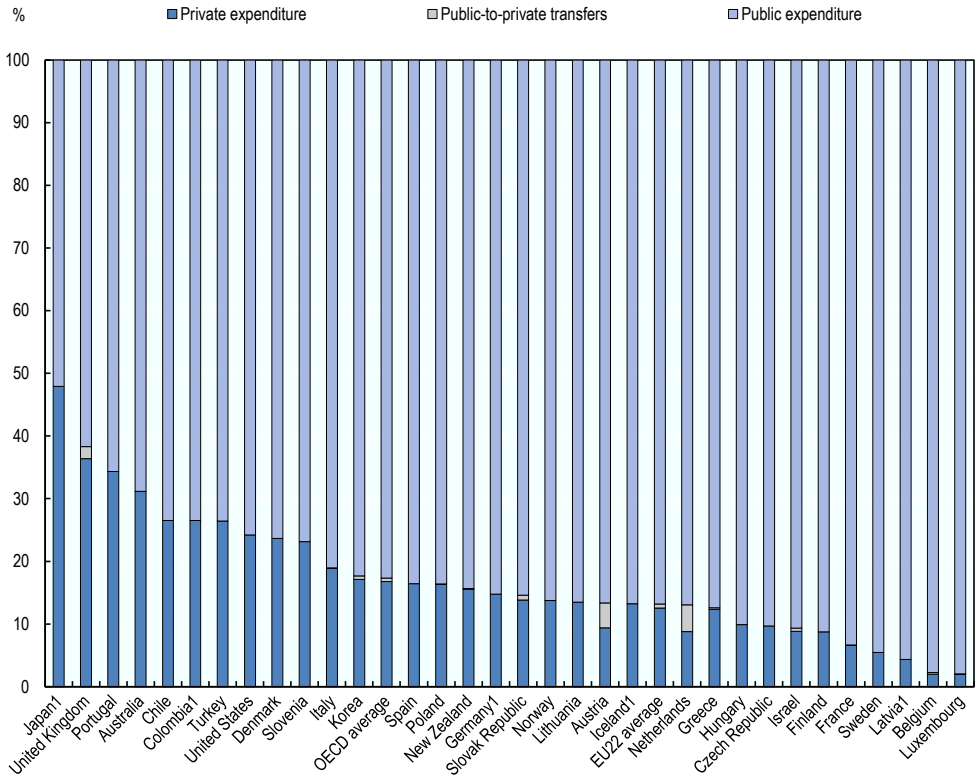
14. Possible strategies to equitably raise participation in ECEC include increasing the provision of free ECEC, for at least some hours, ages or targeted population groups. Universal free access to at least one year of ECEC is now common across OECD countries, and having readily available, high-quality ECEC can encourage broad participation from diverse families. However, countries need to carefully balance their investments to increase access throughout the full age range of early childhood (OECD, 2021[2]). Universal free access is typically targeted to pre-primary education, potentially limiting the available public resources to support participation of children under age 3 (OECD, 2017[19]). The expansion of free or subsidised ECEC, targeted to families who face income losses due to furlough or unemployment, may also help ensure that children can continue to engage in ECEC should their parents become unemployed (OECD, 2021[2]).

15. Universal free access is one tool governments can use along with others, such as regulatory frameworks to foster high-quality ECEC across settings that are both publicly and privately managed, or mechanisms to adapt ECEC settings to the needs of disadvantaged families to encourage their participation in particular (OECD, 2020[21]; Blanden et al., 2016[22]).

Despite the growing recognition of the importance of high-quality ECEC, funding for the sector has remained lower than for later stages of education

16. According to data from Education at a Glance, on average in 2018, OECD countries spent 0.9% of gross domestic product (GDP) on ECEC as compared to 1.5% and 1.9% of GDP on primary and secondary education, respectively (OECD, 2021[18]). In some countries, pre-primary education has a shorter duration than primary education, potentially justifying lower overall expenditures. However, the proportion of private spending in total spending is higher for pre-primary education than for primary education, highlighting the gap between funding that is needed in the sector and public investments (Figure 3) (OECD, 2021[2]). On average across OECD countries, private funding represented 29% of total expenditure on early childhood educational development (ISCED 01) and 17% on pre-primary education (ISCED 02) in 2018. At the primary level, by contrast, only 8% of expenditure on educational institutions came from private sources, on average across OECD countries (OECD, 2021[18]). Also expenditure per child in pre-primary education is lower than spending per student at higher levels of education, on average across OECD countries, even if several countries, notably Nordic ones, combine strong investments per child with widespread access to ECEC (OECD, 2021[18]).

Figure 3. Distribution of public and private expenditure on educational institutions in pre-primary education (2018)



Note: 1. Information on public-to-private transfers is missing.
Countries are ranked in descending order of the share of private expenditure after public-to-private transfers.
Source: OECD (2021[18]), *Education at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/b35a14e5-en, Figure B2.3.

Besides fostering access to ECEC for disadvantaged children, investments in ECEC need to also advance quality in provision

17. Policy makers want to better understand the successes of public investments in the early years and also identify areas for improvement. Research consistently underscores the importance of ensuring that ECEC is of high quality to realise the numerous benefits of focusing on this period of the life course (OECD, 2021[2]). In particular, process quality has been identified as the primary driver for children's development in ECEC (Melhuish et al., 2015[23]), which refers to children's experience of ECEC and their interactions with other children, staff, space, materials, their families and the community (OECD, 2021[2]).

18. The complex nature of quality in ECEC requires multifaceted policy solutions. The OECD's work on ECEC has highlighted five policy levers which are instrumental for building ECEC systems that can foster process quality: governance, standards and funding; curriculum and pedagogy; workforce development; data and monitoring; and family and community engagement (OECD, 2021[2]). The ECEC workforce is, of course, central to ensuring high-quality ECEC for all children. However, in part due to historical views of childcare as unpaid women's work, this workforce is not always regarded in light of the professionalism required for the sector. Increasing qualification requirements in countries where they are low can be one policy option for raising the status of ECEC professionals and help attract stronger candidates to the sector (Box 1) (OECD, 2021[2]).

19. Raising qualification requirements, however, needs to be accompanied by possibilities for existing staff to meet the new requirements through training and recognition of prior learning. This requires granting time and funding to increase access and staff engagement in professional development. To ensure that the demands on the workforce and wages are aligned in the long term, and to attract and retain high quality staff, countries can set long-term objectives for improving salaries and career development opportunities (OECD, 2021[2]).

Box 1. Initiatives to increase the number of qualified staff in ECEC: Australia, Canada and Ireland

Several countries have employed a range of strategies to increase the number of qualified teachers in ECEC over time, such as setting higher standards, incentive mechanisms, or offering workplace education opportunities for staff working in the sector.

In **Australia**, since 2012, higher workforce requirements have been progressively introduced. Centre-based services with children in pre-primary education are required to employ at least one qualified teacher, and additional requirements (two qualified teachers) hold for some large settings. Furthermore, requirements cover both teachers and assistants: half of the staff must hold or be working towards at least a short-cycle tertiary qualification (ISCED 5), and the other half must hold or be working towards at least a post-secondary qualification at ISCED level 4. In line with increasing regulatory requirements, the qualifications of the ECEC workforce in Australia have increased over recent years.

In **Canada**, many provinces and territories have recently set new standards for initial education. For example, in the province of Nova Scotia, the curricula of post-secondary programmes have been updated to meet the adopted new standard on learning outcomes. The province also introduced a process of recognition of prior learning to provide individuals who have been working for ten years or more in the ECEC field the opportunity to demonstrate they have acquired the necessary knowledge and skills to obtain an ECEC qualification.

In **Ireland**, new qualification requirements have been introduced in the past years, as well as incentives for ECEC centres to hire staff with higher qualifications. Teachers (so-called “lead educators” in the Early Childhood Care and Education programme (for 3-5 year olds) are now required to have an ISCED 5 diploma at the minimum, but centres with teachers who hold a university degree (ISCED 6) in early childhood receive higher funding. The proportion of ECEC staff (working with children of all ages) who are graduate teachers has increased in the last decade, rising from 12% in 2012 to 34% in 2021. For all staff who work directly with children, the minimum requirement is a major award in ECEC at ISCED 4.

Source: OECD (2021[2]), *Starting Strong VI: Supporting Meaningful Interactions in Early Childhood Education and Care*, OECD Publishing, Paris, https://dx.doi.org/10.1787/f47a06ae-en.

Investing in teacher quality

Teachers are the most important resource in schools, and there is solid evidence showing that teachers can have long-term impacts on adult outcomes

20. Teachers are arguably the most important resource in schools. There is a solid evidence base indicating that teachers are key in improving learning opportunities for students, likely more than anyone else in children’s lives outside their families, and that teachers can have long-term impacts on adult

outcomes, such as earnings and tertiary education attendance (Chetty, Friedman and Rockoff, 2014[24]; Rivkin, Hanushek and Kain, 2005[25]; Rockoff, 2004[26]). Recent research has documented teachers' impact on other desirable outcomes, including students' behaviours at school, such as attendance and drop-out (Liu and Loeb, 2019[27]; Gershenson, 2016[28]; Koedel, 2008[29]), and non-cognitive skills, such as resilience, growth mindset and self-efficacy (Kraft, 2019[30]; Blazar and Kraft, 2016[31]; Jennings and DiPrete, 2010[32]).

21. Insufficient investments in the teaching workforce, then, risk creating challenges to quality, equity and efficiency in school education in the long run. Spending reforms driven by reductions in teachers' salaries or cuts to professional development may make a career in schools less attractive and motivating, thus crowding out the most qualified staff (OECD, 2017[1]). Effective human resource policies, by contrast, develop attractive and motivating careers, distribute teachers effectively and equitably, and support powerful professional learning so teachers maintain the effectiveness of their practice (OECD, 2019[33]).

22. Nevertheless, many countries struggle with a number of common challenges. Notably, careers, salaries and working conditions often remain unattractive and act as a barrier for talented individuals to pursue or remain in a career in teaching (OECD, 2019[33]). According to data from Education at a Glance, teacher attrition, that is the proportion of teachers leaving the profession during their career exceeded 8% in half of countries with available data for 2016 (OECD, 2021[18]). Moreover, the most effective and experienced teaching staff are often not matched to the schools and students that need them the most (OECD, 2019[33]).

23. Further challenges relate to the quality of initial teacher education programmes, which may not adequately screen candidates and prepare them for a career in teaching. This can result in students dropping out of programmes or graduates not going into teaching at the end of their studies, creating considerable inefficiencies. Finally, teachers' time can be used more or less effectively, influencing the cost and the quality of education (Boeskens and Nusche, 2021[34]).

But countries face important trade-offs in their human resource policies, which are also relevant as countries respond to the impact of the COVID-19 pandemic

24. As the experience of countries suggests, the overall resource implications of human resource policies are often underestimated in the design stage. Human resource policies must however recognise important resource trade offs and be implemented in ways that are sensitive to unique contexts. For instance, choices to require smaller class sizes, longer teacher working hours or less instructional time per teacher all increase the number of teachers required and raise per student spending (OECD, 2019[33]).

25. School systems have also been facing these trade offs as they have sought to respond to the impact of the COVID-19 pandemic. As a Survey on Joint National Responses to COVID 19 School Closures suggested, nearly half of countries surveyed (48%) had recruited temporary teachers and/or other staff to support student needs in at least one level of education for the school year 2020/21. These additional teacher resources were deployed to ensure substitution for teachers on sick leave, to facilitate social distancing through class size reductions, and for remedial teaching. Some countries decided to increase teachers' salaries to compensate them for additional workload (**Latvia**, **Lithuania** and **Slovenia**), while others increased teachers' working time to give schools the autonomy to reduce class size or provide tutoring (**Austria**) (OECD, 2021[35]).

The size of classes is a much debated topic, yet does not show strong potential for efficiency gains, except for younger and disadvantaged students

26. Teacher-student ratios and class size are much debated topics in education policy. Strategies targeted at reducing class size are generally supported by arguments related to closer ties between teachers and students, increased time on task, and more individualised attention to students (OECD, 2017[1]). Data from TALIS 2018 show that smaller classes do tend to go along with more actual teaching

and learning time, but that they are no predictor for other quality indicators of teaching processes, such as the use of cognitive activation practices and teachers' reported self-efficacy in teaching (OECD, 2019[36]).

27. Moreover, any potential benefits of small classes need to be weighed against other potential investments such as improvements in professional development and working conditions. Organising students in smaller classes is an expensive policy since it requires more staff resources per student. In other words, there may be a policy trade-off between investing in more teaching staff to maintain small classes, and investing in better human resources and new approaches to teaching and learning (OECD, 2017[1]).

28. Given the high cost of class size reduction policies, these appear comparatively less efficient than other interventions to support student learning (Rivkin, Hanushek and Kain, 2005[37]). Some high-performing systems, such as Shanghai and Singapore, have chosen to reduce teacher workloads instead to free time for professional development (Jensen et al., 2012[38]). Despite a polarised debate over the effects of class size on students' achievement (Santiago, 2002[39]), there is nevertheless substantial evidence in the research literature that small classes have a strong positive effect on the learning of particular student groups such as those in the earlier years and from disadvantaged backgrounds (Krueger, 1999[40]; Angrist and Lavy, 1999[41]; Chetty et al., 2011[42]; Dynarski, Hyman and Schanzenbach, 2013[43]). This indicates that additional teacher resources – for example in school systems with declining student numbers – would be optimally allocated if they were targeted at those who are likely to benefit the most, that is disadvantaged students and students in pre-primary and primary education (OECD, 2017[1]).

29. For school systems more broadly, there still seems to be room for more creative solutions in organising smaller student groups. For example, teachers can be encouraged and supported to set up their classroom space in a way that is conducive to more individualised and active learning approaches. School leaders can also be given increased discretion to use staff more flexibly within schools to enable teachers to work with smaller groups at least part of the time (OECD, 2019[36]).

Attracting, retaining and motivating talented individuals for teaching is a pressing concern in many countries, requiring attention to both intrinsic and extrinsic factors

30. Attracting and retaining the best teachers, motivating them throughout their careers and enabling them to use their talents effectively to foster student learning and well-being is at the heart of what makes a successful school system (OECD, 2019[33]).

31. Evidence from TALIS 2018 suggests that although individuals choose a career in education for a variety of reasons, the great majority of serving teachers were motivated by a strong commitment to public service and the social impact of teaching (OECD, 2019[36]). Working with young people and inspiring them to learn are powerful sources of intrinsic motivation. At the same time, a substantial number of teachers report that extrinsic factors, including career prospects (61%), job security (71%) and the ability to reconcile their work schedule and private life (66%) also mattered for their decision to join teaching. Moreover, working conditions, salaries and administrative workload rank at the top of practicing teachers' concerns in many OECD countries (OECD, 2019[36]).

32. Intrinsic and extrinsic motivations are thus closely intertwined and countries need to consider both when seeking to raise the attractiveness of a career in schools, to motivate school staff and to enable them to support student learning. Countries need to make teaching a financially rewarding career, while also making it intellectually satisfying and allowing teachers to focus on their instruction (OECD, 2019[33]).

Comparatively low salary levels can be one factor contributing to teacher shortages and high rates of turnover

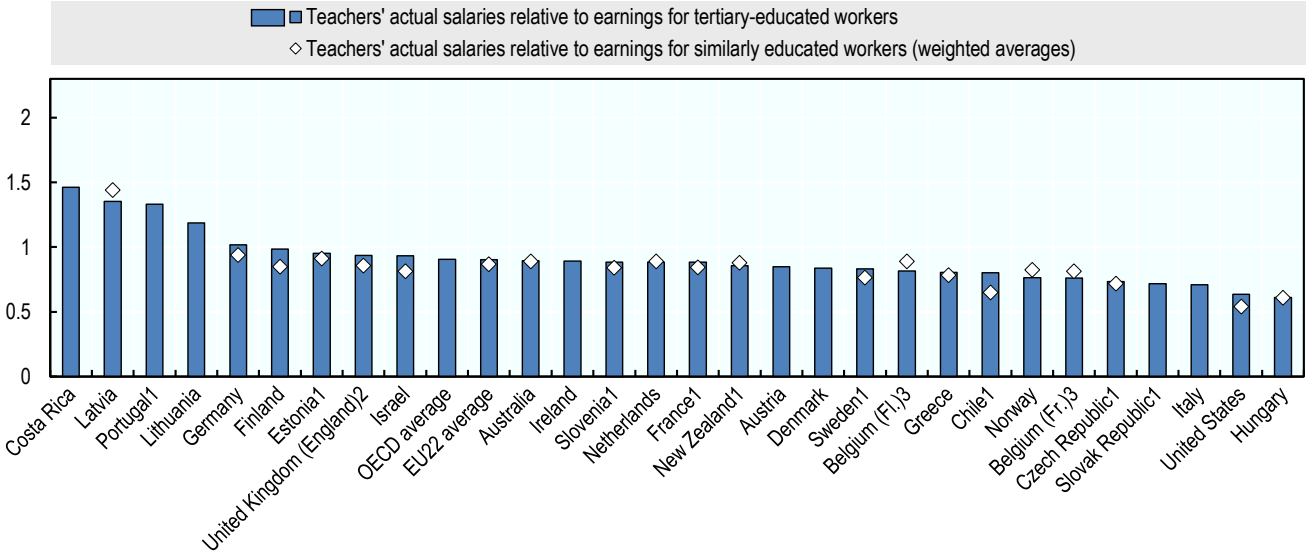
33. While remuneration is only one of many factors that can render a profession attractive, salary levels, the structure of salary scales and the factors that determine salary progressions are critical policy levers that need to be considered for the supply, retention and motivation of teachers (OECD, 2019[33]).

34. It is widely recognised that teachers' remuneration should be competitive with that of similarly educated adults working in comparable occupations in order to attract and retain high-potential candidates. Yet, according to OECD Education at a Glance, teachers' actual salaries are lower than those of similarly educated workers in almost all countries with available information, although they tend to increase with the level of education taught (Figure 4). In 2020, pre-primary teachers' average salaries amounted to 81% of the full-time earnings of tertiary-educated adults between the ages of 25 and 64, while primary teachers earned 86% of this benchmark, lower secondary teachers 90%, and upper secondary teachers 96%. Teachers' relative earnings nevertheless vary widely across countries. In Costa Rica, Latvia, Lithuania and Portugal, teachers earn more than other tertiary-educated adults at all levels of education, while teachers at some levels of education in Hungary, the Slovak Republic and the United States earn two thirds or less (OECD, 2021[18]).

35. Comparatively low salaries are frequently regarded as one of the factors contributing to teacher shortages and a lack of qualified candidates for the profession. Uncompetitive salaries may also affect practicing teachers as some evidence suggests that teachers' salaries (and the opportunity cost of foregone wages from a career outside of teaching) affect their likelihood of leaving the profession (Falch, 2011[44]), particularly in the early years of their careers (Hendricks, 2014[45]; Murnane, Singer and Willett, 1989[46]). Competitive salaries may therefore also support schools in reducing high rates of turnover that can adversely affect student achievement and that tends to be a particularly pressing concerns for disadvantaged schools (Ronfeldt, Loeb and Wyckoff, 2013[47]).

Figure 4. Lower secondary teachers' actual salaries relative to earnings of tertiary-educated workers (2020)

Ratio of salaries to the earnings of full-time, full-year workers with tertiary education



Note: Data refer to ratio of salary, using annual average salaries (including bonuses and allowances) of teachers and school heads in public institutions relative to the earnings of workers with similar educational attainment (weighted average) and to the earnings of full-time, full-year workers with tertiary education. 1. Year of reference for salaries of teachers/school heads differs from 2020. See Table D3.3 for more information. 2. Data on earnings for full-time, full-year workers with tertiary education refer to the United Kingdom. 3. Data on earnings for full-time, full-year workers with tertiary education refer to Belgium.
Countries and economies are ranked in descending order of the ratio of teachers' salaries to earnings for full-time, full-year tertiary-educated workers aged 25-64.
Source: OECD (2021[18]), *Education at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/b35a14e5-en, Figure D3.1.

36. Several countries in which teachers' salaries were significantly lower than those of similarly educated workers have considered reducing this gap to make teaching more attractive (Box 2). Yet, while absolute and relative salary levels are an important factor shaping the financial attractiveness of a career in schools, other aspects associated with remuneration should also be taken into account when assessing their competitiveness. In many countries, for example, teachers are civil servants and enjoy a high level of job security or benefits like pensions, tax exemptions, family allowances and annual leave that workers in comparable private sector positions do not. The competitiveness of teachers' salaries therefore need to be assessed against a relevant comparison group, bearing in mind both financial and non-financial benefits (OECD, 2019[33]).

Box 2. Teacher salary increases to enhance the attractiveness of teaching careers in the Czech Republic, Estonia and Sweden

In the **Czech Republic**, poor salaries and working conditions have been identified as drivers of the low social status and attractiveness of the teaching profession. Following an initial increase in teachers' salaries by 22% in real terms between 2009 and 2014, the government made it a priority to continue raising salaries to tackle staff shortages as part of its Strategy for Education 2020, adopted in 2014. As a result, teachers' salaries have risen annually since 2015, with an increase in 2016 of 8% for teaching staff. In 2017, the government implemented a programme to increase salaries by 15%. Following pressure from and negotiations with regional teacher unions, the 2019 education budget earmarked CZK 95 billion for teacher salaries, an increase of CZK 16.1 billion from 2018, and constituting an average teacher salary increase of 10%. The country's new sector strategy (Strategy 2030+) foresees further increases in teachers' wages, both relative to the average wage in the national economy and the average salary of university-educated workers. Actions considered in the strategy also include increasing the share of funding for bonus-pay components so that school leaders can reward teaching quality as well as a review of the salary system (MSMT, 2020[48]; OECD, 2020[49]).

In **Estonia**, ensuring teachers' satisfaction and their image in society was at the core of the Lifelong Learning Strategy 2014-2020. The government's actions included, among others, salary raises and reforms in work organisation to increase the esteem of the teaching profession in society. To attract the best candidates, average salaries of teachers were adjusted to make them consistent with the qualifications required and the set of skills developed. Novice teachers' salaries were specifically targeted to boost the popularity of the teaching profession for young people. The salary system for teachers also incorporated incentives for participation in professional development, with the possibility of taking half a year away from teaching to fulfil definite developmental assignments (OECD, 2020[50]).

In **Sweden**, the government introduced the National Gathering for the Teaching Profession in 2014, which contained measures to avoid teacher shortages and boost the attractiveness of the profession. This initiative included salary increases and more rapid wage progression for teachers, linked to their competences and development. In 2016, this was followed by the Teacher Salary Boost initiative (*Lärarlönelyftet*), which rewarded teachers for participation in professional development programmes.

The government furthermore sought to encourage entry to the profession by promoting alternative pathways to teaching and increasing government grants for new teachers. Grants were also implemented to improve working conditions and career possibilities, thereby increasing retention. These measures were complemented by an information campaign (*För det vidare*) to attract more people to teaching, encourage retention and boost the social prestige of the profession (OECD, 2020[50]).

Source: OECD (2020[50]), *TALIS 2018 Results (Volume II): Teachers and School Leaders as Valued Professionals*, OECD Publishing, Paris, https://dx.doi.org/10.1787/19cf08df-en; (OECD, 2020[49]), *Education Policy Outlook 2020: Czech Republic*, https://www.oecd.org/education/policy-outlook/country-profile-Czech-Republic-2020.pdf (accessed on 31 January 2022); MSMT (2020[48]), Strategy for the Education Policy of the Czech Republic up to 2030+, https://www.msmt.cz/uploads/brozura_S2030_en_fin_online.pdf (accessed on 31 January 2022).

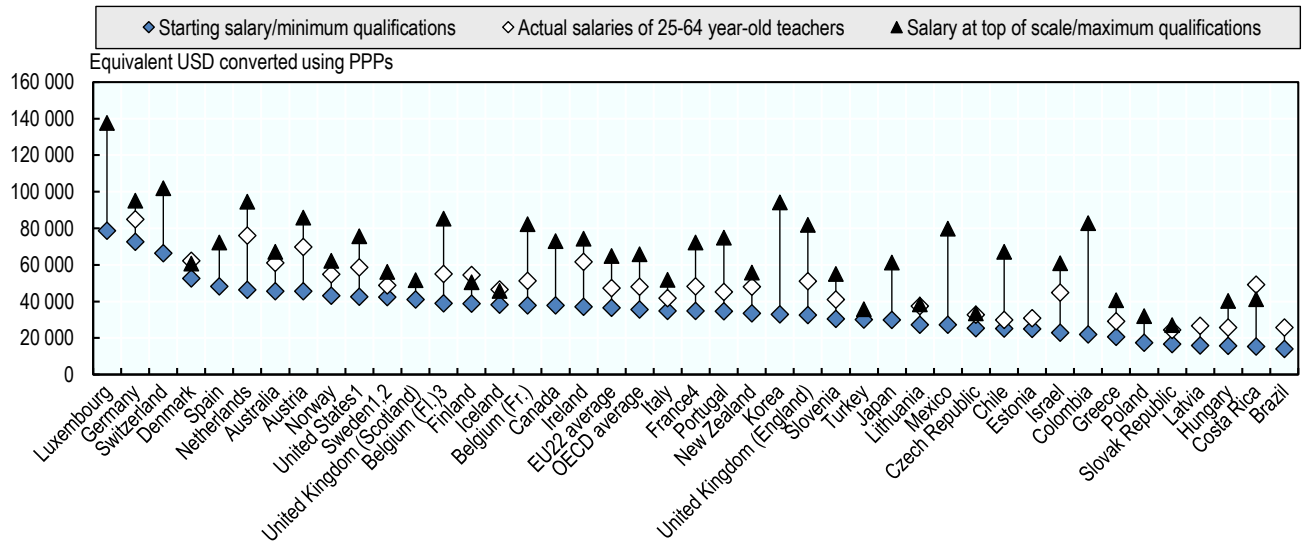
The design of the salary scale and criteria for salary progression also need to be considered when seeking to raise the attractiveness of a career in teaching

37. Countries need to consider not only the competitiveness of teachers' lifetime earnings, but also how their compensation is distributed over the course of the career and the factors that determine salary progression. Higher starting salaries, for example, may need to be weighed against the benefits of greater pay rises over the course of the career. Indeed, many countries face the dual challenge of providing competitive starting salaries to attract high-calibre entrants to the profession while also seeking to retain, motivate and recognise experienced, high-quality teachers through salary increases (OECD, 2019[33]).

38. According to Education at a Glance, the range of teachers' pay scales and their slope (i.e. the rate at which salaries increase over the course of the career) vary significantly across OECD countries with available data. In a number of countries, teachers earn comparatively little as they start their career but experience a stronger salary progression as they gain further qualifications or seniority. In Chile, Costa Rica, Hungary, Israel, England (United Kingdom), Korea and Mexico, for example, top-end salaries can be more than 2.5 times as high as starting salaries. In Colombia, salaries at the top of the scale are more than three times as high as starting salaries. By contrast, the salary scales in countries like Denmark, Germany and Spain, which offer some of the highest starting salaries, are comparatively compressed (Figure 5) (OECD, 2021[18]).

Figure 5. Lower secondary teachers' average actual salaries compared to the statutory starting and top of the scale salaries (2020)

Annual salaries of teachers in public institutions, in equivalent USD converted using PPPs



Note: Actual salaries include bonuses and allowances. 1. Actual base salaries. 2. Salaries at the top of the scale and the minimum qualifications, instead of the maximum qualifications. 3. Salaries at the top of the scale and the most prevalent qualifications, instead of the maximum qualifications. 4. Includes the average of fixed bonuses for overtime hours.
Countries and economies are ranked in descending order of starting salaries for lower secondary teachers with the minimum qualifications
Source: OECD (2021[18]), *Education at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://dx.doi.org/10.1787/b35a14e5-en, Figure D3.2.

…but there is no one-size-fits-all solution to the design of effective salary scales…

39. However, there is no one-size-fits-all solution to the design of effective salary scales. Instead, policy makers' decisions need to reflect the specific challenges their country has to address as well as their local labour markets. While a failure to attract graduates to the profession might call for higher starting salaries, high attrition rates among mid-career teachers may indicate the need for a more attractive progression of earnings. Likewise, broader economic developments, such as the level of private sector wages or unemployment rates, can affect whether, and up to what point, higher starting salaries can be an effective means to attract high-performing individuals and what forms of salary progression are best suited to recognise and amplify teachers' profound impact on student learning and development (OECD, 2019[33]).

40. Compressing the salary scale can free up resources to increase starting salaries at the expense of salaries for more experienced staff and thereby attract more students to teaching and reduce turnover in the early years of teachers' careers. Austria's 2015 teacher service code provides an example of a reform towards a more compressed salary scale (Box 3). By contrast, increasing the rate at which salaries rise over the course of the career can create space to provide higher salaries at the top end of the scale. Such scales may serve to retain and motivate more experienced staff or offer a wider scope for salary differentiation among teachers (OECD, 2019[33]).

Box 3. Reforming the teacher salary scale to make teaching more attractive to new entrants: the example of Austria

In 2015, **Austria** implemented a new teacher service code which has been mandatory for all teachers entering the profession since 2019/20. It implied a compression of the salary scale, which provided more attractive starting salaries while reducing top-end salaries, keeping the expected lifetime earnings of teachers roughly equal. The changes have been accompanied by raised qualification requirements for new teachers in provincial schools and an increased teaching load in federal schools.

It is expected that flattening the salary structure in Austria (whose slope had been considerably steeper than the OECD average) may lead to an increase in spending in the medium term until the more highly paid senior teachers who have a right to continue serving under the old salary system will retire. Part of this effect may be offset by longer teaching hours and the new service code's overtime regulations. Fewer teachers than anticipated chose to enrol under the new service code while its adoption was voluntary during a transition period, between 2015/16 and 2018/19

Note: In Austria, responsibilities for school education differ between so-called federal schools and provincial schools. Federal schools (*Bundesschulen*) comprise academic secondary schools as well as upper secondary vocational schools and colleges (ISCED 2-3). Provincial schools (*Landesschulen*) include primary schools, general lower secondary schools, New Secondary Schools, special needs schools, pre-vocational schools and part-time upper secondary vocational schools (ISCED 1-3).
Source: OECD (2019[33]), *Working and Learning Together: Rethinking Human Resource Policies for Schools*, OECD Publishing, Paris, https://dx.doi.org/10.1787/b7aaf050-en.

… and significant implementation challenges need to be anticipated when reforming compensation systems

41. Compensation reforms always involve a degree of uncertainty about the size and distribution of their benefits and are likely to cause resistance among those who fear to lose out, whether in absolute or relative terms. They therefore require an open dialogue with stakeholders, including teacher unions, and their involvement in reform processes. To build and sustain trust for the implementation of compensation reforms, they must be underpinned by clear communication, consensus building, and a process for prioritising competing claims on resources. Failing to effectively engage stakeholders at the design stage of reform can come at a high cost and some OECD countries have had to delay or abandon their projects in the face of stakeholders' resistance.

42. The experience of OECD countries also highlights the importance of anticipating the costs and challenges involved in compensation reforms. For example, although adjusting the slope of salary scales and shifting resources towards their lower or upper end can be budget neutral in theory, fiscal consequences are often hard to predict and reforms may involve significant transition costs over the course of their implementation. Finally, policy makers need to bear in mind the inertia of reform processes and the significant amount of time that it can take for a change in teachers' compensation systems to reach all or even just a majority of the profession (OECD, 2019[33]).

Some countries have sought to strengthen the link between teachers' compensation and their performance to promote quality teaching, which is fraught with difficulties

43. In addition to linking salaries to seniority, many systems seek to incentivise continuous improvement by differentiating compensation based on teachers' education and training or responsibilities. Other forms of differentiated pay have aimed to more explicitly link teacher pay to their assessed effectiveness. For instance, starting in 2006, the US Department of Education competitively awarded

Teacher Incentive Fund grants to school districts to fund the development and implementation of performance pay programmes aimed at teachers and principals. Participating districts were required to use measures of student achievement growth and at least two observations of classroom or school practices to evaluate effectiveness (OECD, 2019[33]).

44. In theory, performance-based compensation is meant to motivate teachers to improve their practice and raise students' achievement by rewarding effective teaching (OECD, 2019[33]). However, research from different contexts has shown the difficulty of measuring performance at the level of individual teachers and the potential perverse effects of doing so, such as narrowing the curriculum or reducing teachers' efforts on tasks not explicitly rewarded by the programme (Ballou and Springer, 2015[51]; OECD, 2013[52]; Papay, 2011[53]; Rothstein, 2010[54]). An excessive reliance on extrinsic incentives may also undermine teachers' intrinsic motivation and negatively impact on collegial relationships (Bénabou and Tirole, 2003[55]; Frey, 1997[56]).

45. As an alternative, linking salaries to career advancement creates a more indirect link between teachers' growing expertise and their compensation and can address some of the challenges associated with conventional performance pay (Box 4). First, this can combine extrinsic rewards for high performance (in the form of salary increases) with intrinsic rewards in the form of professional opportunities and responsibilities that grow in line with teachers' knowledge and skills. And second, this offers both beginning and experienced teachers realistic goals based on their current position on the career ladder and a clear pathway to achieve them. Implementing such systems may require countries to further develop and integrate their teaching standards, appraisal systems, career structures and salary scales (OECD, 2019[33]).

Box 4. Linking salaries to career advancement: the examples of Colombia and Chile

Colombia's new teacher career structure, introduced in 2002 and applicable for teachers appointed following its introduction, illustrates how indirect links between appraisal and compensation can be established. In contrast to the seniority-based system in place for teachers appointed prior to 2002, teachers need to undergo a system of Diagnostic and Formative Evaluation (*Evaluación de Carácter Diagnóstico Formativo*, ECDF) to advance their career and reach the next step of the salary scale. While initially based on a written assignment, the evaluation process was reformed in 2015 to more closely measure teachers' effectiveness in the classroom. The process has since focussed on peer evaluations based on video observations, and on identifying professional development needs and providing access to professional development opportunities for teachers. While the details of the process have been subject to frequent negotiations since it was introduced (e.g. concerning the evaluation method's reliability), the system signals a clear commitment to strengthening the indirect linkages between teachers' performance and their compensation.

Similarly, **Chile** uses a certification process (*Sistema de Reconocimiento*) to regulate teachers' progression across the five stages of their career structure (*Carrera Docente*) based on competencies specified in the national teaching standards (*Marco para la Buena Enzeñanza*). Progression through the career structure is linked to better remuneration through specific salary supplements (*Asignación por tramo de desarrollo profesional docente*) and a higher base supplement (*Bonificación de Reconocimiento Profesional*). It also provides access to new professional opportunities, such as teacher networks, and professional learning to improve practice. The certification process includes a standardised written assessment and external markers evaluating a professional portfolio, as well as classroom observation. While advancement to the two highest stages of the teaching career (Expert I and Expert II) is voluntary, teachers are expected to move from the first stage (Initial) to the second or

third (Early, Advanced) after four to eight years. This also serves as a means to remove underperforming teachers from the profession if they fail the examination more than twice.

Source: OECD (2019[33]), Working and Learning Together: Rethinking Human Resource Policies for Schools, OECD Publishing, Paris, https://dx.doi.org/10.1787/b7aaf050-en.

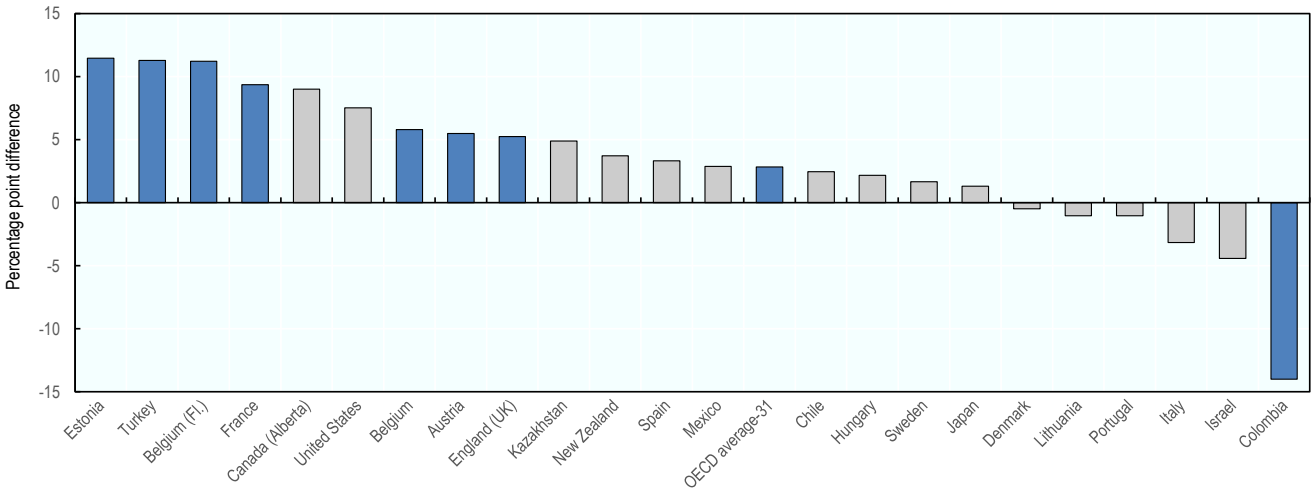
Inequities in the distribution of teachers are problematic in many countries…

46. Inequities in the distribution of staff across schools in different socio-economic circumstances are problematic in many countries as a rich research literature and data from the OECD have established (OECD, 2018[57]; OECD, 2019[33]). Data from PISA 2015, for example, show that teachers in the most disadvantaged schools are less qualified or experienced than those in the most advantaged schools in more than a third of the participating school systems, and that gaps in student performance related to socio-economic status are wider when fewer qualified and experienced teachers work in socio-economically disadvantaged schools (OECD, 2018[57]).

47. More recent data from TALIS 2018 similarly show that, on average across OECD countries, novice teachers tend to work in more challenging schools that have higher concentrations of students from socio-economically disadvantaged homes and immigrant students (Figure 6) (OECD, 2019[36]). As new teachers often struggle with classroom realities before adapting their practice (Jensen et al., 2012[58]), this may reduce their sense of efficacy and make them more likely to move schools or to leave teaching altogether.

Figure 6. Distribution of novice teachers by concentration of students from socio-economically disadvantaged homes (ISCED 2) (2018)

Difference in percentage of novice teachers between schools with “more than” and “less than or equal to” 30% of students from socio-economically disadvantaged homes



Note: Results based on responses of teachers and principals. Novice teachers are teachers with five or less years of teaching experience. Socio-economically disadvantaged homes refers to homes lacking the basic necessities or advantages of life, such as adequate housing, nutrition or medical care. Statistical significant differences are indicated in a darker tone. The number of countries or economies included in the OECD average is indicated next to that average. On 25 May 2018, the OECD Council invited Colombia to become a Member. While Colombia is included in the OECD average reported in this figure, at the time of its preparation, Colombia was in the process of completing its domestic procedures for ratification and the deposit of Colombia’s instrument of accession to the OECD Convention was pending

Source: OECD (2019[33]), *Working and Learning Together: Rethinking Human Resource Policies for Schools*, OECD Publishing, Paris, https://dx.doi.org/10.1787/b7aaf050-en, Figure 3.7.

… which can be driven by a number of factors, including recruitment processes and regulations as well as staff preferences

48. There are concerns that, while facilitating a more effective matching of staff and workplace, giving schools autonomy in the recruitment of their teachers may lead to greater disparities in staff qualifications and experiences among schools. Teacher allocations through higher-level authorities, by contrast, may help steer a more equitable teacher distribution across advantaged and disadvantaged schools and help fill hard-to-staff positions in schools (OECD, 2019[33]).

49. International data nevertheless suggest that inequities in the distribution of teachers can be observed in both systems with higher-level teacher recruitment and those with school-based recruitment (OECD, 2018[57]). This indicates that an effective and equitable distribution of teachers depends not only on the level of decision-making but also on recruitment processes and teacher incentives and preferences. In a number of systems, teachers' interests rather than students' needs drive the distribution of teachers and make it difficult to match the mix of teachers' experiences and skills to school contexts. Where recruitment is centralised, teachers with the highest rank may for example have the first choice for the school they would like to work at. In decentralised systems, schools or sub-central authorities may have to safeguard teachers' statutory rights, such as permanent contracts or higher levels of seniority, when recruiting staff (OECD, 2019[33]).

… and be potentially addressed through both financial and non-financial incentives

50. Some school systems have introduced financial incentives for teachers to work in areas of need, such as higher salaries in schools enrolling large proportions of students from disadvantaged backgrounds, differential pay for particular expertise, or scholarships and subsidies for working in disadvantaged schools (Box 5).

Box 5. Financial incentives to attract and retain high-performing teachers in disadvantaged schools in Chile and France

Chile's government has designed different awards that provide a financial bonus for high-performing teachers choosing to work in disadvantaged schools. The *Asignación de Excelencia Pedagógica* (AEP) programme sought to reward the most effective teachers and to increase retention in the teaching profession. In place between 2002 and 2021, the programme incorporated a monetary bonus for teachers working in disadvantaged schools since 2012. An evaluation of the programme suggested that the incentive was not sufficient to redirect high-performing teachers to disadvantaged schools but was effective in retaining quality teachers in high-needs schools. Since 2017, a separate monetary incentive has been in place (*Asignación de Reconocimiento por Docencia en Establecimientos de Alta Concentración de Alumnos Prioritarios*), which is also focused on attracting and retaining teachers to work at schools with a large proportion of students from disadvantaged backgrounds.

In 1981, **France** established the *Zones d'Éducation Prioritaire* (ZEP), a compensatory education policy directing additional resources to disadvantaged schools. In 1992, for example, an annual bonus of EUR 600 was awarded to teachers working in ZEPs. The policy scheme has substantially evolved since then. For instance, since September 2015, teachers working in schools serving disadvantaged communities are awarded an annual bonus, which may vary between EUR 1 734 and EUR 2 312 (gross amount).

Since September 2019, teachers working in schools in the most deprived areas (REP+) are awarded an annual gross salary bonus of EUR 4 646.

Source: OECD (2020[50]), *TALIS 2018 Results (Volume II): Teachers and School Leaders as Valued Professionals*, OECD Publishing, Paris, https://dx.doi.org/10.1787/19cf08df-en.

51. In some contexts, monetary incentives have shown promising results to distribute teachers where they are needed the most (Steele, Murnane and Willett, 2010[59]; Clotfelter et al., 2008[60]). But such policies will work differently depending on the design and size of the incentives and the general framework for teacher employment and career progression. A financial incentive for working in disadvantaged schools in France, for example, described in Box 5, did not show positive results, highlighting that the size of the financial bonus and the perception of the policy are crucial to achieve the policy's objectives (Prost, 2013[61]). Financial incentive schemes therefore require adequate evaluation and monitoring.

52. Of course, non-financial incentives also matter. For example, recognising experience in difficult or remote schools for teacher career development is a further option. Professional factors, such as opportunities to take on extra responsibilities and to engage in research and innovation, also need to be taken into account as do working conditions, such as preparation time, leadership, collegiality, accountability demands, class size or facilities. Hence, it is equally important to ensure that schools in difficult contexts provide attractive conditions for staff to work in (OECD, 2019[33]).

Reducing educational failure

Educational failure entails high costs for individual students, and is a major source of inefficiency for educational systems

53. Formal education is a cumulative – if not linear – process. When students' progression through school is compromised by knowledge gaps or inappropriate year repetition, students risk leaving school early, failing to progress to tertiary education and having lower prospects in the labour market (OECD, 2018[62]). When students do not progress through the system as expected and leave school with insufficient knowledge, skills and competencies, this has a high cost for school systems and individuals, and it is an important source of inefficiency in many countries (OECD, 2017[1]). In the context of the COVID-19 pandemic, addressing the urgent needs of students who may have left school early or are at increased risk of doing so will be a critical educational and economic priority in some contexts, for example through high quality second-chance or early acceleration programmes (Box 6).

Box 6. Complementary second chance and early acceleration programmes to re-engage struggling learners and minimise school dropout

Second chance and early acceleration programmes are specific types of interventions for students who have struggled or are struggling to make successful transitions through secondary education and into post-secondary education and the labour market. They provide a different curriculum and structure to re-engage students, rather than aiming to better support students in the common curriculum.

The classical way of addressing students who have dropped out of school, but later express interest in gaining skills and credentials at the secondary level as adults, is the second-chance programme. Second-chance programmes can tackle skill gaps and school failure in a variety of ways including

literacy and numeracy remediation, course repetition through online or in-person classes, test-based competency demonstrations, and work experience.

For example, in **France**, a network of second chance schools (*Écoles de la 2e Chance*, E2C) provides practical training for early school leavers. The training, which targets 16 to 25 year-olds without qualifications, focuses in particular on individualised learning pathways and practical work experience. As part of the government's investment plan for 2018-2022 (*Grand Plan d'Investissement*), the Ministry of Labour provides financing for places in the programme between 2019 and 2022, for the development of the network's information systems, and the development of a skills-based approach.

In **Denmark**, a new type of educational programmes (Preparatory Basic Education and Training, FGU) was launched in 2019 to rethink and strengthen second chance education, and half the share of youth not in education or training by 2030. This type of programme is offered by dedicated institutions serving a number of schools and embedded within the youth initiatives of the country's 98 municipalities. It offers various educational tracks, a strong element of guidance and counselling, and new pedagogical approaches to support youth under 25 in entering upper secondary education or the labour market.

An alternative to the traditional second-chance programme is to seek to alter a student's trajectory before they experience failure in the first place. These types of early intervention programmes are often premised on an idea of acceleration rather than remediation. Though such strategies vary in nature, a common structure involves providing students with the opportunity to earn tertiary credits and credentials while enrolled in secondary school, and often with the opportunity for embedded employer internships. Students are assigned professional mentors, visit multiple workplace environments on learning missions, and access paid or unpaid internships. In some cases, graduates from these early acceleration programmes are given priority in job opportunities with partner private employers.

One such Early College High School in New York City (**United States**) is the Pathways in Technology Early College High. "The school provides students with an enriched curriculum that is aligned with actual employment opportunities with industry partner IBM and that enables them to earn both a high school diploma and a cost-free Associate in Applied Science (AAS) degree in six years. Students have professional mentors, substantive workplace experiences … and internships."

Source: OECD (2018[62]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264306707-en. EPALE (2019[63]), Preparatory basic education and training, https://epale.ec.europa.eu/en/blog/preparatory-basic-education-and-training (accessed on 31 January 2022); Réseau E2C France (n.d.[64]), *Qui sommes nous?*, https://reseau-e2c.fr/qui-sommes-nous (accessed on 31 January 2022).

Many school systems face challenges in supporting student transitions, potentially leading to educational failure and inefficiencies and inequities in resource use

54. Students' experiences as they progress through the school system differ markedly across OECD countries, but vertical (that is upward) transitions play an important role in every student's educational experience, often right from the beginning of their time in school. In any school system, students accumulate years of educational attainment before leveraging these educational milestones to seek success in the labour market (OECD, 2018[62]).

55. However, many school systems face challenges in supporting students in their transitions through the system. Practices and policies to facilitate transitions across early childhood education and care and primary school providers vary widely, and school systems across the OECD have struggled with the best ways to address the unique learning and social needs of students transitioning from primary into lower secondary education. The transition between lower and upper secondary education is often one of the most fraught, frequently taking place near the age for the end of compulsory schooling (OECD, 2018[62]).

56. Where the organisation of the educational offer does not support students' smooth progression through the system and guide them to programmes that correspond to their interests, this can lead to disengagement, educational failure and skill mismatches later on as well as an inefficient and inequitable use of school resources. Smooth transitions, on the other hand, facilitate human capital development, ease entry into the labour market, and reduce costs associated with youth unemployment and poor adult health outcomes (OECD, 2018[62]).

Greater co-ordination between educational levels and sectors can have benefits for students' transitions through the system

57. Accomplishing smooth transitions for students requires careful co-ordination between the different levels and sectors of school education, which are often fragmented, and the responsible governing bodies. For instance, early childhood education and care and primary education tend to be more locally managed than secondary education, which tends to be the responsibility of central governments. Enhancing the co-ordination between different levels of education yields efficiency, quality and equity improvements:

- First, the effective co-ordination of the educational offer can reduce the duplication of educational services, and reinforce professional collaboration and supervisory capacity.
- Second, it can facilitate and incentivise the sharing of resources, such as facilities and materials, between school providers and schools providing different levels of education.
- Third, co-ordination can help better articulate the curricular and pedagogical offer, facilitating the progression of students throughout the system, helping them to integrate skills acquired at each level of education, and minimising reasons to drop out of school (OECD, 2018[62]).

58. Designing explicit transition programmes or combining different levels of schooling into a single organisation in areas with high rates of early school leaving can also help to ease vertical transitions for all students. More generally, the configuration of years and levels of education will affect the nature and ease of students' transitions as well as the extent to which services, facilities and materials can be efficiently shared. Policymakers should therefore assess the relevant curricular options in consultation with stakeholders and reflect on the best configuration of years and levels of education (OECD, 2018[62]):

- Several studies in the **United States**, for example, have found benefits in student outcomes to eliminating entirely the transition between primary and lower secondary schooling and keeping students in their same primary school through 8th grade (Rockoff and Lockwood, 2010[65]; Schwerdt and West, 2013[66]).
- In **Sweden**, a reform in 1994 aimed at integrating grades 7-9 in locally run basic schools, led students to keep attending smaller schools closer to their homes, while having no significant impacts on educational outcomes (Holmlund and Böhlmark, 2017[67]).

59. A greater integration of different levels of education can also be achieved through an alternative administration of schools and curricula. **Colombia** and **Portugal**, for example, have organised their educational provision in school clusters which group schools offering different levels of education. This enables students to complete their entire schooling within the same extended school community if they so wish and allows for a more efficient resource use (OECD, 2018[62]).

High rates of grade repetition challenge efficiency and equity in some countries…

60. Students' vertical progression through the school system is also affected by institutional factors and educational regulations, such as academic standards, promotion examinations, grade repetition practices, or structures to support struggling learners. Schools systems must constantly navigate a tension between adopting policies intended to impose high standards for students' knowledge and skills to ensure

that they acquire the necessary skills for future life success, and policies that do not unnecessarily inhibit students' vertical progression (OECD, 2018[62]).

61. Whether students acquire specific academic skills may or may not determine whether they progress from one year to another, depending on system policies and cultural contexts (Goos et al., 2013[68]). At the extremes among OECD countries, and according to data from PISA 2018, all students in Japan and Norway progress from one year to the next as a matter of policy, whereas 41% of 15-year-olds in Colombia, 32% of students in Luxembourg, and 31% of students in Belgium had repeated a grade at least once by the time they reached 15 years of age (OECD, 2020[69]).

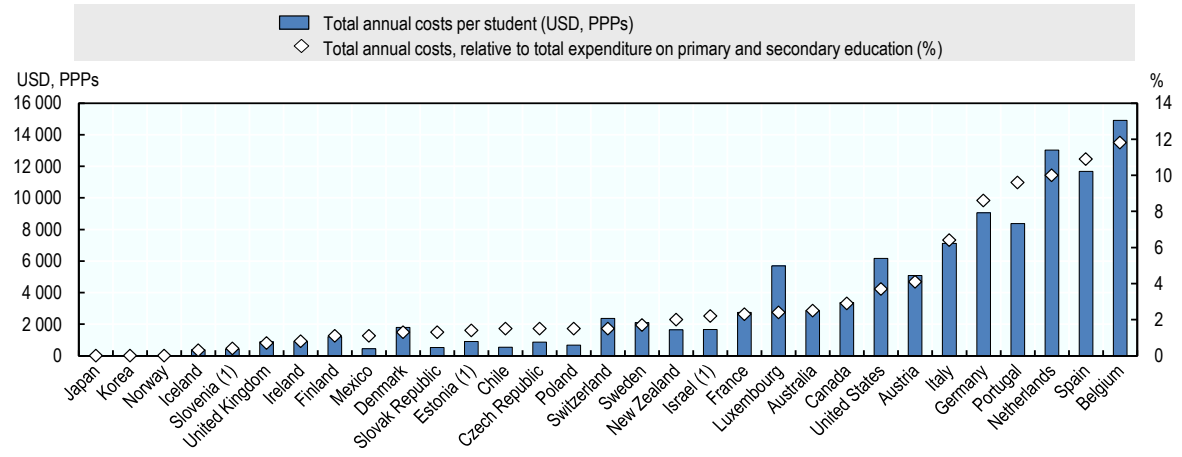
62. International evidence provides no support for systematic grade repetition practices. Clear evidence shows that students who repeat years do worse on a host of measures than students who have never repeated (Ikeda and García, 2014[70]). The evidence points to worse – or at best mixed outcomes for repeaters, which may be partially explained by the fact that year repetition is rarely accompanied by a modified curriculum or additional instructional resources (Schwerdt, West and Winters, 2017[71]; Allen et al., 2009[72]; Jacob and Lefgren, 2004[73]; Jimerson, 2001[74]; Jimerson, Anderson and Whipple, 2002[75]).

… as it is a costly practice for school systems and individuals

63. Grade repetition, which adds an additional year of schooling, is a costly practice. The retention of students in the system increases the number of enrolled students and thus the level of funding required, besides delaying students' entry to the labour market (Manacorda, 2012[76]; Alet, Bonnal and Favard, 2013[77]; Benhenda and Grenet, 2015[78]). In an OECD estimate, the total cost of year repetition was equivalent to 10% or more of the annual national expenditure on primary and secondary school education for some countries. The cost per 15-year-old student can be as high as USD 11 000 or more (Figure 7) (OECD, 2011[79]).

Figure 7. Cost of grade repetition (2009/10)

Assuming that repeaters attain at most lower secondary school



Note: These estimates add up both the direct and the opportunity cost and are based on the assumption that students who repeat years attain, at most, lower secondary education. These estimates do not address either the potential benefits of year repetition or the costs if school systems do not allow for year repetition. For example, students who have repeated a year might be better prepared for the labour market than if they had not done so. Schools might also have to spend more to offer remedial classes to struggling students if those students are not permitted to repeat a year.

1: In Estonia, Israel and Slovenia, gross annual full-time earnings are used as annual labour costs are not available in EAG 2010.

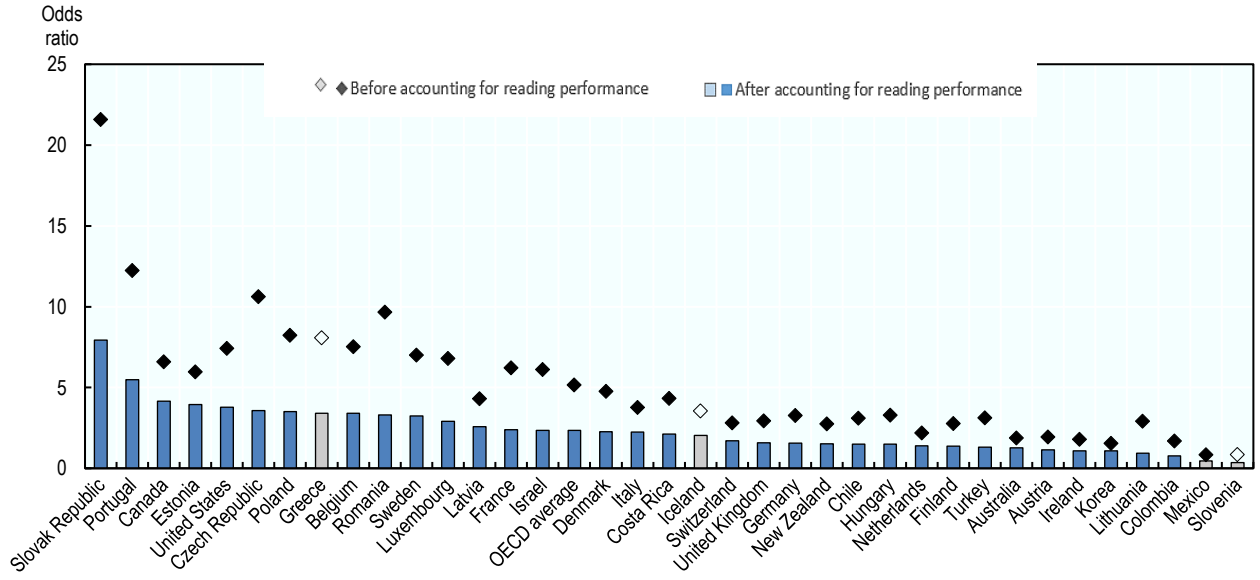
Source: OECD (2011[79]), "When Students Repeat Grades or Are Transferred Out of School: What Does it Mean for Education Systems?", *PISA in Focus*, No. 6, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k9h362n5z45-en, Figure 2.

… and tends to affect disadvantaged students disproportionally

64. Furthermore, grade repetition raises important equity concerns as socio-economically disadvantaged students are more likely to be held back compared to their more advantaged peers**.** On average across OECD countries, a disadvantaged student was more than twice as likely to have repeated a grade at least once, as compared to an advantaged student, even if the students scored similarly in the PISA reading test (Figure 8). Across OECD countries, one in five students in socio-economically disadvantaged schools had repeated a grade at least once since entering primary school, compared to only 5% of students in advantaged schools (OECD, 2020[69]). Similarly, boys are more likely to repeat a grade than girls, and immigrant students compared to native-born students (OECD, 2018[62]).

Figure 8. Grade repetition, socio-economic status and reading performance (2018)

Increased likelihood of having repeated a grade amongst disadvantaged students, relative to advantaged students, before and after accounting for reading performance



1. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).
Note: Statistically significant odds ratios are shown in darker tones (see Annex A3).
Countries and economies are ranked in descending order of the increased likelihood of having repeated a grade amongst disadvantaged students, after accounting for reading performance.
Source: OECD (2020[69]), *PISA 2018 Results (Volume V): Effective Policies, Successful Schools*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/ca768d40-en, Figure V.2.6

A number of countries have taken steps to change grade repetition practices through individualised support for struggling students…

65. Over the past years, a number of OECD countries have taken steps to reduce their reliance on grade repetition practices. According to data from PISA, the incidence of grade repetition decreased between 2003 and 2018 in 14 out of 36 countries and economies for which there are comparable data. On average across OECD countries, the percentage of students who reported that they had repeated a grade at least once decreased by three percentage points during the period. Notably, grade repetition decreased by more than 10 percentage points in France, Mexico, the Netherlands and Turkey, although it increased in Austria, the Czech Republic, Iceland, Korea, New Zealand, and the Slovak Republic (OECD, 2020[69]).

66. Reducing grade repetition begins by providing intensive, individualised support to struggling students: learning gaps between students should be targeted early with necessary supports provided for students with difficulties so that they can be put back on track before the learning gaps widen (Box 7).

Box 7. Providing individualised support to struggling students: Austria, Finland and Uruguay

In **Austria**, different measures seek to provide early support to students with learning difficulties. In primary school, the curriculum allows for one lesson of remedial teaching (*Förderunterricht*) per week for students at risk of falling behind, in particular in the core subjects. This additional instruction can be delivered as an additional class or be integrated in the regular schedule. In upper secondary education, students with learning difficulties can receive individual learning support (Individuelle Lernbegleitung). This type of support does not focus on individual subjects, but rather the entire learning process. As part of the process, students work together with a tutor (Lernbegleiter*in) with a focus on individual learning goals. An early warning system (Frühwarnsystem) should help identify students with learning difficulties at risk of falling behind and inform early support measures.

In the **Finnish** education system, almost all students are automatically promoted (none are retained prior to grade 10); every child has the right to individualised support provided by trained professionals as part of their regular schooling. A teacher who is specifically trained to work with struggling students is assigned to each school and works closely with teachers to identify students who need extra help.

In **Uruguay**, the Community Teachers Programme (*Programa Maestros Comunitarios*) allocates one to two community teachers to disadvantaged schools, depending on school size. This programme aims to prevent students from falling behind and having to repeat a year by supporting children who perform poorly. This is coupled with the Teacher + Teacher (*Maestro más Maestro*) Programme providing either after-school or team teaching support for students in underserved communities.

Source: OECD (2018[62]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264306707-en; Eurydice (2021[80]), Support Measures for Learners in Early Childhood and School Education: Austria, https://eacea.ec.europa.eu/national-policies/eurydice/content/support-measures-learners-early-childhood-and-school-education-1_en (accessed on 31 January 2022).

67. Identifying the contextually specific indicators that are simultaneously highly predictive of grade repetition and easy for all stakeholders to interpret is a critical first step to intervening early (Box 8). This may require building data systems that can track in an integrated fashion student attendance, course marks and behaviour. Once these data systems are built, educational professionals at the school level must be trained to interpret their outputs and design a standardised response protocol (OECD, 2018[62]).

Box 8. Using data-tracking systems to develop early warning indicators for students at risk of repeating years and/or dropping out of school

A critical factor preventing many school systems from intervening early and effectively with at-risk students is a failure to systematically identify them early, before their struggles are so pronounced as to minimise the efficacy of interventions. Some profiles of students who risk repeating a year or dropping out of school are obvious for school staff to identify: students who are frequently disruptive, refuse to complete work and fail examinations. There are, however, other profiles of quieter struggles: students who attempt to avoid being noticed, students who produce the minimal required work at low levels of

proficiency, and so on. Designing a comprehensive system to identify all students who are at risk requires robust data systems that are regularly used by school staff.

As a first step, ensuring that each student has a unique identifier that can be tracked across schools and networks is critical to follow highly mobile students who are at significant risk. Second, combining educator expertise with empirical analysis to identify the factors that are most predictive of students failing a course, repeating a year and dropping out of school can clarify which are the key indicators to track. In some contexts, these results can run counter to accepted wisdom. For instance, in the United States, school attendance, course marks, and behavioural conduct are much stronger predictors of school completion than external test scores.

Once countries have built data infrastructure systems and agreed on which indicators to track, extensive training of school staff (teachers, counsellors and school leaders) must take place to ensure that they both understand the meaning of the early warning indicators and believe in their value. For school staff to see value in this data, clear steps for intervention must exist. This might include targeted small-group teaching and counselling sessions or referral to social service providers. The key is a clear protocol for what happens when students are flagged as in need, and then a system to track and ensure that these interventions have, in fact, occurred.

The last step to ensure that the data-tracking system has meaningful impacts is to periodically review the intervention impacts at the school and system levels. This involves analysing trends in early warning indicators across types of students and schools, comparing students' outcomes on the early warning indicators before and after the interventions to track individual growth, as well as more formal evaluation studies using regression discontinuity or matched student to identify the causal effects of the interventions. These types of analyses permit review of areas in which students or schools need extra support, an assessment of the efficacy of specific interventions, and an overall programme evaluation.

Source: OECD (2018[62]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264306707-en.

… as well as forms of "conditional promotion" and efforts to change school cultures

68. School systems can also shift away from understanding the grade repetition decision as a binary choice. Particularly in higher grades, students can be required to take, for example, a prior-year mathematics course in place of an enrichment activity if this is the subject in which they have struggled, rather than repeating the entire previous year. With thoughtful student scheduling, this approach can be implemented at earlier year levels as well. This form of "conditional promotion" can satisfy many educators' practice-based preferences for student-level accountability and support, while avoiding system-level concerns about its associated harms (OECD, 2018[62]).

69. Finally, cultural shifts in the education profession and school-level incentives to avoid repetition are critical. In many countries, educators and the public see grade repetition as a valuable tool to maintain high standards. Raising awareness among educators through professional development and initial and ongoing teacher education is one tool, but in order to allay practitioners' concerns, system leaders should take strong public stances against its widespread practice and publicly present data on the outcomes of grade repetition. Only through such leadership will long-standing practices shift over time. **France** and the **French Community of Belgium** provide examples for serious policy attention to the issue of grade repetition (Box 9).

Box 9. Systematic policy efforts to reduce grade repetition rates: lessons from France and the French Community of Belgium

France

In 2008, the Ministry of Education set ambitious objectives to reduce repetition rates. School leaders were required to explain their school level results and encouraged to decrease the number of repeaters. Students struggling in the last two years of primary school were provided with two additional hours of academic support. The rate of primary school repetition was still 14% in 2009, so the ministry set a goal of halving this rate by 2013. In 2014, Parliament passed a decree addressing school repetition [*Decree 2014-1377 of 18 November relating to the monitoring and educational support of pupils*]. The decree indicates that the repeating of a year should be considered "exceptional." The decree also highlights the value of dialogue between the student and the school staff prior to the decision on a student's repetition (Benhenda and Grenet, 2015[78]). While the rate of repetition has dropped significantly, it remains high, and more work remains to be done. In 2018, the incidence of grade repetition was still the 11th highest in the OECD, and 17% of students were retained at least once in primary school.

As the French case study shows, budget savings from grade repetition abolition appear gradually. Indeed, the abolition of this practice can induce short-term costs related to the more rapid flow of students towards higher and more costly educational levels. The first savings could appear in the medium term (after two years in the French case) and increase gradually over time. This has important implications in terms of policy as "first, the savings to be made by abolishing year repetition can only be realised and used for other education purposes gradually. Second, the reform would require several years of careful and rigorous management of the recruitment and allocation of teaching staff over the whole transition period." (Benhenda and Grenet, 2015, p. 4[78]).

French Community of Belgium

In the French Community of Belgium, grade repetition and early school leaving have been longstanding issues, resulting in significant costs for individuals and society. Some estimates, which are likely an underestimate, put the cost of grade repetition at EUR 42.8 million in primary education and EUR 349.2 million in secondary education (2014 values), or equivalent to 10% of the budget devoted to these levels of education. A number of policies and initiatives have therefore been put in place over time to change the culture of grade repetition, in particular in primary but also in secondary education. A major reform (*Pacte pour un Enseignement d'excellence*) adopted in 2015, which seeks to improve the quality of education, also aims to smooth educational pathways and to reduce educational failure and repetition.

Following legislative changes in 2015 and 2016, children can only be retained in pre-primary school (*maternelle*) in exceptional circumstances. Upon parents' request and subject to the approval of the school provider, a child can repeat the third year, but in that case is not taken into account in the calculation of the operating grant. As part of teachers' continuing education, third grade teachers in pre-primary can also participate in training to better understand specific learning disabilities and to adjust their pedagogy accordingly. In general, schools must put in place individualised support and remedial measures where learning difficulties are identified, in collaboration with their psycho-medical-social support centre, and define strategies to combat school failure, early dropout and grade repetition as part of their six-year school development plans (*plan de pilotage*). In the first stage of secondary education, an individual learning plan (*Plan Individuel d'Apprentissage*) must be put in place for students

experiencing particular difficulties, based on observations by teachers and counselling, setting individual objectives and providing multidisciplinary support to students.

These measures build on previous initiatives, such as the *Décolâge!* project which created a community of schools with a common interest in implementing new pedagogical practices to reduce grade repetition in the transition between pre-primary and primary education, and a reform of the first stage of secondary education (ISCED 2) seeking to strengthen the common core for all students up to the age of 14.

Source: OECD (2018[62]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Publishing, Paris; https://dx.doi.org/10.1787/9789264306707-en. Benhenda and Grenet (2015[78]), *How much does grade repetition in French Primary and Secondary Schools Cost?*, Institut des Politiques Publiques, Paris; Ministère de la Fédération Wallonie-Bruxelles (2016[81]), *Examen de l'OCDE des politiques pour un usage plus efficace des ressources scolaires RAPPORT PAYS Communauté française de Belgique*, Ministère de la Fédération Wallonie-Bruxelles, Bruxelles, http://www.oecd.org/education/school-resources-review/reports-for-participating-countries-country-background-reports.htm (accessed on 01 February 2022).

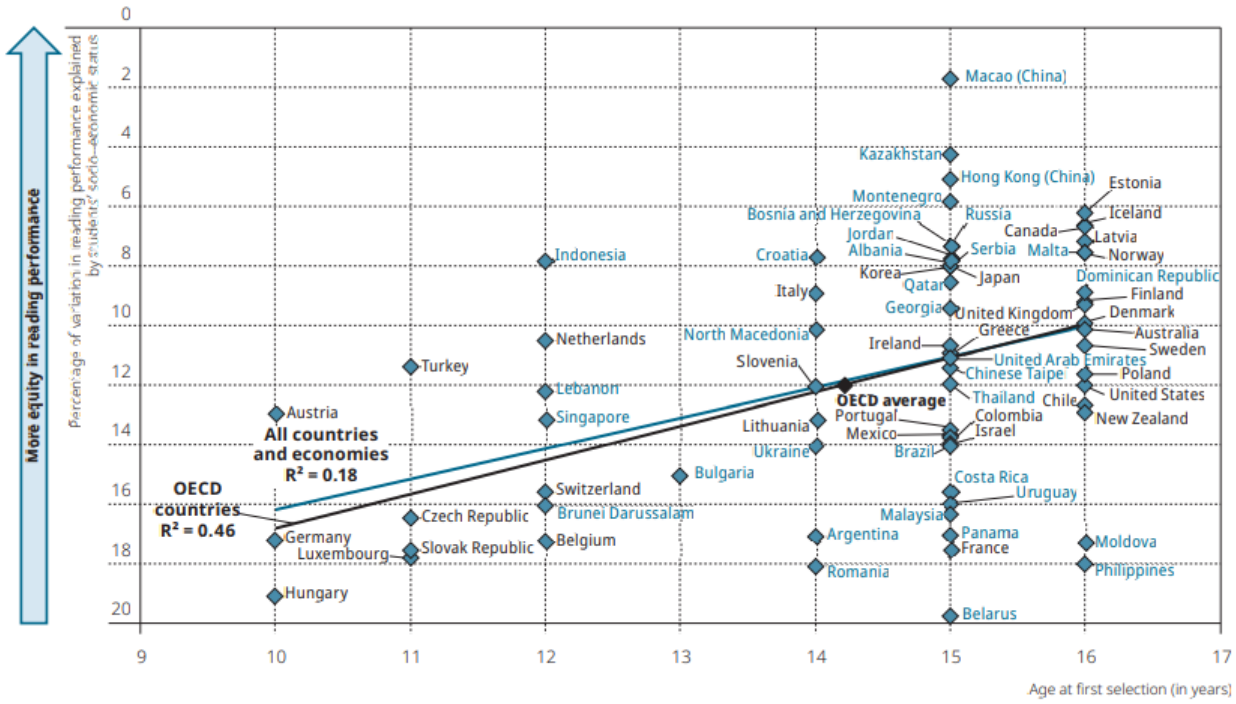
Early tracking of students into specific programmes may also limit educational efficiency and equity

70. In response to students' different preferences, abilities and needs, many school systems offer a variety of educational pathways and parallel programmes, often tracking students into separate learning environments. Vocational education and training (VET) programmes play a substantial role in the education of upper secondary students, and in recent years, policymakers have come to see vocational education as critical to national economic success, as employers seek a wider array of skills from secondary school graduates than those provided by the traditional academic programmes (OECD, 2018[62]).

71. Despite the potential benefits of high-quality vocational programmes, concerns remain however regarding the selection of students into these programmes. Particularly where tracking occurs at a young age, students' choice of or selection into tracks tends to be strongly associated with their socio-economic background (OECD, 2018[62]). Based on analyses for PISA 2018, selecting students into different programmes at an earlier age was correlated with less equity in reading performance, even after accounting for per capita GDP, across OECD countries. Differences in the age at first selection accounted for 46% of the differences in equity in reading performance across OECD countries (Figure 9) (OECD, 2020[69]).

72. While proponents of early tracking argue that educating children in different learning environments allows more tailored pedagogical practices from a young age, cross-country evidence rather suggests that such practice yields no significant gains for students. In multiple contexts, tracking has been shown to marginally increase the educational outcomes of high achieving students, while it substantially decreases the performance of low-achievers; thus increasing educational inequality with no overall average benefits to academic performance (Hanushek and Wossmann, 2006[82]; Epple, Newlon and Romano, 2002[83]; Schütz, Ursprung and Wößmann, 2008[84]).

Figure 9. Age at first selection and equity in reading performance (2018)



Source: OECD (2020[69]), *PISA 2018 Results (Volume V): Effective Policies, Successful Schools*, PISA, OECD Publishing, Paris, https://doi.org/10.1787/ca768d40-en, Figure V.3.9.

… which has led some school systems to delay early tracking, and others to institute policies that attenuate its potentially negative effects on students

73. Some school systems have been making efforts in moving towards a more comprehensive system and delaying early tracking to reduce the impact of student background in the selection of study programmes (Box 10). Delaying the age of first tracking has the potential to allow students to cognitively and socio-emotionally mature and enter the most challenging pathway they can successfully complete. The effectiveness of such a policy change may however depend on complementary policies, such as flexible pathways for students that adapt to differentiated needs and the introduction of better systems to monitor the characteristics of students going into different tracks (OECD, 2018[62]).

74. Where delaying the age of tracking is politically infeasible, school systems can consider alternative policies to attenuate its potentially negative effects. Some education systems have been moving towards greater integration in the provision of general, accelerated, pre-vocational and vocational tracks into the same lower and upper secondary schools. Even with early selection, integrated schools providing multiple pathways may generate both better outcomes and free resources to invest in other priorities. Integrating elements of vocational and general education can create synergies and raise students' awareness of the merits of each of the tracks. Integrated school settings may also attenuate the impact of socio-economic differences as integrated schools can lead to more fluid transitions for students. An integrated approach also allows for a more modular approach to tracking where students may pursue different types of applied versus theoretical learning depending on the subject area (OECD, 2018[62]).

75. Such integration of services thus enables a more coherent organisation of educational planning for improved progression throughout the school system. As promising as these integrated approaches may appear, it is important to design them in such a way as to not create a two-tiered school in which some tracks are seen as less prestigious and inferior to the general programme. Counteracting this dominant

perception with investments in state-of-the-art facilities and vocal leadership on the benefits of applied learning can help to mitigate these concerns (OECD, 2018[62]).

Box 10. Policies to delay early tracking and move towards a more comprehensive system in Austria and the Flemish Community of Belgium

Austria

School education in Austria is characterised by early selective transitions, a large vocational sector, and a high degree of differentiation, particularly in upper secondary education. With the completion of primary school, typically at age 10, students enter either the lower level of academic secondary school (*Allgemein bildende höhere Schule – Unterstufe*, AHS-U) or general secondary school (*Mittelschule*, MS), previously known as new secondary school (*Neue Mittelschule*, NMS).

The New Secondary School (NMS) was first introduced as a pilot project in 2008, originally designed as a comprehensive school for all 10 to 14 year-old students (grades 5 to 8), delaying early tracking in the long run. While the intention was to combine the two previously available tracks in lower secondary education in this new school form, two separate tracks have continued to co-exist as the result of a political compromise. Nevertheless, since their introduction, the NMS (or MS as they are called today) have become the standard lower secondary school in the country, to which students are admitted after completing their primary education without any further pre-requisites. Following a pilot project in select schools in 2019/20, the pedagogical model of the new school form was further developed from the school year 2020/21 onwards, and as reflected in the new name (*Mittelschule*, MS). Changes were made, among others, to the grading system, remedial teaching and student grouping.

At the heart of the original reform, the NMS/MS have a similar curriculum to the alternative track (AHS-U), but different educational goals. While students used to be separated into different ability groups in core subjects, students have been assessed on differentiated grading schemes depending on their academic ability in grades 7 and 8 with the introduction of the new model. The NMS/MS also introduced new pedagogical approaches, including more individualised and project-based learning, in particular in the core subjects. The introduction of the NMS/MS moreover sought to open up better chances for their students, and particularly to help them continue their education at an upper secondary academic secondary school (*Allgemein bildende höhere Schule – Oberstufe*, AHS-O) and progress to an academic leaving certificate (matriculation examination, *Matura*).

The introduction of the NMS was accompanied by an evaluation programme, although this was limited to the initial stage of the reform. According to this evaluation, the reform showed weak to medium-strong positive effects on educational quality, student support and learning climate, though not necessarily on learning outcomes. The positive effects were stronger in those schools that implemented the NMS concept more rigorously (Eder et al., 2015[85]).

Flemish Community of Belgium

The Flemish Community of Belgium used to track students relatively early, between the ages of 12 and 14. Secondary school is divided into three stages, and educational pathways are further multiplied within those stages. While students can move from the vocational to the academic track, this rarely happens at the upper secondary level. Instead, students frequently transfer to less academically oriented schools or programmes (known colloquially as the “waterfall system”).

To delay tracking until age 14 and soften the negative effects of early tracking in the course of secondary education the Flemish Community of Belgium has introduced legislative reform for the modernisation of secondary education. The implementation of the modernization coincides with the introduction of the

new attainment targets (learning outcomes) for the first stage of secondary education, for which the Flemish Parliament developed and approved a framework in 2018. From 1 September 2019 new, concrete and clear attainment targets in compulsory education for the first stage apply.

A regulatory framework for the modernization of the structure and organization of secondary education was developed and approved by the Flemish Parliament. The new admission conditions, the qualifications and the study offer of the first stage are therefore fixed. By means of the correlation table and the set of new program rules, school boards can prepare for the modernization of secondary education and profile their schools in this new framework. The implementation of the modernization of secondary education started on 1 September 2019, giving schools sufficient time to prepare. The major reforms in compulsory education contribute to several policy aspects (rationalisation of study offer in secondary education, clearer definition of the finality of the programmes (preparing for transition to higher education or also directly preparing for the labour market), curricular reform through definition of new learning objectives, teacher training and profession…) are currently in gradual implementation. The modernisation of secondary education with new clustering of study fields, redefinition of programme finalities and new curriculum, only started in school year 2019/2020 and is due to be fully implemented in the schoolyear 2025/2026. The implementation of the new learning objectives for the first year of the second stage of secondary education (first grade of upper secondary education) only started in the schoolyear 2021/2022.

Source: OECD (2018[62]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Publishing, Paris; https://dx.doi.org/10.1787/9789264306707-en; BMBWF (2020[86]), *Die Mittelschule. Änderungen ab dem Schuljahr 2020/21 im Überblick*, Bundesministerium für Bildung, Wissenschaft und Forschung, Vienna, https://www.bmbwf.gv.at/dam/jcr:7b6de1bc-36c1-4b54-88f0-7683120238d0/mittelschule_2020.pdf (accessed on 13 January 2022); OECD (2019[87]), *Education Policy Outlook 2019: Working Together to Help Students Achieve their Potential*, OECD Publishing, Paris, https://dx.doi.org/10.1787/2b8ad56e-en.

Matching the school offer and adapting school networks to changing demand

76. Demographic trends and economic and societal transformations have required countries to adjust the way they organise their school infrastructure and education services. In rural regions, populations have been on the decline over the past 15 years in the vast majority of OECD countries, a development driven by productivity gains in agriculture, economies of agglomeration, lower fertility rates and increased rural-to-urban migration. Diverging demographic trends have meant that many school systems are simultaneously confronted with unsustainable excess capacities in rural areas and the need to expand the provision of school places in large cities. While no rural areas are the same, and some of their challenges also apply to urban places, shrinking student numbers, teacher shortages and a relatively high proportion of disadvantaged students make the efficient provision of high-quality education a difficult undertaking in some rural contexts.

77. Adapting the school network (i.e. the location, size and structure of its physical infrastructure, the use of facilities and the distribution of services across school sites) in areas with falling educational demand has thus become a central issue for school systems seeking to enhance their efficiency to free up resources for the improvement of student outcomes (OECD, 2018[62]; Echazarra and Radinger, 2019[88]; OECD, 2021[89]).

Small school size, while it can have benefits, can be an obstacle for the efficient provision of education…

78. The structure of a school network has a significant impact on the resources required to operate and maintain its facilities. There is no agreement on what constitutes a large, medium-sized or small school

in any given context. Yet, regardless of where the boundary is drawn, research from different countries indicates that significant economies of scale can be achieved when increasing school size up to a certain enrolment level before returns to scale diminish or diseconomies of scale may emerge (Andrews, Duncombe and Yinger, 2002[90]; Falch, Rønning and Strøm, 2008[91]).

79. Larger schools can reduce their per-student cost up to a certain point by reducing their fixed costs (e.g. related to administrative work and running and maintaining school facilities). Larger schools are moreover in a better position to fill classes up to the maximum permitted number of students. However, there is evidence that costs may increase once schools surpass a certain size and that very large schools bring their own challenges, such as greater complexity (OECD, 2018[62]).

80. For the experience of students and teachers, the size of a school can have both advantages and drawbacks. Smaller schools often haver greater difficulties to offer their students curricular diversity, specialised teachers, and quality equipment and facilities. In other respects, smaller schools may be at an advantage. They are often argued to allow for more interaction among staff, parents and students, foster a greater sense of belonging and facilitate the exchange between students of different ages (OECD, 2018[62]). The smaller class size found in many small schools may allow teachers to devote more attention to individual students and personalise their instruction accordingly, which has been shown to be particularly beneficial for students in the early grades and those with a lower socio-economic profile (Piketty, 2004[92]).

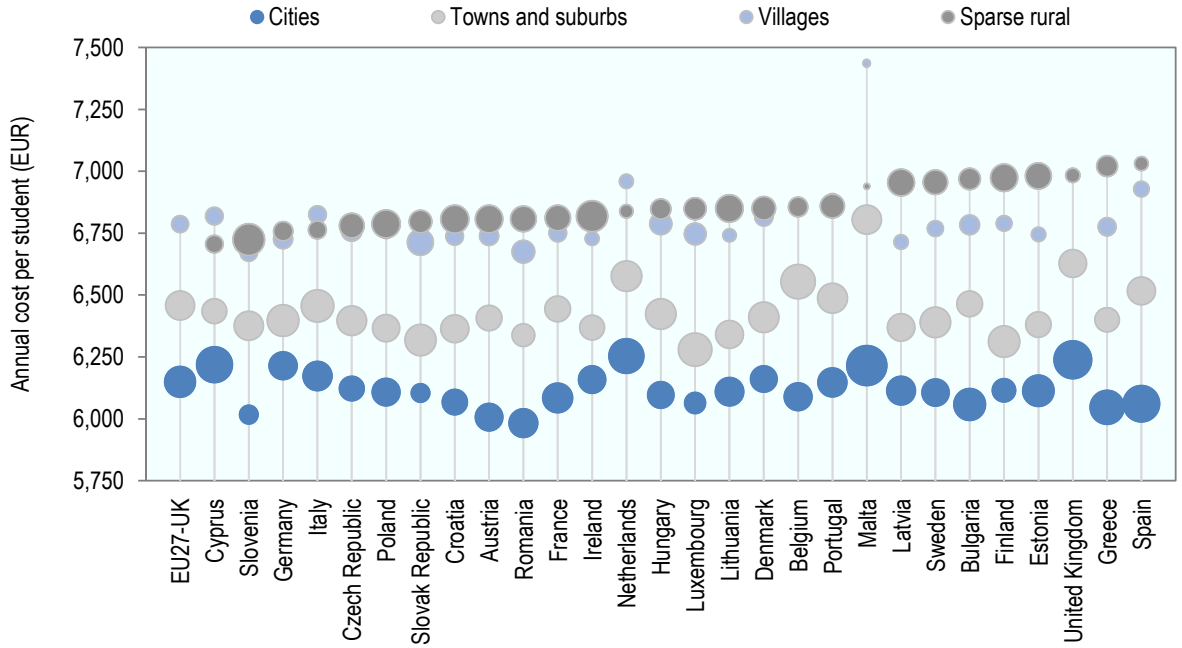
… which raises the importance of effective school network management in rural areas

81. One of the biggest challenges for the efficient operation of schools in rural areas is precisely their small size and the low population density of their surrounding areas. Partly due to their small size and demographic decline, rural schools tend to have smaller classes and fewer students per teacher than their urban counterparts, which can exert considerable pressure on public resources (OECD, 2018[62]; Echazarra and Radinger, 2019[88]; OECD, 2021[89]). Based on data from PISA 2018, both student-teacher ratios and class sizes tend to be smaller in rural as compared to city schools in secondary education across OECD countries (OECD, 2021[89]).[1] These characteristics are typically even more pronounced at the primary level (OECD, 2018[62]).

82. A recent OECD report providing estimates of both cost and access (distance) to education and health services in rural areas, suggests that, in Europe, the annual costs per student in sparse rural areas are 20% higher (EUR 720) compared to cities for primary schools, and 11% (EUR 681) higher for secondary schools (Figure 10). This cost difference can be higher than 40% for primary schools in Estonia, Finland and Latvia, and 16% for secondary schools in Greece and Spain (OECD/EC-JRC, 2021[93]).

[1] In PISA, “rural schools” refer to those in communities with fewer than 3 000 people and “urban schools” refer to those located in any city with more than 100 000 people.

Figure 10. Annual cost per secondary school student (estimated) by country and degree of urbanisation, EU27+UK (2011)



Note: Bubble areas represent the share of national population.
*1. Footnote by Turkey: The information with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
*2. Footnote by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
Source: OECD/EC-JRC (2021[93]), *Access and Cost of Education and Health Services: Preparing Regions for Demographic Change*, OECD Publishing Paris, https://dx.doi.org/10.1787/4ab69cf3-en, Figure 3.18.

A broad spectrum of strategies can be employed to address inefficiencies in school networks, which requires carefully managing trade-offs in cost and access

83. The response to school network inefficiencies and falling student numbers has conventionally been associated with consolidation, that is closing schools and transferring their students to proximate schools. However, the repertoire of strategies to rationalise school networks has been greatly expanded beyond the merger or closure of schools and many have come to see consolidation as a last resort given its strong impact on the lives of students and communities (OECD, 2018[62]).

84. Developing and maintaining school infrastructures that provide all students with adequate spaces to learn is a fundamental condition for an equitable and high-quality school system. A central aspect of this is to ensure the geographic coverage of school networks and the proximity of education services to students' homes as excessive distances and/or inadequate school transport arrangements can be detrimental to both attendance and students' outcomes. Accordingly, countries can consider a broad spectrum of strategies to rationalise the organisation of the school network, which includes re-thinking how educational services are defined and distributed across school sites, fostering co-operation and resource sharing between providers, creating school clusters and engaging in consolidation (OECD, 2018[62]).

85. Policy simulations by the OECD for the EU27+UK countries highlight the urgency of effective school network management and the challenges this involves to manage costs while ensuring access. For these countries, even after adjusting the school network to future demand by 2035, the costs per student in sparse rural areas can be expected to increase by around 3% on average, while distance to school is expected to increase everywhere outside cities, and more so in villages (OECD/EC-JRC, 2021[93]). Many school systems therefore face the challenge of reconciling incentives for a rational organisation of the school network with the recognition that high-quality instruction in small schools is more resource intensive and should be supported accordingly, particularly where consolidation is not an option (OECD, 2018[62]).

Quality, equity and well-being need to be guiding principles for school network reforms, which may differ by level of education and require community engagement and monitoring

86. Regardless of the strategy used, educational quality, equity and student well-being should be the guiding principle for any school network reform. While consolidation, for example, can provide students and teachers with access to better learning and professional development opportunities in some cases, it may result in prohibitively long travel distances in others. Making students' educational benefit central to network reforms thus requires countries to acknowledge the limits of consolidation and to ensure that access to schools at a reasonable distance remains a priority, particularly for younger children. At the same time, the more specialised curricula of secondary education are often impossible to provide at the scale of the average rural school. There may then be limits to the rationalisation of early childhood education and care and primary school networks while the potential for consolidation may be greater at the secondary levels (OECD, 2018[62]).

87. As with any major reform project, the systematic consultation and engagement of all major stakeholders should precede the reorganisation of school networks (OECD, 2018[62]). This can help to resolve conflicts before they arise, yield solutions that are suitable to the local community's needs and ensure that stakeholders are willing to effect change and possess the tools to implement a reform as planned (Viennet and Pont, 2017[94]). Authorities should contribute to this process by maintaining a high level of transparency, articulating a clear educational vision for the reforms and demonstrating that it will bring about tangible improvements to students (Burns and Köster, 2016[95]). Central guidance on when and how to conduct consultations can be an effective means to support local authorities and align expectations among all actors involved (OECD, 2018[62]).

88. For reforms to benefit students of all backgrounds and needs, it is also essential for authorities to identify their potential impact on equity and the well-being of specific student groups in advance, so as to take the necessary steps to address them. The continuous monitoring of equity developments should be integrated into planning and design from the outset. At the same time, representatives of vulnerable groups should be consulted and involved at key stages of the proposed reforms' design and implementation. While authorities should draw on international experiences with school network reforms, generating and sharing evaluation results at the sub-system level can also be effective in fostering system-wide learning and generating reliable insights into the effects of network adjustments on students (OECD, 2018[62]).

Sharing resources and engaging in co-operation can create economies of scale and enhance efficiencies

89. Co-operation and resource sharing between providers can, in many cases, allow smaller institutions to benefit from economies of scale and enhance efficiency while leaving the number, size and distribution of school facilities intact (Box 11). This may include jointly providing specialised services or curricula; sharing staff, facilities and back-end infrastructure; jointly purchasing materials or services; co-ordinating student transportation; and jointly offering professional development opportunities for teachers. Besides the savings generated through economies of scale, resource sharing and collaboration

can also support small schools in providing a broad curriculum and high-quality instruction (OECD, 2018[62]).

90. The success of such collaborative practices is subject to a number of conditions. Long distances between schools and a low level of trust between school leaders and staff – especially in contexts where schools are competing for students – can act as barriers to resource sharing, while clearly established goals and a focus on mutual benefits can form a basis for sustained collaboration (Muijs, 2015[96]). Authorities should encourage such practices and reduce barriers or disincentives for small schools to collaborate.

Box 11. Addressing inefficiencies in school networks: examples of co-operation and resource sharing in the Flemish Community of Belgium and Spain

In the **Flemish Community of Belgium**, the education ministry launched a policy to encourage school collaboration through the establishment of "school associations" (*scholengemeenschappen*) among secondary school in 1999 and, since 2003, primary schools. School associations are collaborative partnerships between schools in the same geographical area comprising between 6 and 12 schools on average. Particularly at the secondary level, a central goal was to improve the efficiency of schools' resource use and their offer through increased co-operation and co-ordination. Membership in a school association is voluntary. To incentivise collaboration in a system that is otherwise based on school choice and competition, the ministry provides additional staff and other resources whose use the association can collectively decide upon. In the most successful cases, school associations have also brought about greater effectiveness and efficiency through the use of shared management systems for staff recruitment and evaluation, easing their principals' managerial burden and allowing them to assume greater pedagogical leadership. Evaluations of secondary school associations also showed that many of them had developed common staffing policies that facilitate sharing staff across schools.

Spain provides another example for co-operation and resource sharing. Here, partnerships between rural schools (*Colegios Rurales Agrupados*, CRA), have served as a means to overcome the resource constraints faced by small schools since the late 1980s. Participating schools from multiple municipalities share itinerant teachers, instructional materials or extracurricular offers and organise regular co-ordination meetings among their teachers. In Catalonia, one of the country's Autonomous Communities, schools collaborate within Rural Education Zones (*Zona Escolar Rural*, ZER) around a common educational project and curriculum. Each zone is co-ordinated by a leadership team including one of the participating schools' principals, a chief of studies and a secretary, who dedicates 25 weekly hours to co-ordinating the ZER. Each ZER has a school council composed of representatives of the school management, teachers, administrative staff, parents, and the municipality. The schools of each ZER share at least three itinerant teachers for instruction in a foreign language, music and sports. Larger ZERs of seven or more schools hire a fourth itinerant teacher for special needs education.

Source: OECD (2018[62]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Publishing, Paris; https://dx.doi.org/10.1787/9789264306707-en; Ares Abalde, M. (2014[97]), "School Size Policies: A Literature Review", *OECD Education Working Papers*, No.106, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jxt472ddkjl-en.

Clustering schools under joint leadership can also help improve efficiency and quality, while maintaining a broad coverage of the school network

91. Co-operation between schools can take different forms with varying degrees of formality, duration and scope. If properly administered, the creation of school clusters under joint administration can also generate significant improvements in efficiency and educational quality without diminishing the geographic

coverage of the school network. School clusters should be considered as an effective means to counteract some of the disadvantages of small schools without requiring their closure. In light of their complexity, the successful introduction of a centralised leadership team and budget for multi-site schools requires however careful attention to building the capacity for pedagogical and administrative leadership, and possibly the development of distributed leadership structures. **Colombia** and **Portugal** provide two examples for large-scale school network reforms that brought a number of schools under joint leadership as school clusters (Box 12) (OECD, 2018[62]).

Box 12. Addressing inefficiencies in school networks: examples of school clustering in Colombia and Portugal

In **Colombia**, the education ministry has promoted the clustering of nearby schools in order to ensure all students have the opportunity to complete their education within a single school cluster, to promote smoother transitions between levels and reduce student dropout. Since 2002, schools, and especially public schools, have been organised as school clusters with a number of sites. The main site offers all levels of compulsory education. The remaining sites offer only some levels of education. A school cluster includes one main site and a number of satellite sites. Qualitative studies suggest that the reorganisation of schools has granted small rural school sites access to school resources and infrastructure such as a library, computer lab and sports facilities, and helped ease rural students' transition between levels, although its impact on grade repetition and student dropout have been mixed.

Portugal reformed its school network to address inefficiencies and drastic regional inequalities beginning from 2005. Within a decade, educational authorities closed 47% of the country's public schools, most of them primary schools in rural areas, while investing in new school infrastructure, transportation and extracurricular programmes. As part of the consolidation process, nearly all public schools (98%) were re-organised into clusters under a single administration. The clusters usually include kindergartens, primary and secondary schools. While they typically group between 4 and 7 schools, clusters range in size from as few as 2 to as many as 28 schools. The organisational leadership of clusters is assigned to a principal, supported by a number of deputy principals and school co-ordinators, and school governing councils. The governing councils include a General Board (comprised of elected representatives of teachers and parents, as well as representatives of the municipality and local partners), as well as a Pedagogical Council, which is comprised of department coordinators designated by the cluster Principle (e.g. the chairs of the Departments of pre-schooling, primary education, maths, languages, arts, sports, inclusive education). The introduction of clusters aimed to mitigate some of the negative consequences of school closures, allowed for a more rational use of resources and eased students' transitions across levels of compulsory education. The reorganisation of the school network is also considered to have reduced the isolation of rural teachers, improved educational opportunities for disadvantaged students in isolated areas, and fostered greater collaboration between the education ministry, municipalities, schools and other stakeholders.

Source: OECD (2018[62]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Publishing, Paris; https://dx.doi.org/10.1787/9789264306707-en.

Taking a "modular" approach to school networks constitutes a further option for the efficient organisation of school networks

92. Encouraging a "modular" approach to the school network and educational offer can expand the repertoire of flexible strategies to advance their efficient organisation. This entails shifting the focus away from schools as entire institutions towards the individual services they offer and re-evaluating whether

there is room for improving the way they are distributed across schools. Allowing for some flexibility in the combination of different grade levels within the same institutions can make it easier to adapt the school network in response to changing demand, particularly where pressures differ across levels of education. Promoting these modular approaches should also involve a reflection on which levels of education can be adequately offered at the local level and which ones should rather be provided at a larger scale (OECD, 2018[62]).

93. **Estonia**, for example, opted for a more decisive separation between general upper secondary education and basic education. The aim was to consolidate upper secondary provision while leaving the network of lower secondary schools largely intact. Combined with the construction of centralised upper secondary schools, the government thereby sought to initiate a reflection among municipalities on the levels of education that they can adequately provide locally (OECD, 2018[62]).

Consolidating school networks can complement other strategies of school network reform

94. Despite the great potential of resource sharing and school clustering, systems with a fragmented school network should complement these approaches with incentives for the consolidation of small schools. Consolidation can yield long-term cost savings by increasing the average size of schools and lowering per-student fixed costs. When considering the consolidation of school networks, countries however need to take great care to weigh its economic benefits against the substantial transition costs generated in the process, the public and private expenditure arising from longer commuting distances, and the social and economic impact on surrounding communities (e.g. in terms of family exodus or impact on real estate prices). Adequate transportation arrangements (which typically require significant investments) need to be in place when students are reallocated to distant schools. Consolidation measures can also further reduce the diversity of schools and parents' ability to choose between multiple providers or course offers (Gronberg et al., 2015[98]).

95. Evidence on the negative impact of school closures suggests that, following a school closure, socio-economically disadvantaged students are more negatively affected, and the long-term negative impact is minimised if an alternative publicly-funded schools is available at a reasonable distance (Humlum and Smith, 2015[99]). To attenuate any negative effects, the transition process needs to be as smooth as possible, ensuring that students are well-integrated in their new environments (OECD, 2018[62]).

96. Countries that decide to pursue consolidation can consider a combination of policy levers, including financial incentives and direct support in the school closure process. Incentives for consolidation, for example in the form of per-capita funding through a central formula, can constitute a powerful steering tool that discourages the maintenance of small schools due to their relatively high per-student fixed costs. These measures should be carefully targeted at the educational levels and sectors in which consolidation is expected to yield the greatest benefit, and include safeguards for schools that cannot or should not be subject to closure (OECD, 2018[62]).

97. Consolidation can also be encouraged through other policy levers, for example by increasing the size of catchment areas. Steering tools such as minimum school and class size rules can promote the provision of education at an efficient scale. However, given the heterogeneity in local contexts, it is important to bear in mind that there is no "one size fits all" solution to the size and distribution of schools. To take account of specific contexts, authorities can exempt schools from size requirements if they are identified as meriting protected status to avoid placing student in remote areas at a disadvantage. In general, countries need to be careful to provide clear incentives and use tools that reinforce, rather than undermine each other (Duncombe and Yinger, 2007[100]).

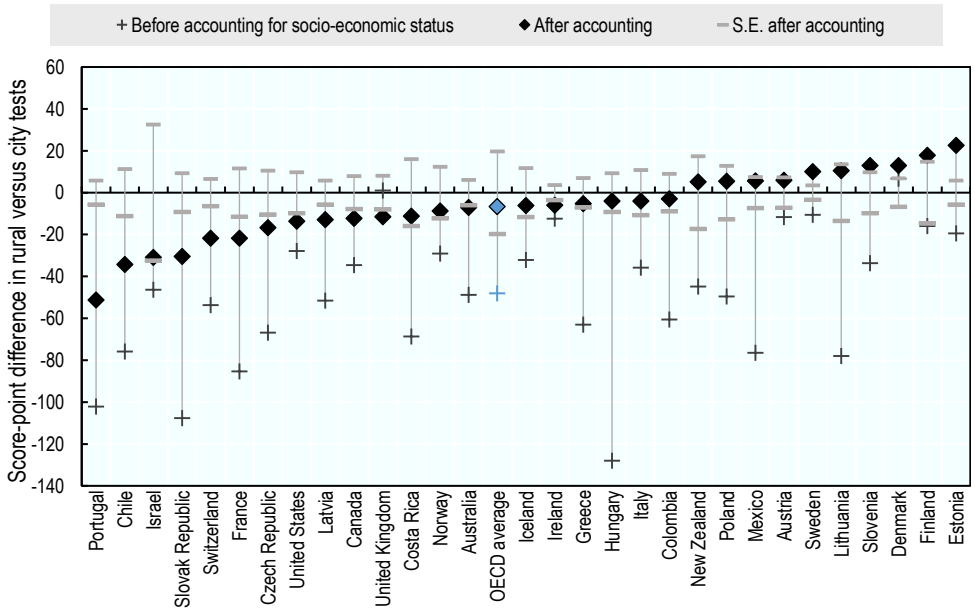
Yet, the scope for school network reform is often limited in remote areas…

98. The challenges associated with small school size are, in many rural areas, compounded by the schools' geographic isolation. Especially in remote areas, the scope for strategies to rationalise the school network through school co-operation, clusters or consolidation is limited due to distance. In order to ensure that students in these areas enjoy a high-quality education nevertheless, systems can employ a range of strategies to address the challenges of remote schools while leaving the structure of the school network intact (OECD, 2018[62]; Echazarra and Radinger, 2019[88]).

99. The OECD recent projections of cost and access for providing education in rural areas again highlight the need for complementary strategies to ensure equity in provision, especially for children in remote areas, as some schools will need to continue to operate under capacity to ensure access. According to the report's estimates, students in sparse rural areas are estimated to travel on average four to five times further compared to students in cities (OECD/EC-JRC, 2021[93]).

100. Such additional strategies can be essential to help reduce performance differences between rural and urban students. Students in rural areas of most OECD countries lag consistently behind their urban peers when it comes to educational achievement and attainment (Echazarra and Radinger, 2019[88]). In PISA 2018, on average, 15 year-olds in city schools across OECD countries scored 48 points higher in reading than their peers in rural schools – more than the equivalent of a year of schooling, although differences in the socio-economic composition of the student populations tend to explain the rural-urban achievement gap (OECD, 2021[89]). While no evidence is available, the COVID-19 pandemic and efforts to provide continuity in learning through distance education likely also impacted students in rural and urban areas differently.

Figure 11. The rural-city gap in reading performance of secondary school students (2018)



Note: Results based on linear regression models. S.E = Standard error.
Source: OECD (2021[89]), *Delivering Quality Education and Health Care to All: Preparing Regions for Demographic Change*, OECD Publishing, Paris, https://dx.doi.org/10.1787/83025c02-en, Figure 3.10.

… which requires complementary strategies to address inequities in learning opportunities for students in rural and remote areas

101. Ensuring that all schools provide high-quality teaching and learning regardless of their geographical location can be challenging. Innovative practices, such as staffing schools with teachers from the community through "Grow your own" models, building professional learning networks across rural schools, or using new technologies for distance learning, combined with efforts to build local capacity and resources, however provide promising avenues for closing rural-urban gaps in education (Sipple and Brent, 2015[101]; Echazarra and Radinger, 2019[88])

102. Since the provision of high-quality education in rural areas comes at a higher per-student cost, some countries provide dedicated funding to small, isolated schools. Targeted programmes have financed teacher learning and collaboration across remote schools and helped improve transport arrangements where distance constitutes a significant barrier for attendance. **Denmark**, for example, has increased its financial support for small island schools to secure the provision of a high-quality school offer in remote areas. **Chile** and **Colombia** have also dedicated resources to address challenges related to educational quality in rural areas (Box 13) (OECD, 2018[62]).

103. The transitions to secondary and post-secondary education can be a serious challenge for rural youth who often have lower expectations and face considerable financial, logistical and emotional barriers as they move to higher levels of education. For PISA 2018, on average across OECD countries, students in rural schools were half as likely to expect completing a university degree as those in city schools (OECD, 2021[89]). Countries should therefore pay sufficient attention to supports, such as scholarships, allowances, socio-emotional support, career guidance, and boarding and housing (OECD, 2018[62]).

Box 13. Examples for targeted support for rural schools: Chile and Colombia

In **Chile**, a Basic Rural Education Programme (*Programa de Mejoramiento de la Calidad y Equidad de la Educación para las Escuelas Básicas Rurales*) was created in 1992, providing technical assistance to rural schools. Originally, the programme provided pedagogical materials, teacher training and professional development, and curriculum adaptation to rural contexts. The programme also created local networks of rural schools (*microcentros rurales*) which continue to operate and provide teachers with a platform to meet regularly to collaborate in academic planning and evaluation.

Similarly in **Colombia**, a Rural Education Programme (*Programa de Educación Rural*, PER) implemented between 2002 and 2015 sought to raise access to a quality education in rural areas, to prevent dropout and to make education relevant for the needs of rural students. The programme followed a multidimensional approach that included the use of flexible pedagogical models and teaching materials designed for rural schools, teacher development, and capacity building of participating sub-national education authorities. Additional strategies focused on the improvement of basic competencies in language and mathematics in basic primary education and the teaching of English. An impact evaluation found positive and significant effects on efficiency (dropout, pass and failure rates) and quality (achievement in standardised language assessment) in the schools where it was implemented.

Source: OECD (2018[62]), *Responsive School Systems: Connecting Facilities, Sectors and Programmes for Student Success*, OECD Publishing, Paris; https://dx.doi.org/10.1787/9789264306707-en; Echazarra and Radinger (2019[88]), " Learning in rural schools: Insights from PISA, TALIS and the literature", OECD Education Working Papers No 196, https://dx.doi.org/10.1787/8b1a5cb9-en.

Questions for discussion

- What are the main challenges in your country related to:
  - …supporting high quality early childhood education and care?
  - …investing in teacher quality?
  - …reducing educational failure?
  - …marching the school offer and adapting school networks?

  What strategies are used to address those challenges?
- Are reforms being envisaged in your country to promote efficiency and equity in the use of school resources? What is motivating those reforms and what are they trying to achieve?
- How do the finance and education sectors interact and collaborate in promoting efficiency and equity in the use of school resources in your country? How could such collaboration be strengthened in these areas?

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