European Commission

Education and Training Monitor 2021

Education and Training

Published as a European Commission Staff Working Document, the Education and Training Monitor presents a yearly evaluation of education and training system across the EU. The report brings together the latest data, technical reports and studies, as well as examples of policy measures from different EU countries. Volume 1 offers a cross-national and thematic analysis. Volume 2 consists of 27 individual country reports.

This year's lead theme for the Education and Training Monitor is education and well-being. The 2021 Monitor also analyses the EU-level targets adopted by the Council resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030). The targets cover:

1. Low achievement in basic skills
2. Low achievement in digital skills
3. Early childhood education and care
4. Early leavers from education and training
5. Tertiary level attainment
6. VET graduates' work based learning
7. Participation of adults in learning

ec.europa.eu/education/monitor

EU-LEVEL TARGETS
Reference levels of European average performance in education and training

		Current	Target
1	**Low achievement in basic skills** The share of 15-year-olds failing to reach level 2 on the OECD's PISA scale for reading, mathematics and science.	Reading: 22.5 % Maths: 22.9 % Science: 22.3 %	Below 15% (by 2030)
2	**Low achievement in digital skills** The share of low-achieving eight-graders in computer and information literacy.	Available in 2024	Below 15% (by 2030)
3	**Early childhood education and care** The share of children aged 3 to the age of compulsory primary education who are participating in education and care.	92.8%	At least 96% (by 2030)
4	**Early leavers from education and training** The share of 18-24 year-olds having attained ISCED 2 at most and who are no longer in formal or non-formal education and training.	9.9%	Below 9% (by 2030)
5	**Tertiary level attainment** The share of 25-34 year-olds having successfully completed ISCED 5 to 8.	40.5%	At least 45% (by 2030)
6	**VET graduates' work based learning** The share of recent graduates from VET benefiting from exposure to work-based learning during their vocational education and training.	Available in April 2022	At least 60% (by 2025)
7	**Participation of adults in learning** The share of adults aged 25-64 should have participated in learning during the last 12 months.	Available in April 2023	At least 47% (by 2025)

Source: OECD (PISA 2018 for 1), IEA (ICILS for 2), Eurostat (UOE 2019 for 3; EU-LFS 2020 for 4 and 5; EU-LFS for 6 and 7)
Note: ISCED 0 = early childhood education; ISCED 1 = primary education; 2 = lower secondary education; 3 = upper secondary education; 4 = post-secondary non-tertiary education; 5 = short-cycle tertiary education; 6 = bachelor's or equivalent level; 7 = master's or equivalent level; 8 = doctoral or equivalent level.

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EUROPEAN COMMISSION

Education and Training Monitor 2021

Education and well-being

Directorate-General for Education, Youth, Sport and Culture

2021 EN

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Additional contextual data can be found at ec.europa.eu/education/monitor

Foreword

2021 has been a milestone year in education, as schools, training centres and universities across the EU have been progressively resuming operations following the most serious disruption of their activities for many decades. Teachers, students, schools and universities in Europe have proven to be resilient, have successfully mastered digital and pedagogical challenges and have shown their importance as key pillars of our society and economy. The crisis has also revealed the enormous potential for innovation that has been dormant in many education systems. The EU has responded with the adoption of unprecedented initiatives to address the challenges of the pandemic, not least by implementing numerous measures towards building the European Education Area.

The current edition of the Education and Training Monitor examines in depth the well-being of students and teachers. Well-being affects learning outcomes and students' ability to lead meaningful lives. Teachers need a good working environment which acknowledges their contribution to society and the economy and enables them to perform their duties. Evidence shows that even in countries where there are seemingly robust well-being policies in education, there is considerable room for improvements. This is even more pressing now as the pandemic has led to the deterioration of well-being among students.

As a response to the pandemic, the EU has put together the largest stimulus package ever financed in Europe – NextGenerationEU. Together, this and the EU's long-term budget for the period 2021-2027 make more than €2 trillion and will help to build a better and more modern Europe. The centrepiece of NextGenerationEU is the Recovery and Resilience Facility. EU countries have presented Recovery and Resilience plans to undertake investments and reforms in order to address the social and economic consequences of the pandemic. Education and skills feature strongly in these plans, demonstrating their importance not only to the recovery process, but also to setting a path to a more prosperous future embracing the green and digital transitions. This is echoed in the EU's long-term budget with the Erasmus+ programme and through important funding for education under the European Structural and Investment Funds.

This Monitor edition also looks at developing the European Education Area and how Member States stand in relation to the new targets agreed. It is encouraging to see that young people in Europe are better educated than ever before, children's participation in early childhood education and care has improved considerably and participation rates in higher education have increased massively across the EU. However, still too many leave the education system early and ill-equipped. Although over the past decade the share of early leavers in education and training has steadily decreased, the pandemic risks a reversal of this trend. Especially young people from disadvantaged backgrounds are at risk of not acquiring the qualifications and skills they need.

The pandemic has seriously disrupted Europe's education and training systems, but the implications of this disruption are not predetermined. Ultimately, it is our common response that will determine how we will emerge from the pandemic. To this end, the Commission will continue working closely with all stakeholders, including governments, experts and international organisations, and is determined to pursue policies that are based on evidence and supported by data and research. This year's Education and Training Monitor is yet another example in this quest.

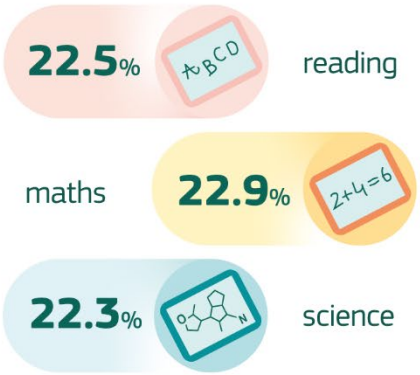
Mariya Gabriel

Commissioner for Innovation, Research, Culture, Education and Youth

European Commission

Infographics on EU-level targets for 2030 in education

15-years-olds' underachievement in



TARGET below 15%

Source: OECD (PISA, 2018)

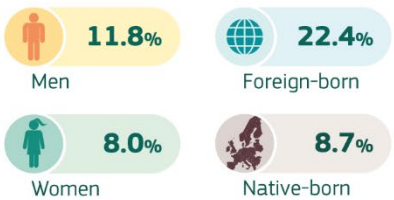
Early childhood education and care (age 3+)

Source: Eurostat (UOE, 2019)

Early leavers from education and training (age 18-24)

TARGET < 9%

NOW 9.9%

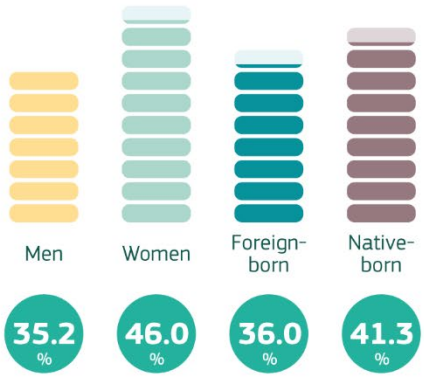


Source: Eurostat (EU-LFS, 2020)

Tertiary level attainment (age 25-34)

TARGET 45%

NOW 40.5%



Source: Eurostat (EU-LFS, 2020)

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Executive Summary

Well-being in the context of disruption

The COVID-19 pandemic has disrupted education and training in an unprecedented way, but this disruption has also presented opportunities for innovation. The pandemic has brought about major challenges to teaching and learning, but countries across Europe were able to rapidly mobilise resources. Teachers, school leaders, families, students and schools have showed determination, adaptability, resilience and creativity to ensure the continued provision of education. The crisis has accelerated change and has provided massive insights into how digital technology and innovative teaching can help strengthen our education and training systems. On the other hand, the crisis has exposed and, in some cases, magnified existing weaknesses and inefficiencies, and not least inequalities. As schools and universities have gradually re-opened and restarted their operations, their major task has been to remedy interruptions to learning and to address the negative impacts on students' well-being.

The debate about well-being in education predates the pandemic and well-being has attracted increasing attention of education policy makers in recent years. However, the pandemic has brought challenges to well-being to the fore. Well-being covers both mental and physical health and is closely connected to students' performance at school and in other aspects of their lives. Students' life satisfaction, the ability to develop decision-making skills and psychological coping mechanisms are crucial for lifelong learning and for individuals to lead meaningful lives. They lay the foundations for self-awareness, relationship building and forming resilience, enabling individuals to adjust and to overcome personal adversity, long-term life challenges and societal shocks.

While the disruption to learning resulting from the pandemic is difficult to measure at this stage, data available from the Netherlands indicates substantial learning loss, which might soon turn to the one of the biggest challenges for education policy. A survey carried out among primary and secondary school pupils shows that their learning progress dropped in all year groups. However, while the children of highly skilled parents showed no significant disruption to their progress, the children of low-skilled parents made only about 85% of the progress expected for their year group.

Most countries address well-being partially or implicitly in their education policies and practices. Competences related to mental health are generally incorporated in the curricula of specific subjects or as cross-cutting issues. The majority of Member States implement targeted programmes to tackle bullying and violence. A number of initiatives are focused on physical activity and healthy lifestyle, discrimination and racism, mental health, school climate and equal opportunities. Most of these, however, remain fragmented and few evaluations are available on their impact.

A few Member States have taken steps towards a comprehensive approach on well-being in education. Approaches include concepts and policy objectives linked to well-being, monitoring mechanisms collecting data on the well-being of students and concrete requirements and guidance on the implementation of well-being policies at the institutional level. For instance, the well-being of pupils is regularly monitored through surveys in Denmark, Finland and Estonia. In Ireland, every school is required by 2023 to use a self-evaluation tool to promote well-being and they are supported in this process by a Well-being Practice Framework and online resources. In Spain, an observatory of school life disseminates good practices, monitors and provides guidance on how to improve school climate.

Very timely, the dedicated working group on well-being launched under the EEA framework will help shed light on new trends following the pandemic and support Member States in learning from each other in a policy area, which is relatively new for most countries.

Surveys show that the pandemic has led to feelings of isolation, anxiety and depression among students of all ages. Data from nine EU Member States indicates that around a quarter of pupils felt "helpless" during remote classes and when completing homework. Experiences during the

pandemic confirmed that education fulfils an essential societal role. Well-functioning, inclusive and supportive education systems are important for families and are key to support the well-being, including the mental health, of pupils and teachers.

Already before the pandemic, nearly half of all students in the EU reported feelings of sadness, one third reported feelings of fear and almost 40% reported feeling miserable. Phenomena, such as bullying and a low sense of belonging in school, are strongly linked to academic performance. Students with a stronger sense of belonging in school are less often truant and show stronger academic performance. In many EU Member States, students who skipped a day of school in within the past two weeks had a lower score on the sense of belonging index. Positive relationships between teachers and pupils emphasising respect and empowering students can foster performance improvements, especially among high-risk youth groups. In as many as 19 EU Member States, over 50% of students report bullying at least a few times a year.

Investment in education

In recent years, public expenditure on education in EU Member States was fairly steady. However, variations between countries are considerable. In 2019, on average, the EU dedicated 4.7% of its GDP to education, accounting for around 10% of total public expenditure. Education spending varied from over 6% in Estonia, Belgium, Denmark and Sweden to 3.1% of GDP in Ireland. The largest share of public investment is directed to secondary education (38.7%), followed by pre-primary and primary education combined (33.4%) and tertiary education (16.2%). Public expenditure in education is predominantly allocated to teaching staff (64%), followed by intermediate consumption (14%), which consists of the purchase of goods and services needed to provide education services. The third-highest allocation was gross capital formation (7%), which comprises capital investments, for example on buildings, followed by social benefits (6%) and other current transfers (6%).

Several Member States increased investment linked to the move to online and blended learning during the pandemic. Investments included digitalisation projects, as well as hiring additional teachers or the additional training of teachers, funding for counselling and assistance for students and bonuses for teachers. Some countries also compensate schools for the additional costs of preventative measures, for example buying protective equipment or additional disinfection products.

The Recovery and Resilience Facility will, together with the European Structural and Investment Funds, increase the EU funds directed to education and training in an unprecedented way. The Recovery and Resilience Facility (RRF) is the centrepiece of NextGenerationEU, the European Union's instrument to support recovery from the coronavirus crisis. It makes up to €675 bn available – €312.5 bn in grants and €360 bn in loans. The RRF supports sustainable and growth-enhancing reforms and investments in Member States to help recovery and build institutional capacity, essential to reduce inequalities and divergences in the Union.

Investments and reforms in education and training play an important role in national RRPs. To benefit from support under the Facility, Member States had to submit their Recovery and Resilience Plans (RRP), including a comprehensive set of reforms and investments to be implemented by 2026. While the adoption process is still ongoing, according to provisional calculations, education and skill-related reforms and investments are expected to make up about 13 % of total RRF expenditure. Investment and reforms cover all education levels and sectors. They aim to modernise education and have the potential to make a long-lasting impact. For instance, the RRF will support the move to a one-shift system in Croatia, the consolidation of the school network in Lithuania and a broad reform of school education in Slovakia. In almost all countries, it is expected to give a major boost to the digital transformation of education and enhance the digital skills and competences of the workforce – a prerequisite to boost growth and the competitiveness of the economy. Measures to boost digital education include the adaptation of the school curricula, developing digital resources and content, teacher training on digital education and the modernisation of the training offering in VET institutions, among others. For instance, in Belgium, the Flemish Community has included in its plan the ambition to set up a knowledge and support

centre for digital school education. Germany aims to support the digitalisation of education by investing in digital devices for teachers, learning materials and digital skills, as well as a single digital education platform.

EU-level targets for European cooperation in education and training towards a European Education Area and beyond

During the last decade, considerable steps have been taken to improve the participation of children in early childhood education and care (ECEC) throughout the EU. In the past 5 years, most countries have seen the participation of children between the age of 3 years and the mandatory schooling age in ECEC increase, with Ireland, Croatia, Cyprus, Luxembourg and Poland recording the fastest improvements. On average in the EU, ECEC participation (3+) stood at 92.8% in 2019. This is an increase of 1 percentage point compared to the preceding five years. In 2019, five Member States (Belgium, Denmark, Ireland, Spain and France) reached the target level and Sweden came very close to reaching 96% participation.

Improving access to quality ECEC has been high on the agenda in most Member States during recent years. The Recovery and Resilience Facility may provide further impetus to investment in ECEC across the EU, with about half of Member States making use of it to expand ECEC capacities. Some Member States have set ambitious targets to increase participation under the RRF. For example, Croatia aims to raise the participation rate of the 3+ age group from 76.3% to 90% by 2026. Czechia plans to increase the number of childcare facilities by 40% by the end of 2025. 90 000 places will be created in Germany and 60 000 in Spain (for children aged 0-2).

Investments are also accompanied by reforms in a number of countries. For instance, the compulsory pre-school age is being lowered in Bulgaria and Cyprus (to four years), Belgium and Slovakia (to five years). Croatia and Slovakia are reviewing the financing model of ECEC. Portugal is reducing participation fees. Greece plans to improve early diagnosis and support for children with disabilities and special needs. Slovakia aims to review the recruitment system and support the professionalisation of ECEC staff. A legal entitlement to ECEC will be introduced in Croatia and Slovakia. Romania envisages the further development of an integrated ECEC framework and a large-scale teacher training programme. Denmark is working towards improving quality by introducing minimum standards and increasing staffing. Estonia is defining learning outcomes and learning support needs.

The share of early leavers from education and training decreased steadily over the past decade, but the pandemic risks reversing this positive trend. In 2020, the rate stood at 9.9% on average across the EU – which while below the old target of less than 10%, is now 0.9 percentage points above the new and more ambitious target of below 9%. However, progress of close to 4 percentage points over the past 10 years masks pronounced differences between and within countries. Therefore, sustained efforts are required. At the EU level, the average share of early leavers from education and training is 3.8 percentage points higher among young men (11.8%) than it is among young women (8.0%). There are striking disadvantages for foreign-born young people and regional discrepancies are wide in many Member States. There are also considerable differences between countries, with more than 15% of the young population leaving school early in Spain and Romania. On the other end of the spectrum, in 18 Member States the share of early leavers from education and training is less than 9%, with Croatia having the smallest proportion (2.2%).

Some Member States renewed their efforts to prevent early school leaving in the context of the COVID-19 pandemic. For example, in France compulsory education and training was extended from 16 to 18 years and supported by different measures to mitigate the negative implications of school closures. In Ireland, further support was allocated to schools catering for students experiencing the highest levels of educational disadvantage to reduce class size and to extend the school completion programme to more schools.

The attainment rates in tertiary education have been increasing steadily over the past decade, but there is still considerable variation between countries and sub-groups within countries. In 2020, the tertiary educational attainment rate stood at 40.5% in the EU, with eleven countries already reaching the target set for 2030. The difference between countries is pronounced, spanning from 24.9% in Romania to 60.6% in Luxembourg. The average share of 25–34-year-olds with tertiary educational attainment is 10.8 percentage points higher among women (46%) than it is among men (35.2%). Moreover, there is a clear urban-rural divide, with the average rate in cities (50.9%) being substantially higher than it is in rural areas (28.9%).

To increase tertiary educational attainment, several countries aim to enhance the access of disadvantaged students to higher education. For example, in Romania some dedicated places are reserved for Roma and 40% of newly created or modernised places in student accommodation will be allocated to disadvantaged students with support from the RRF. Portugal is planning to create an additional 15 000 places in student accommodation by 2025 with support from the RRF. In France, 30 000 new places in study programmes will be created and 100 000 students could benefit from state-guaranteed student loans. Slovakia is launching a new scholarship programme for students, in particular for those from disadvantaged backgrounds.

More than half of the countries will use the RRF to support transformation in higher education. Actions will include the modernisation of study programmes, expanding study places, launching new study courses, among which micro-credentials, the review of the funding model, the development of quality assurance and governance mechanisms, developing graduate tracking mechanisms and supporting the internationalisation of higher education. For example, with support from the RRF Latvia is implementing a comprehensive higher education reform, which envisages complex structural changes across three pillars: governance, funding, and human resources. Portugal will foster careers in science, technology, engineering, the arts and mathematics (STEAM), while Finland will support a programme to attract and retain national and foreign talent.

The basic skills proficiency of the younger generation has not improved during the past decade. This is not only a worrying social issue, but also has a braking effect on the EU's future economic competitiveness and resilience. Unfortunately, the EU has not met its target to reduce underachievement in basic skills to less than 15% and little progress has been made over the past 10 years. The underachievement rate stood at 22.5% in reading, 22.9% in mathematics and 22.3% in science, the last time the PISA test was conducted (2018). Despite progress in some countries throughout the period 2009-2018, performance in science and reading deteriorated at the EU level, while it remained stable in mathematics. PISA results suggest that countries tend to obtain similar results across the three domains. Countries such as Estonia, Finland, Ireland and Poland have low underachievement rates in all three domains. By contrast, in Bulgaria, Romania, Cyprus and Malta, more than one in five pupils underachieve across all three domains, significantly reducing their future opportunities in professional and private life.

Some Member States launched targeted programmes to compensate for the interruption to learning, but considerable further efforts are likely to be needed in most countries. In the Netherlands, €282 m was made available in 2020 for schools to assist students to reduce the negative impact on their education due to the pandemic. In Ireland, a COVID Learning and Support Scheme (CLASS) has been put in place for the 2021-2022 school year to help schools mitigate the adverse impacts of the pandemic on the interruption of students' learning and negative effects on their well-being. In Slovakia, additional tutoring was provided to pupils in need and further measures are planned under the Recovery and Resilience Facility (RRF). In Romania, REACT-EU will support additional remedial measures.

Despite compensatory measures taken by Member States, inequalities are likely to increase following the pandemic. It is, therefore, important that Member States reinforce their efforts to promote inclusion and to enhance access to quality education for all. France continues its reform aiming to improve the basic skills of disadvantaged pupils by reducing class size. In Malta, between 2021 and 2024 about 1 000 underachieving pupils aged 6 will join the 20 week Reading Recovery Programme. Ireland is piloting a School Inclusion Model to fully comply with the UN Convention on the Rights of Persons with Disabilities regarding participation in mainstream education. In Ireland, the 2021 supplementary programme provided for additional hours of in-home support for children

with special educational needs and to those at risk of educational disadvantage during periods of school closures and reopenings. At tertiary level, socioeconomic inequalities were addressed by: doubling the Student Assistance Fund, providing funding to support Traveller students' access to universities, a laptop loan scheme and funding for HEI (Higher Education Institution) access services.

Digital skills are becoming crucial for all citizens to participate in an increasingly digital world. Over the past two years, the COVID-19 crisis has further emphasised the importance of both basic and advanced digital skills for sustaining our economies and societies. Digital skills became a prerequisite for participation in learning, working and socialising, thereby accelerating the digital transformation. With only partial data available on the digital skills of pupils and based on the International Computer and Information Literacy Study (ICILS), the share of underachievement in digital skills only approached the EU level target value in Denmark in 2018 (16.2%), while it reached a high of 50.6% in Luxembourg (in 2018). The data from 2018 suggest that a significant effort is necessary to reduce the share of underachievement in digital skills across all EU Member States for the EU-level target to be achieved by 2030.

The Recovery and Resilience Facility will be a major source of funding for digital education, making up approximately one third of RRF spending on education and skills. Most countries will invest in the digital infrastructure and connectivity of schools, often with a focus on disadvantaged and rural schools. In Italy, 100 000 classrooms will be transformed into flexible and connected learning environments. Slovakia aims to increase the share of schools with highly equipped and connected classrooms from 30% to at least 90%. A number of Member States will equip learners and teachers with digital devices to reduce the digital divide. For instance, in Austria 80 000 pupils per year will receive digital equipment funded under the RRF. A broad range of measures will aim to improve the digital competences of pupils through the adaptation of the school curricula, developing digital resources and content, teacher training, as well as modernising the training offer in VET institutions. In Belgium, the Flemish Community is setting up a knowledge and support centre for digital school education. In higher education, significant investments are planned for the development of digital infrastructure and digital teaching resources, the adaptation of study courses and digital training for academic staff. Funding will also be devoted to the development of digital skills of the adult population in the majority of Member States. For example, in Latvia, all employees that were placed on short-time work schemes between January and March 2021 may have access to e-learning courses to improve digital skills, using vouchers worth up to €500.

The COVID-19 pandemic has interrupted already-slow progress in adult learning across the EU. Member States have agreed on an EU-level target of at least 47% adult learning by 2025 and 60% by 2030. Both targets apply the improved measurement of adult learning to be applied in 2022. Many Member States are taking action to increase the share of adults participating in learning and most have envisaged to use RRF for upskilling and reskilling measures. In particular, several countries are planning to introduce or develop measures to provide direct financial support to individuals for learning purposes to be complemented by non-financial measures enabling adults to engage in learning. For instance, in the Netherlands, a public individual learning and development account (*STAP – Stimulans Arbeidsmarktpositie*), will enter into force as of 1 January 2022. Anyone with a link to the Dutch labour market will be able to receive a subsidy up to €1 000 to cover their training costs for personal development and employability.

Part 1

Education and well-being

1 Education and well-being

1.1 COVID-19: an exceptional stress test for educational systems

COVID-19 has disrupted education and training in an unprecedented way. The pandemic and the subsequent move to remote and later blended learning have been a watershed event for Member States' education systems. Some systems and some schools were able to mitigate the impact on students' exams results better than others, pointing to the importance of teachers and schools in the aftermath of the pandemic.

The COVID-19 pandemic has also moved the well-being of children and young people up the policy agenda, with increasing media attention and growing political interest. Students' life satisfaction, sense of well-being, and ability to develop decision-making skills and psychological coping mechanisms are crucial for lifelong learning and for leading a meaningful life. These factors lay the foundations for self-awareness, relationship building and building resilience, enabling all of us to adjust and to overcome personal adversity, long-term life challenges and societal shocks and disasters[1].

Students' well-being can be defined as a state of overall mental and physical health, strength, resilience and fitness that allows them to function well at school and in their personal lives. International research[2] shows that the school environment in general, and educational attainment in particular, are fundamental determinants of good or poor mental health in children and adolescents[2]. The World Health Organization defines good mental health as a state of well-being, the realisation of one's own abilities and the ability to cope with the normal stresses of life[3]. A sense of well-being includes having a positive sense of identity and an ability to manage thoughts and emotions, to build social relationships, and to acquire an education that allows active citizenship as an adult.

The concept of well-being can be analysed in multiple ways. While the literature shares a rather general starting point[4], i.e. that well-being is about quality of life and is multidimensional, the degree of consensus decreases as the definition attempts to become more precise and operational. Among the many existing concepts, the OECD has developed a specific framework to analyse student well-being[5]. This has also been adopted in the OECD Programme for International Student Assessment (PISA) 2018[6]. It includes five dimensions: cognitive, psychological, physical, social and material.

The OECD conceptual framework will be broadly followed in the analysis, mostly focusing on the psychological, social and physical dimensions. When relevant, material indicators will be taken into account.

The actual measurement of well-being is a challenge[7], given that indicators are usually self-reported and collected through surveys. The comparability of cross-country data requires not only

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1 Agasisti, T., et al. (2018). Academic resilience: What schools and countries do to help disadvantaged students succeed in PISA, OECD Education Working Papers, No. 167.

2 Cefai, C., Simões, C. and Caravita, S. (2021). A systemic, whole-school approach to mental health and well-being in schools in the EU. A NESET report for the European Commission.

3 World Health Organization (2004). Promoting mental health: concepts, emerging evidence, practice (Summary Report).

4 Statham, J. and Chase, E. (2010). Childhood Wellbeing: A Brief Overview, Childhood Wellbeing Centre Research Centre Briefing Paper N. 1.

5 Borgonovi, F. and Pál, J (2016). A framework for the analysis of student well-being in the PISA 2015 study: Being 15 in 2015, OECD Education Working Papers, No. 140.

6 OECD (2019). PISA 2018 Results (Volume III): What School Life Means for Students' Lives.

7 Selwyn, J. and Wood, M. (2015). Measuring Well-Being: A Literature Review. University of Bristol.

international surveys asking the same question in several countries, but also selecting the most "unbiased" indicators, i.e. those that are more independent from country-specific cultural contexts[8].

The analysis that follows distinguishes between the "pre-COVID-19" and the "during-COVID-19" periods. For the former, the key sources of well-being indicators for primary and secondary school that are used are the Trends in International Mathematics and Science Study (TIMSS)[9] 2019 and the PISA 2018 surveys, which gather data on educational aspirations, absenteeism and learning outcomes in mathematics. More subjective data from the PISA survey are also analysed, notably on bullying and feelings of well-being. Teacher's views are taken into account in a third subsection. For the during-COVID-19 period, the analysis looks at the impact of the pandemic on well-being indicators for primary, secondary and tertiary students, based on a few recent international surveys that cover a number of EU countries. Specific attention is paid to students in Vocational Education and Training (VET) in a final subsection of the analysis. Unfortunately, due to the lack of cross-country comparable data on learning outcomes after the spread of the pandemic[10], the relationship between well-being and learning outcome indicators at international level cannot yet be investigated for the duration of the COVID-19 period.

Box 1: Well-being as part of education policies in Estonia

In Estonia's education strategy for 2021-2035, a well-being-focused learning environment is defined as "a combination of mental, social and physical conditions for learning that support the learner's self-efficacy and self-esteem, the development of life skills and social competences, and mental and physical health in general". Since 2018, the well-being of students and teachers is regularly monitored through a satisfaction survey targeted at students, teachers and parents. Each school receives feedback on areas for improvement. This year's well-being survey focused on distance learning and self-management.

1.2 What we know about well-being before COVID-19: an analysis of data from PISA 2018 and TIMSS 2019

A sense of belonging is a fundamental human need. It includes a desire for social approval and to be accepted, respected and liked by others. A sense of belonging helps people make sense of their lives and contributes to their overall well-being[11].

This also applies in a school context[12]. Since students spend a considerable part of their lives in school, interactions with their peers and teachers affect their overall well-being as well as school

8 Life satisfaction can suffer from cultural biases, which makes it unsuitable for international comparisons, Cf. OECD (2019). PISA 2018 Results (Volume III): What School Life Means for Students' Lives, p. 36.

9 TIMSS is carried out every four years by the International Association for the Evaluation of Educational Achievement (IEA). It is an international assessment of student achievement in mathematics and science at fourth and eighth grades.

10 There are country-specific studies estimating the negative impact of the spring 2020 COVID-19-induced lockdowns on student learning outcomes.

Cf. Engzell, P., Frey, A. and Verhagen, M.D. (2020). Learning Loss Due to School Closures During the COVID-19 Pandemic. SocArXiv (on the Netherlands);

Maldonado, J. and De Witte, K. (2020). The Effect of School Closures on Standardised Student Test Outcomes. KU Leuven Faculty of Economics and Business Discussion Paper Series 20.17 (on Belgium-Flemish Community);

French Ministry of National Education, Youth and Sports (2021). Évaluations repères 2020 de début de CP et de CE1: baisse des performances par rapport à 2019, notamment en français en CE1, et hausse des écarts selon les secteurs de scolarisation, an information note N. 21.02 (on France).

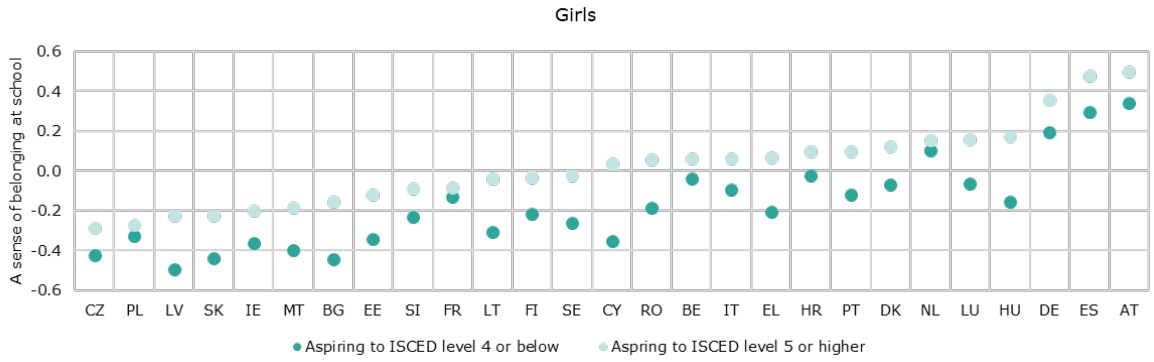
11 Greenaway, K. H., Haslam, S. A., Cruwys T, Branscombe, N. R., Ysseldyk, R. and Heldreth C. (2015). From "we" to "me": Group identification enhances perceived personal control with consequences for health and well-being. In: Journal of Personality and Social Psychology 109 (1): 53.

motivation, and performance at school. In this section, a student's sense of belonging at school as an indicator of their well-being is analysed in relation to three types of academic outcomes, namely educational aspirations, absenteeism and performance on standardised tests[13].This analysis is based on data from two large cross-national surveys: PISA[14] and TIMSS[15]. Both surveys used a similar approach, calculating a single scale of well-being on the basis of responses to several statements (for details, cf. Box 3 and Box 4). These surveys were last carried out in 2018 and 2019, respectively.

1.2.1 Sense of belonging at school and educational aspirations

PISA data (Figure 1) shows that 15-year-old boys and girls in the EU with a stronger sense of belonging at school have higher educational aspirations, as measured by the highest level of education they expect to complete: ISCED level 5[16] or above and ISCED level 4 or below. Magnitudes of difference between the variables vary considerably across EU countries. For example, among girls, the difference in the sense of belonging is relatively large in Bulgaria, Hungary, Romania and Sweden, and relatively small in France, Poland and the Netherlands. Among boys, relatively large differences are observed in Portugal, Hungary, Luxembourg and Greece, and rather small differences in Sweden, France and the Netherlands.

Figure 1: Sense of belonging at school by educational aspirations and sex – "What level of education do you expect to complete?" (PISA)



12 Osterman, K. F. (2000). Students' Need for Belonging in the School Community. In: Review of Educational Research 70 (3): 323–67.

13 Causal interpretation of our results cannot be guaranteed, but they are largely consistent with findings from other studies which established a causal effect of sense of belonging at school on education-related outcomes. E.g.

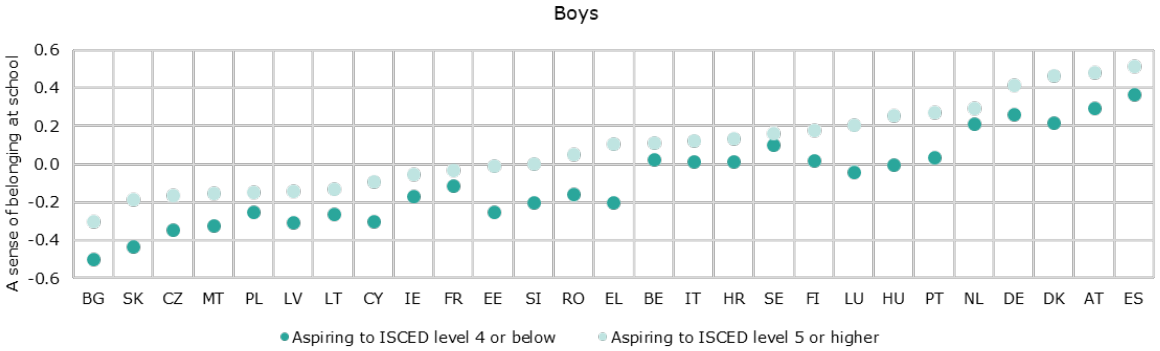
Walton, G. M., and Cohen, G. L. (2011). A Brief Social-Belonging Intervention Improves Academic and Health Outcomes of Minority Students. In: Science 331 (6023): 1447–51;

Walton, G. M., Cohen, G. L., Cwir, D, and Spencer S. J. (2012). Mere Belonging: The Power of Social Connections. In: Journal of Personality and Social Psychology 102 (3): 513.

14 PISA is targeted at 15-year-olds and aims at assessing their achievement in three main areas: reading, mathematics, and science. In 2018, PISA was carried out in nearly 80 countries and economies, including all member states of EU.

15 TIMSS is concerned with mathematics and science achievements of students in grades 4 and 8. In 2019, TIMSS was administered to grade 4 students in 64 countries, including 22 members of EU, and to grade 8 students in 46 countries, including 10 members of EU.

16 ISCED is the International Standard Classification of Education. Cf. Eurostat's "Statistics Explained" for details.



Source: DG JRC calculations based on OECD PISA 2018 data.

Note: The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their schoolmates. It is scaled so as to have a mean of 0 and standard deviation of 1 across equally weighted OECD countries. Negative values indicate a sense of belonging at school lower than the OECD average. Positive values indicate a sense of belonging at school above the OECD average.

Box 2: The sense of school belonging in PISA 2018

In PISA 2018, responses to the following questions were used to build a composite index of the sense of school belonging:

1. I feel like an outsider (or left out of things) at school
2. I make friends easily at school
3. I feel like I belong at school
4. I feel awkward and out of place in my school
5. Other students seem to like me
6. I feel lonely at school

It is assumed that all these questions actually represent a single underlying construct — the sense of belonging at school — which influences students' responses. Specifically, the responses were coded on a 4-point scale ranging from "Strongly agree" to "Strongly disagree". Thus, students[17] with a strong sense of belonging are expected to generally agree with the positively worded questions (i.e., questions 2, 3, and 5) and disagree with the negatively worded ones (i.e., questions 1, 4, and 6). For students with a weaker sense of belonging, a reverse pattern of responses is predicted. That is, such students are expected to disagree with the positively worded questions and agree with the negatively worded ones. The responses are then aggregated and scaled to have a mean of 0 and a standard deviation of 1 across equally weighted OECD countries. Thus, a typical student in an OECD country has a score of 0 on the scale of school belonging. Also, roughly two thirds of all OECD students are expected to have belonging scores between -1 and 1. Similarly, about 95% of all students in OECD countries are expected to have belonging scores ranging from -2 to 2.

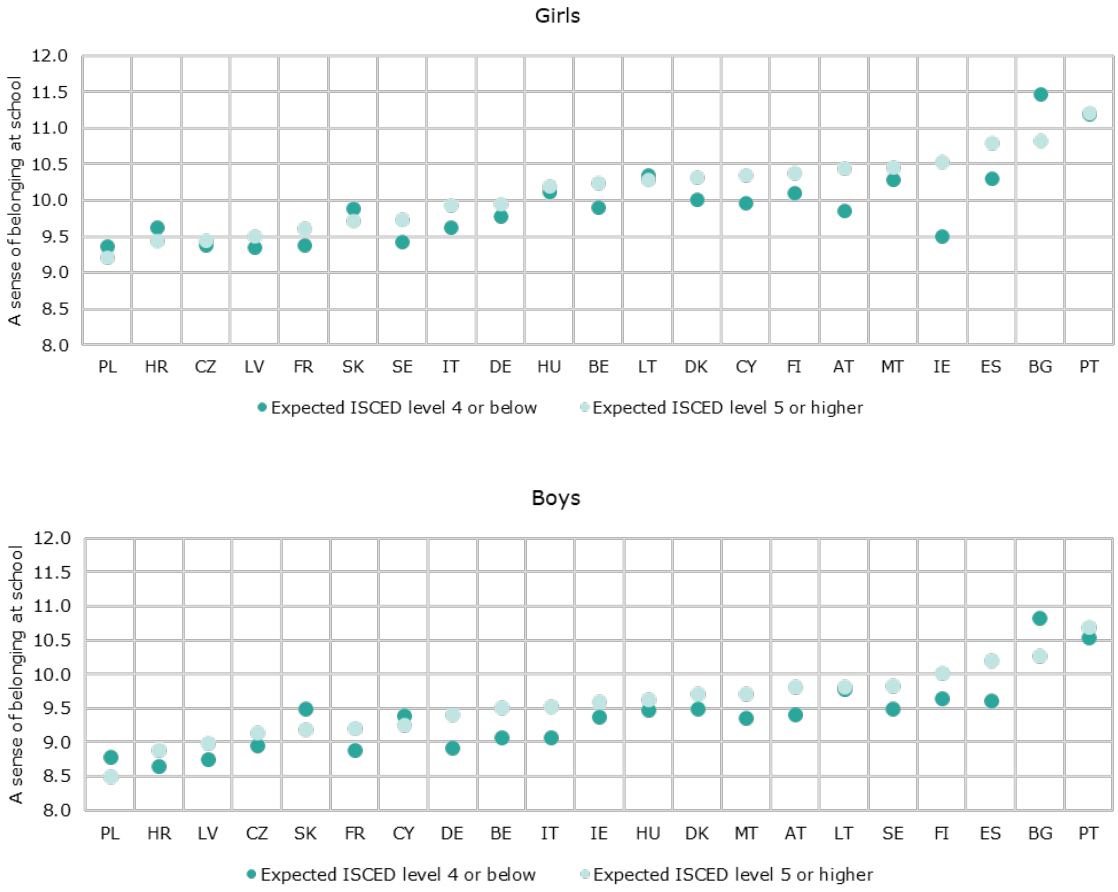
In other words, a negative value on the scale of sense of belonging at school in a given country doesn't mean that students in this country have a poor sense of belonging at school. Instead, it means that the average sense of school belonging at school is below the OECD average. For instance, the average sense of belonging at school in Czechia is equal to 0.28. It means that an average student in Czechia has a somewhat weaker sense of belonging at school than their

[17] Note that by "students" we mean here "15-year-olds" because this is the target population of PISA.

average OECD peer. Similarly, the average value of the index of the sense of school belonging in Germany is 0.28. This means than an average German student has a stronger sense of school belonging than their average OECD peer. At the same time, the results suggests that the average students in Czechia and Germany are among two-thirds of their OECD peers when it comes to the sense of belonging at school.

TIMSS 2019 (Figure 2) illustrates the aspirations of grade four students, as answered by their parents on their behalf. Among this younger sample, students with higher educational aspirations tend to have, on average, a stronger sense of belonging at school. However, among girls in Poland, Croatia, Slovakia and Bulgaria, this pattern is reversed. In Lithuania, Czechia and Hungary, the difference in the sense of belonging by level of aspiration is virtually non-existent. Furthermore, boys in Poland, Slovakia, Cyprus and Bulgaria who are not expected to complete tertiary education have a stronger sense of belonging at school.

Figure 2: Sense of belonging at school by parental educational expectations towards children by sex of the children – "What level of education do you expect your child to complete?" (TIMSS)



Source: DG JRC calculations based on IEA TIMSS 2019 data.

Note: Data not available for: EE, EL, LU, NL, RO and SI.

The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their teachers. It is assumes only positive values. Values below 7.2 indicate a weak sense of belonging at school. Values equal to or higher than 9.6 indicate a strong sense of belonging at school. Values between 7.2 and 9.6 indicate a moderate sense of belonging at school.

Box 3: Ireland – integration of well-being and mental health measures of education staff and students at system-level

Ireland's well-being Policy Statement and Framework for Practice (2018-2023)[18] sets out the definition of well-being and establishes an overarching structure encompassing the existing, ongoing and developing work on well-being in education. In recent years, Ireland has focused strongly on the well-being of its students and educational personnel, particularly with the onset of COVID-19. At the ECEC (early childhood education and care) level, *Aistear*, the early childhood curriculum framework, strongly emphasises the relationship between education and care. It promotes a "nurturing pedagogy" that is sensitive to children's feelings and dispositions such as motivation, confidence, perseverance, and how they see themselves as learners. In primary education, the Social Personal and Health Education (SPHE) programme supports the development of strong and positive mental health and well-being among children. Well-being is one of the eight key principles of the junior cycle given that a student's school experience contributes directly to their physical, mental, emotional, and social well-being and resilience. At upper secondary level, the SPHE programme aims to help learners make choices to ensure their health and well-being now and in the future. The Professional Development Service for Teachers (PDST) provides resources for individual primary and secondary teachers and schools. In relation to COVID-19, a range of advice and resources were developed and made available to parents, students and school staff. They include a dedicated well-being advice and resources website[19] and well-being guidance and advice for parents from the National Educational Psychological Service of the Department of Education. An example of resources provided is a booklet on "Supporting Children to Cope with Loss and Grief". Health Service Executive (HSE) online resources were also available including "Minding Your Well-being" programme[20] and a booklet on "Understanding Self-Harm"[21] with advice to parents, carers and teachers who are concerned about a young person self-harming. In addition, the National Council for Special Education has developed resources for parents and children with special educational needs, in particular to support well-being and learning during school building closures[22] due to COVID-19. In higher education, the National Student Mental Health and Suicide Prevention Framework (2020) provides a framework to address the issues of student mental health and suicide prevention in a structured and planned way. A "Connecting for Life" group has been established to support implementation across Irish higher education institutions. The Framework for Consent in Higher Education Institutions: Safe, Respectful, Supportive and Positive – Ending Sexual Violence and Harassment in Irish Higher Education Institutions (2019) promotes an institutional campus culture which is safe, respectful and supportive. Institutions have developed individual action plans, aligned with the framework, aimed at tackling sexual violence and harassment in higher education and a number of initiatives are in place to support this.

Students from advantaged socio-economic backgrounds and from families with higher educational attainment are likely to have a stronger sense of belonging at school, while parental educational attainment also has an impact on educational aspirations of students[23]. The link between

18 Government of Ireland/Department of Education (2019). Wellbeing Policy Statement and Framework for Practice 2018-2023.

19 Government of Ireland / Department of Education (2021). Wellbeing advice and resources during COVID-19.

20 Government of Ireland / Health Service Executive (2021). Minding Your Wellbeing.

21 Government of Ireland / Health Service Executive (2021). Self-Harm and Young People.

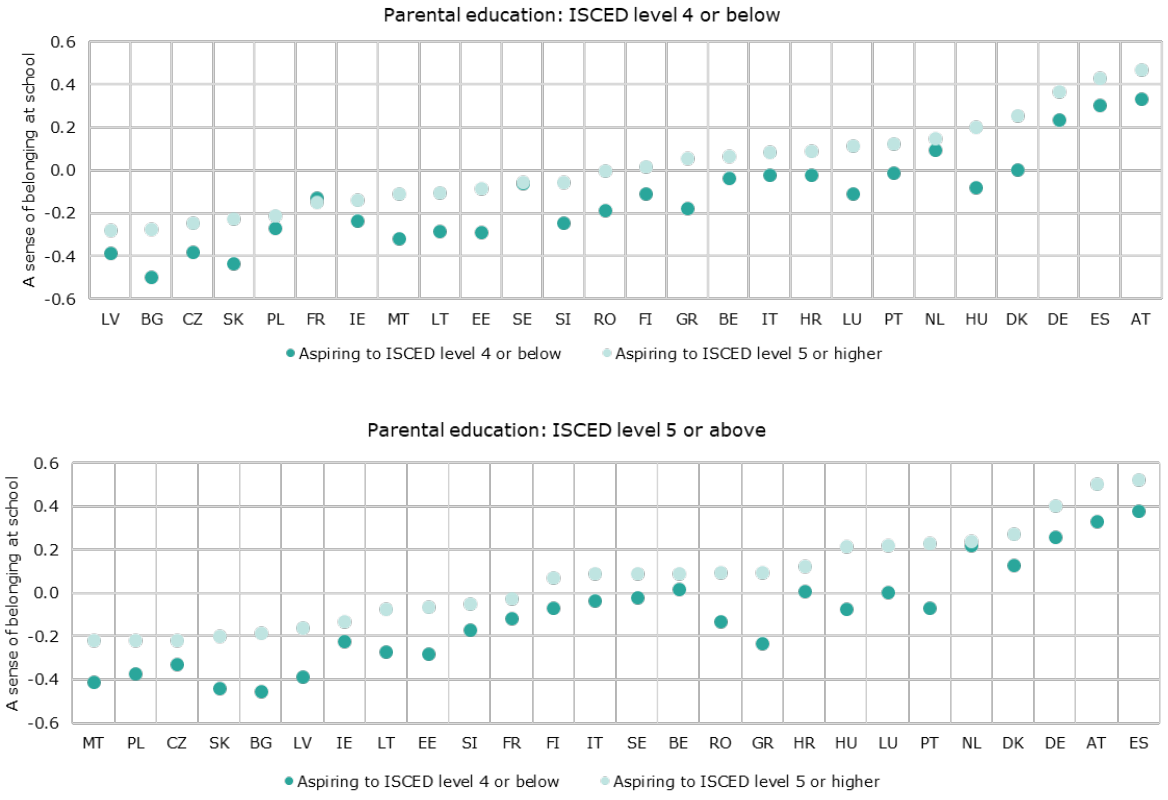
22 Government of Ireland / National Council for Special Education (2021). Remote Teaching – Support for Teachers.

23 An established line of research in sociology argues that a primary motivation for students (and their families) when making educational decisions is to avoid *downward social mobility*, or to reach a social position at least as high as that of their parents:

Breen, R and Yaish, M. (2006). Testing the Breen-Goldthorpe Model of Educational Decision Making. In Mobility and Inequality, 232–58;

educational aspirations and a sense of school belonging may therefore simply be due to socio-economic status alone. However, PISA 2018 data show that students with higher aspirations have a stronger sense of belonging at school even when the parental education level is held constant (Figure 3). However, there are considerable variations between countries. Among students with at least one university-educated parent, differences in the sense of belonging by level of aspiration are relatively large in Greece, Portugal and Hungary, and rather small in Belgium and the Netherlands. Similarly, among students whose parents do not have a university education, the difference is quite large in Denmark and Hungary but practically non-existent in France and Sweden.

Figure 3: Sense of belonging at school by parental educational expectations towards children by parental education – "What level of education do you expect your child to complete?" (PISA)



Source: DG JRC calculations based on the 2018 PISA data.

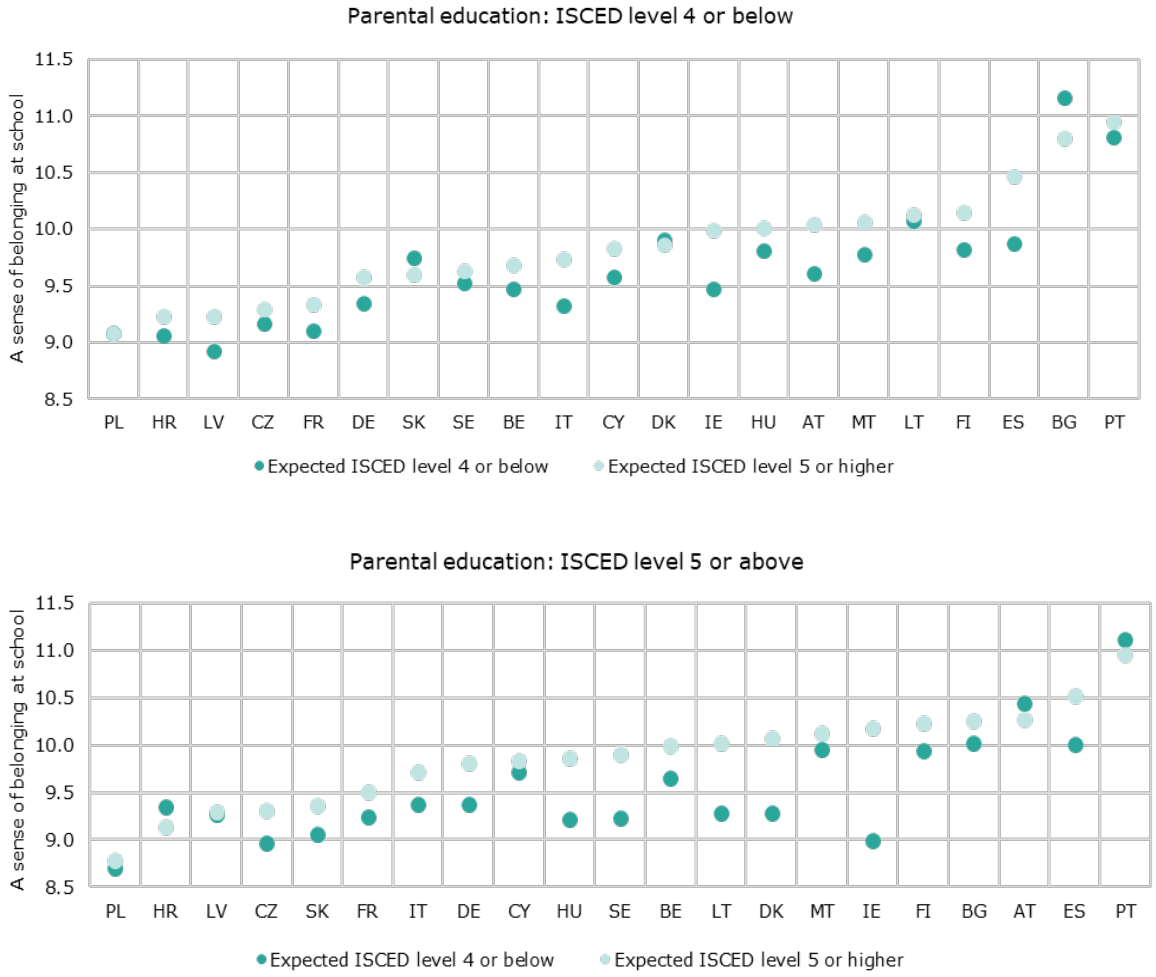
Note: The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their schoolmates. It is scaled so as to have a mean of 0 and standard deviation of 1 across equally weighted OECD countries. Negative values indicate a sense of belonging at school lower than the OECD average. Positive values indicate a sense of belonging at school above the OECD average.

A similar tendency is clear among fourth-graders in TIMSS 2019 (Figure 3): the overall sense of belonging at school is stronger among students with higher educational aspirations, even when their parents' education level is held constant. The relationship seems to be more pronounced at the higher level of parental education with some exceptions. For example, among students whose

Breen, R., and Goldthorpe J. H. (1997). Explaining Educational Differentials: Towards a Formal Rational Action Theory. In: Rationality and Society 9 (3): 275–305.

parents did not complete university education, the trend is reversed in Bulgaria and Sweden. In Poland, Denmark and Lithuania, there is little difference in the sense of belonging by educational aspiration.

Figure 4: Sense of belonging at school by parental educational expectations towards children and parental education – "What level of education do you expect your child to complete?" (TIMSS)



Source: DG JRC calculations based on IEA TIMSS 2019 data.

Note: Data not available for: EE, EL, LU, NL, RO and SI.

The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their teachers. It is assumes only positive values. Values below 7.2 indicate a weak sense of belonging at school. Values equal to or higher than 9.6 indicate a strong sense of belonging at school. Values between 7.2 and 9.6 indicate a moderate sense of belonging at school.

Box 4: The sense of school belonging in TIMSS 2019

In TIMSS 2019, responses to the following questions were used to build a composite index of the sense of school belonging:

1. I like being in school
2. I feel safe when I am at school
3. I feel like I belong at this school
4. Teachers at my school are fair to me
5. I am proud to go to this school

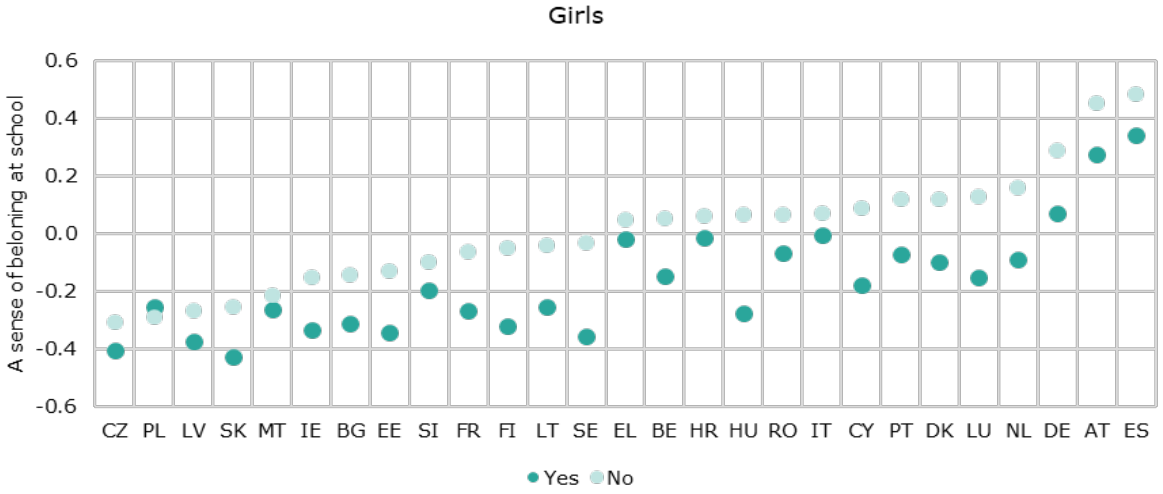
Responses were coded on a 4-point scale ranging from "Agree a lot" to "Disagree a lot". Again, it is assumed that responses to these questions are driven by the single underlying construct. Thus, the responses are aggregated and scaled to form a composite index of the sense of school belonging. The index is, however, slightly different from the one in PISA 2018. First, it assumes only positive values. Second, threshold values are defined to distinguish students[24] with a strong, moderate, and weak sense of belonging at school. Students with a score of 9.6 or higher on the composite index are classified as having a strong sense of belonging. Students with a score below 7.2 on the index are classified as having a weak sense of belonging. Finally, all other students are classified as having a moderate sense of belonging. Alternatively, one can think of the TIMSS 2019 index of the sense of school belonging as follows. A student with a strong sense of school belonging (i.e., with a score of 9.6 or higher on the index) would answer "Agree a lot" to all the items making up the index. Similarly, a student with a moderate sense of school belonging (i.e., with a score of at least 7.2 but lower than 9.6) would response "Agree a little" to these questions. Finally, students with a weak sense of school belonging would respond "Disagree a little" or "Disagree a lot" to these questions.

1.2.2 Sense of belonging at school and absenteeism

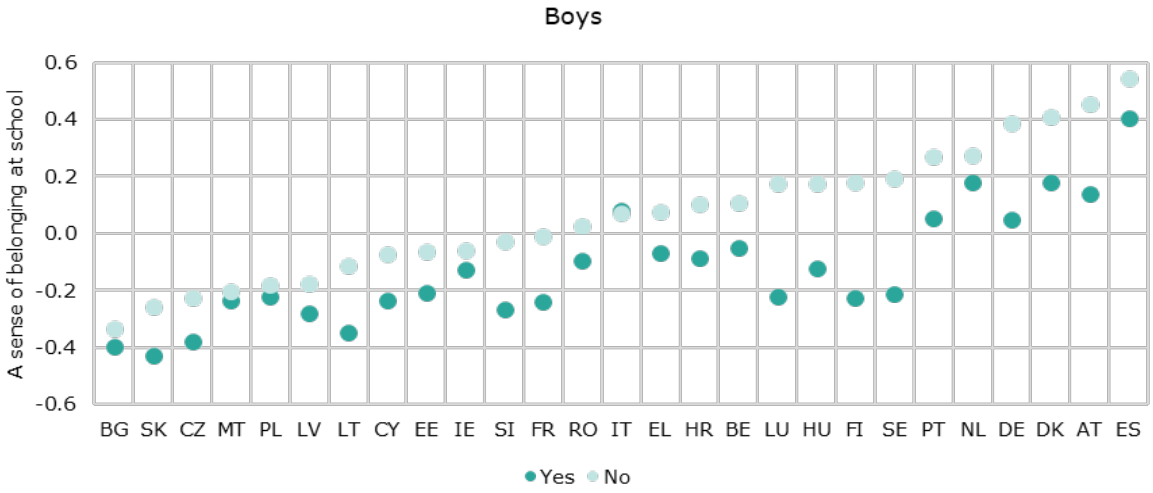
Absenteeism is also likely to be associated with low sense of belonging at school. It can reflect underlying school engagement or motivation, although factors other than motivation (e.g. recurring health problems) can affect the likelihood of absence as well.

While the degree of absenteeism can vary from arriving late to skipping lessons or entire days at school, PISA data distinguishes between students who skipped at least 1 day and those who skipped none when, comparing the average sense of belonging at school between these two groups. As the evidence points to systematic differences between girls and boys (in favour of the former) with respect to learning motivation, results are broken down by sex.

Figure 5: Sense of belonging at school by absenteeism and sex – "Skipped at least 1 day of school within the past 2 weeks?" (PISA)



[24] Here, by "students" we mean 4-graders, as this is the target population in TIMSS 2019. More precisely, TIMSS is targeted at students in grades 4 and 8. However, in the report we use only data on the former.



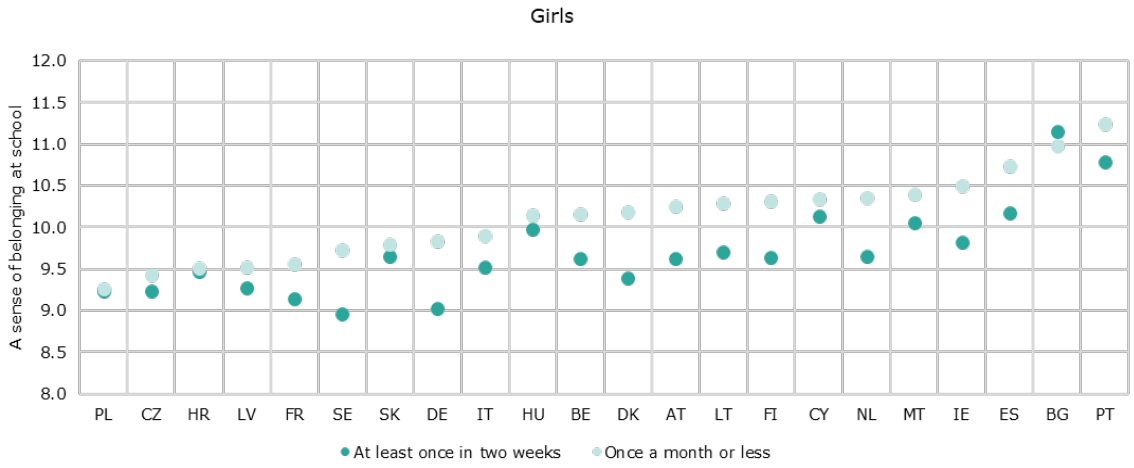
Source: DG JRC calculations based on OECD PISA 2018 data.

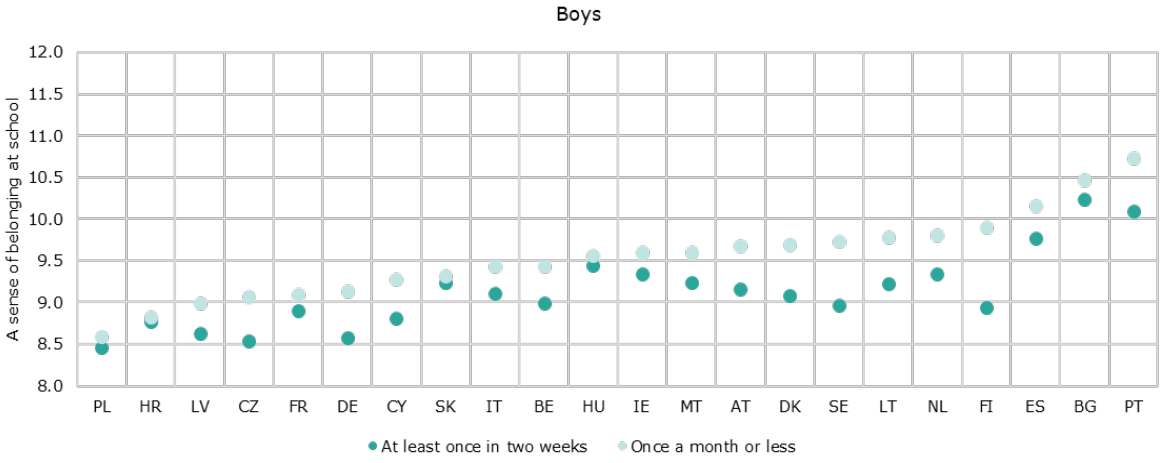
Note: The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their schoolmates. It is scaled so as to have a mean of 0 and standard deviation of 1 across equally weighted OECD countries. Negative values indicate a sense of school belonging lower than the OECD average. Positive values indicate a sense of belonging at school above the OECD average.

The result is generally consistent with expectations: the sense of belonging is, on average, stronger among students who did not skip a single day of class than among those who skipped at least one. The magnitude of the difference in the sense of belonging by absenteeism varies considerably across countries. Among girls, for instance, the difference is quite large in Sweden, Finland, Luxembourg and Hungary, and quite small in Malta, Greece and Italy. Among boys, the difference in the sense of belonging between students with at least one absence and students with no absences is the largest in Sweden, Finland, and Luxembourg. It is also substantial in Austria, Germany and Hungary. On the other hand, in Italy, Malta and Poland, it is virtually non-existent.

In TIMSS 2019, fourth grade students were asked how often they missed school, with answers ranging from "once a week" to "never or almost never". As occasional absences from school may result from random events such as illness, Figure 6 shows average levels of the sense of belonging at school by two categories of absenteeism ("at least once every 2 weeks", and "once a month or less") among fourth grade boys and girls who participated in TIMSS 2019. Students who have fewer absences have a stronger sense of belonging at school, on average, than students with more absences, with a variation across countries.

Figure 6: Sense of belonging at school by degree of absenteeism and sex – "How often are you absent from school?" (TIMSS)





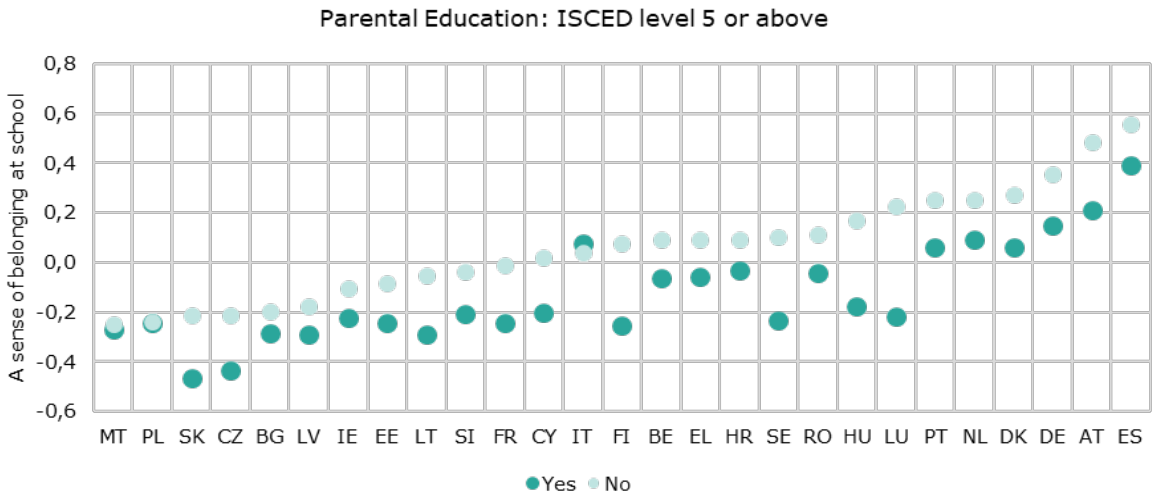
Source: DG JRC calculations based on IEA TIMSS 2019 data.

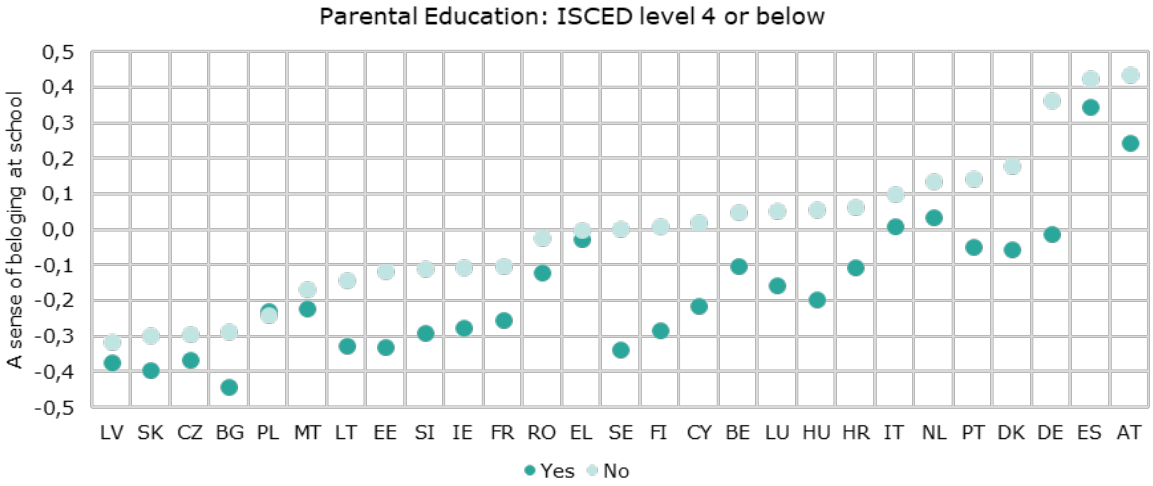
Note: Data not available for: EE, EL, LU, NL, RO and SI.

The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their teachers. It is assumes only positive values. Values below 7.2 indicate a weak sense of belonging at school. Values equal to or higher than 9.6 indicate a strong sense of belonging at school. Values between 7.2 and 9.6 indicate a moderate sense of belonging at school.

Breaking down the results by parental education, data from PISA 2018 (Figure 7) show that in both groups of students (girls and boys), the average sense of belonging at school is stronger among students with no absences than with students who have at least one absence. In other words, the relationship between school absenteeism and the sense of belonging appears to hold regardless of students' socioeconomic background. To be sure, the magnitude of the difference is not uniform across countries. In Poland and Malta, the difference is very small at both levels of socio-economic status. In Greece, there is no difference in belonging at school by absenteeism in the lower socio-economic category.

Figure 7: Sense of belonging at school by absenteeism and parental education – "Skipped at least 1 day of school within the past two weeks?" (PISA)



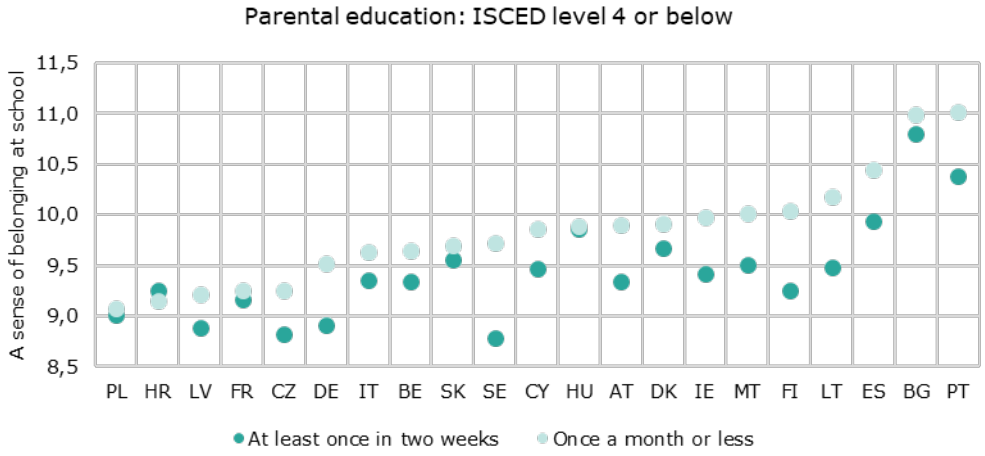


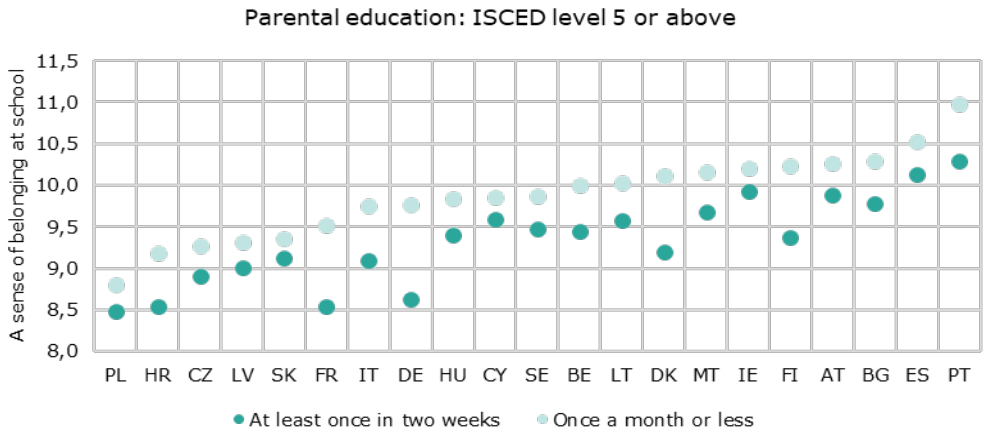
Source: DG JRC calculations based on OECD PISA 2018 data.

Note: The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their schoolmates. It is scaled so as to have a mean of 0 and standard deviation of 1 across equally weighted OECD countries. Negative values indicate a sense of belonging at school lower than the OECD average. Positive values indicate a sense of belonging at school above the OECD average.

Also among the fourth graders who participated in TIMSS 2019 (Figure 8) a link between absenteeism and the sense of belonging at school holds when students' socio-economic background is accounted for: the sense of belonging at school continues to be stronger among those with fewer absences.

Figure 8: Sense of belonging at school by degree of absenteeism and parental education – "About how often are you absent from school"? (TIMSS)





Source: DG JRC calculations based on IEA TIMSS 2019 data.

Note: Data not available for: EE, EL, LU, NL, RO and SI.

The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their teachers. It is assumes only positive values. Values below 7.2 indicate a weak sense of belonging at school. Values equal to or higher than 9.6 indicate a strong sense of belonging at school. Values between 7.2 and 9.6 indicate a moderate sense of belonging at school.

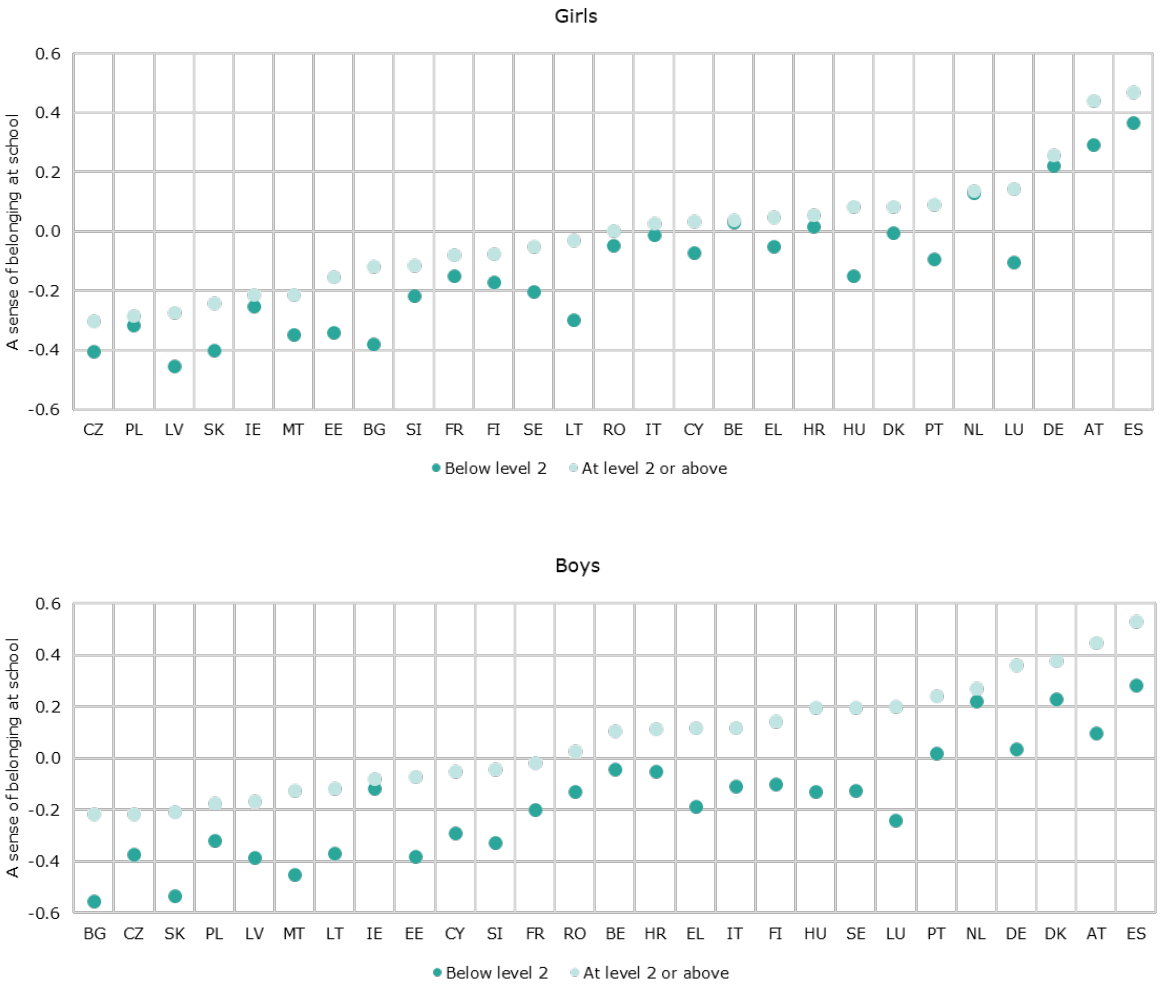
1.2.3 Sense of belonging at school and academic performance

In this section, we look at how academic performance is related to the sense of belonging at school. Academic performance is represented by scores on standardised tests in mathematics and science, two areas covered by both PISA and TIMSS.

For mathematics performance, Figure 9 shows differences in the average sense of belonging at school of boys and girls by performance at level 2 or above on the one hand and below level 2 on the other hand[25].

[25] Students' performance on the PISA 2018 mathematics test was originally represented in the form of numerical scores with the mean of 500 and the standard deviation on 100, the scores were then divided into discrete "levels" to make interpretation of the test a little easier. In the original PISA 2018 report, students below Level 2 (with scores lower than 420 points) are considered as "low achieving students." Level 2, out of six levels of proficiency in mathematics, represents the "minimum level of proficiency" in mathematics that all students should acquire by the end of secondary education (even though it may not be sufficient for making well-founded decisions in everyday situations); see chapter 6 of OECD (2019). PISA 2018 Results (Volume I): What Students Know and Can Do.

Figure 9: Sense of belonging at school by performance in the PISA 2018 mathematics test and by sex



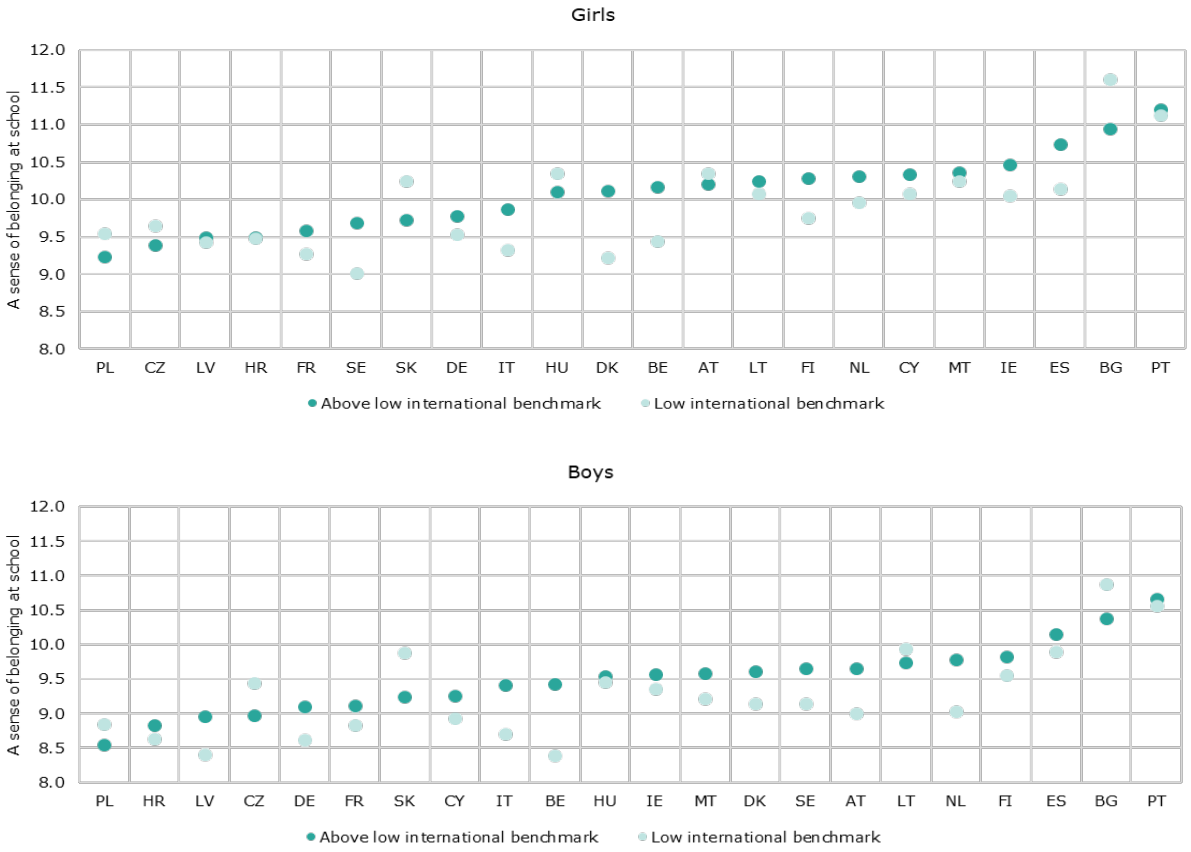
Source: DG JRC calculations based on OECD PISA 2018 data.

Note: The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their schoolmates. It is scaled so as to have a mean of 0 and standard deviation of 1 across equally weighted OECD countries. Negative values indicate a sense of belonging at school lower than the OECD average. Positive values indicate a sense of belonging at school above the OECD average.

Sense of belonging at school is lower, on average, among low performing students than among students at level 2 or higher. This applies to both boys and girls, although the magnitude of the difference among girls appears to be slightly smaller than among boys and the magnitude of the differences varies significantly across countries.

Similarly, TIMSS 2019[26] data show that in the majority of countries the sense of belonging at school is stronger among students who performed better on the mathematics test. The trend is not as pronounced as in PISA 2018 however. One explanation for the less pronounced relationship between mathematics performance and the sense of belonging among fourth graders participating in TIMSS 2019 may be the small percentage of students at the lower performance level: below 10% in nearly all the EU Member States that participated in TIMSS 2019 and even below 5% in about half of them[27]. It is also likely that different age groups react differently to low performance.

Figure 10: Sense of belonging at school by performance in the TIMSS 2019 mathematics test and by sex



Source: DG JRC calculations based on IEA TIMSS 2019 data.

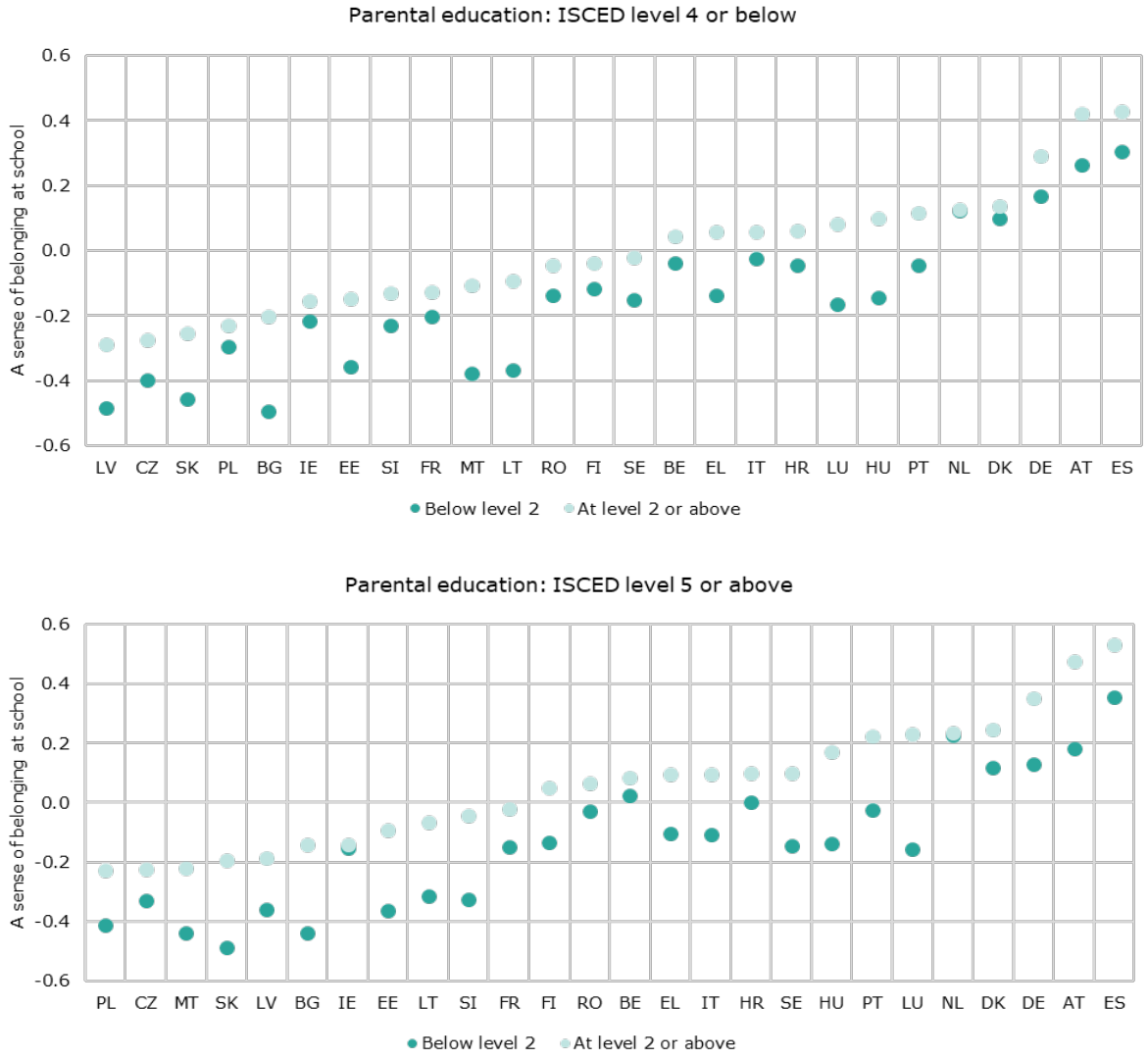
Note: Data not available for: EE, EL, LU, NL, RO and SI.

The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their teachers. It is assumes only positive values. Values below 7.2 indicate a weak sense of belonging at school. Values equal to or higher than 9.6 indicate a strong sense of belonging at school. Values between 7.2 and 9.6 indicate a moderate sense of belonging at school.

26 In TIMSS 2019, scores on the mathematics tests were also represented in the form of a numerical scale with the mean of 500 and the standard deviation of 100 points. As in PISA, the TIMSS 2019 mathematics scale was divided into a set of discrete proficiency levels used for international benchmarking. Again, we distinguish between students who were classified as "low achievers" (those who scored below 400 points) and all the rest. For a detailed description on the levels Cf.: Mullis, I. V. S., Martin M. O., Foy, P., Kelly D. L., and Fishbein, B. (2020). TIMSS 2019 International Results in Mathematics and Science.

27 In addition, the low benchmarking level is defined in terms of simple algebraic operations performed on whole numbers smaller than 100. This criterion may not distinguish well between students with necessary mathematics skills and those who lack those skills.

Figure 11: Sense of belonging at school by performance in the PISA 2018 mathematics test and by parental education



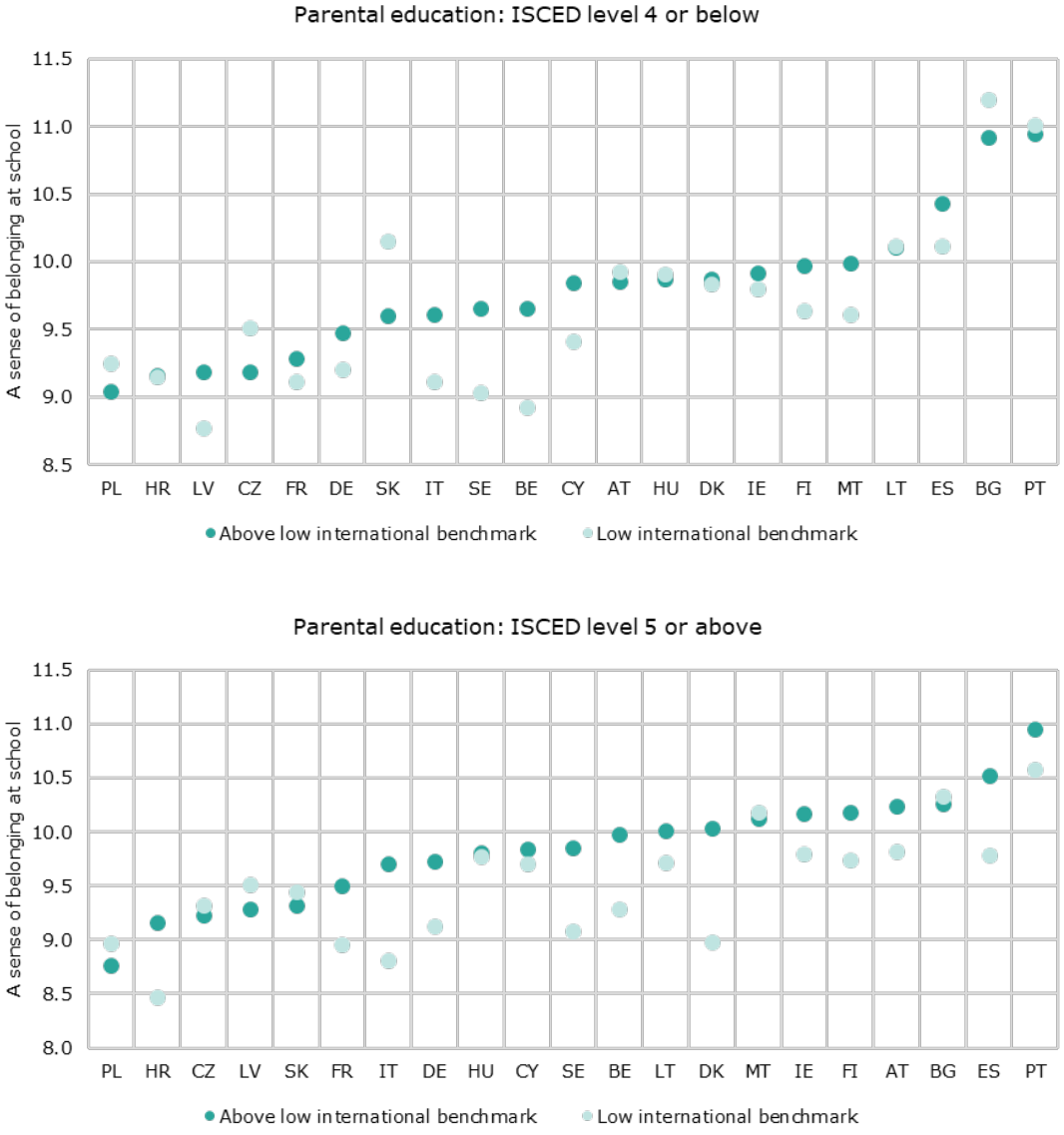
Source: DG JRC calculations based on the OECD PISA 2018 data.

Note: The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their schoolmates. It is scaled so as to have a mean of 0 and standard deviation of 1 across equally weighted OECD countries. Negative values indicate a sense of belonging at school lower than the OECD average. Positive values indicate a sense of belonging at school above the OECD average.

Research has also demonstrated that academic performance, including in mathematics, correlates with students' socio-economic background and parental attainment (Figure 11). For both levels of parental attainment (ISCED level 4 or below; and ISCED level 5 or above), the sense of belonging at school is, on average, stronger among students who perform better in mathematics. However, the difference appears to be more pronounced among students whose parents have a higher level of education.

Finally, Figure 12 shows the relationship between the performance of fourth graders on the TIMSS 2019 mathematics test and their sense of belonging at school, broken down by parental education. Keeping parental education fixed does not change the overall picture: students who performed better on the mathematics test turn out to have a stronger sense of belonging at school. There are exceptions to this general tendency, however. Among students whose parents do not have university education, the difference in the sense of belonging is either reversed or negligible in nearly half of the countries. Among students whose parents have university education, the pattern is somewhat clearer.

Figure 12: Sense of belonging at school by performance on the TIMSS 2019 mathematics test and parental education



Source: DG JRC calculations based on IEA TIMSS 2019 data.

Note: Data not available for: EE, EL, LU, NL, RO and SI.

The sense of belonging at school is represented by a composite index built from responses to questions asking students about how they feel when they are in school and relationships with their teachers. It is assumes only positive values. Values below 7.2 indicate a weak sense of belonging at school. Values equal to or higher than 9.6 indicate a strong sense of belonging at school. Values between 7.2 and 9.6 indicate a moderate sense of belonging at school.

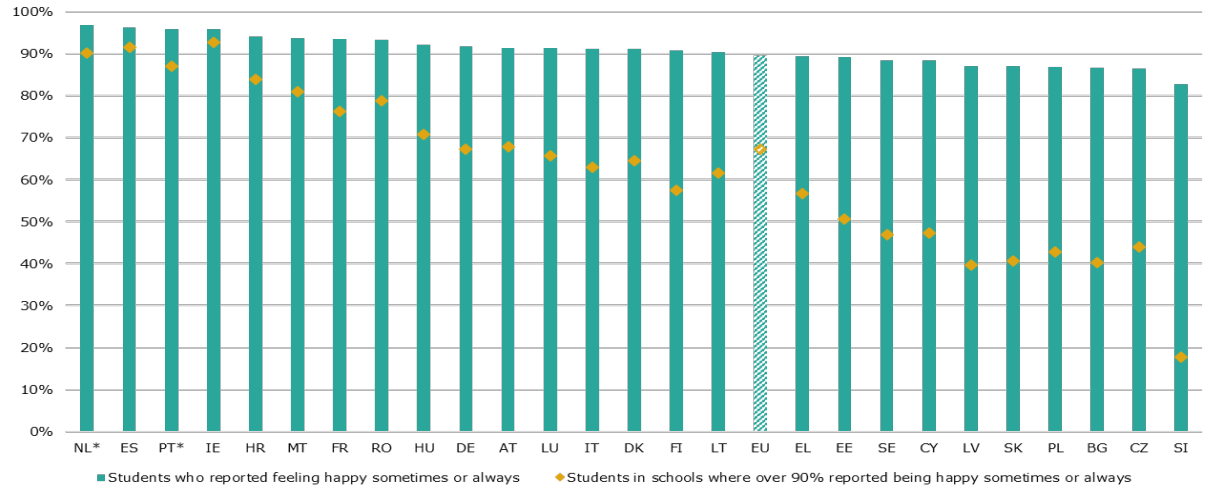
1.3 Students' perspective: PISA data on student feelings and bullying

1.3.1 Students' feelings and well-being

As previously established, well-being is a multidimensional concept that can be measured in different ways. This section will look into student feelings (both positive and negative) in PISA 2018, as a contribution to their sense of well-being, on the basis of self-reported indicators on the frequency of feelings of happiness and sadness.

A vast majority of students reported feeling happy sometimes or always (Figure 13).

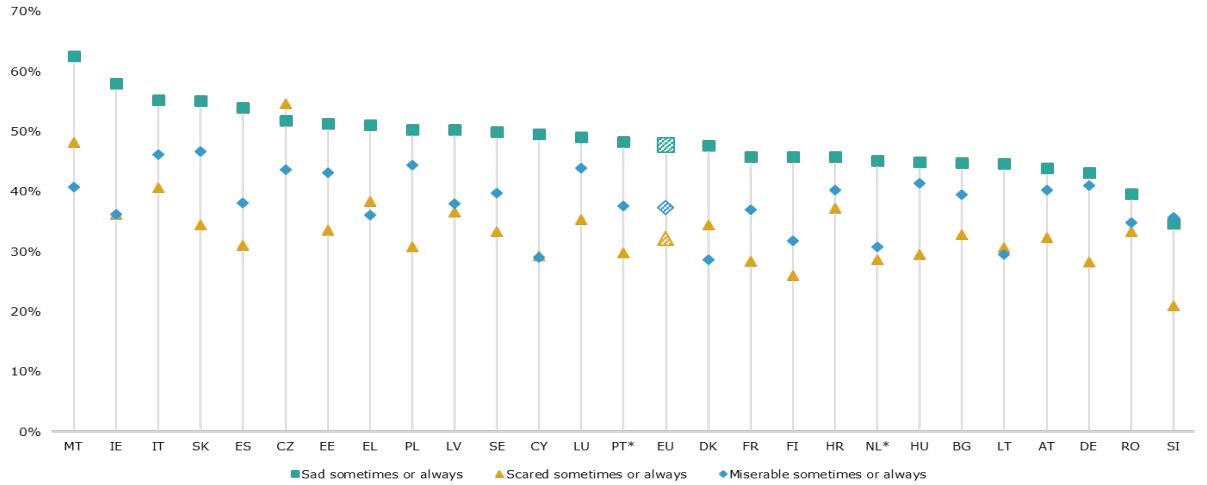
Figure 13: Prevalence of students who report feeling happy [%]



Source: PISA 2018.

Note: Data is ordered in descending order according to students who reported feeling "happy sometimes or always". Data not available for BE. *Data did not meet the PISA technical standards but were accepted as largely comparable.

Figure 14: Prevalence of students' negative feelings [%]



Source: OECD PISA 2018.

Note: Countries are presented in descending order for the survey response "sad sometimes or always". Data not available for BE. *Data did not meet the PISA technical standards but were accepted as largely comparable.

Box 5: Skills labs, a strong tool for better well-being in Greek schools

In 2020, the Greek Ministry of Education and Religious Affairs in collaboration with the Institute of Educational Policy, introduced an innovative initiative, called "21st century skills lab", to integrate the development of soft skills, life skills and technology and science skills into the school curricula. The initiative, which covers pre-primary, primary and lower secondary education, promotes non-violent behaviour, mental and emotional health, mutual respect in diversity as well as bullying and cyberbullying prevention. It is being implemented under the umbrella "quality of school life" and "personal development at school", it complies with the European Skills Agenda and is organised in four thematic cycles ((a) Better living – Well-being, (b) Environmental consciousness, (c) Interest and action — Social consciousness and responsibility, and (d) Creation and innovation — Creative thinking and initiative). The Skills labs received a 2021 award for quality and good practice in global education across Europe, awarded by GENES Global Education.

Source: Greek Ministry of Education and Religious Affairs, Institute of Education Policy

Nearly one in two students in the EU reported feeling sad sometimes or always (Figure 14) with a peak 62.6% of students in Malta[28]. Some 32.2% of students in the EU reported being scared sometimes or always, with a peak as high as 54.6% in Czechia, while 37.3% reported feeling miserable. Girls are disproportionately affected by feelings of sadness. On average, girls reported feeling sad sometimes or always 28 percentage points (pps) more than boys in the EU. In individual Member States, the gap between girls and boys in feelings of sadness was as high as 40 pps (Denmark).

Various factors seem to contribute to these negative feelings, including the phenomenon of bullying[29]. A school's socio-economic status also plays a role in students' negative feelings. In 15 Member States, student sadness was more than 5% more prevalent in socio-economically disadvantaged schools[30] than in socio-economically advantaged ones, with an EU average of 5.1%[31]. An important moment in this sense is the transition from primary to secondary school: the transition of less advantaged students into schools with a higher socio-economic status tends to have a detrimental effect on their well-being.

1.3.2 Bullying

Bullying has a direct negative effect on both the academic performance and the well-being[32] of students. Conversely, the absence of bullying has a positive impact on their mental health[33]. The concept of "bullying" is not easily defined. The Council of Europe defines it as an "unwanted, aggressive behaviour [that is repeated over time] among school aged children that involves a real

[28] This contrasts with the findings of the ISCWEB study with 8-12 year olds (Cefai, C. and Galea, N. (2020). International Survey of Children's' Subjective Wellbeing, the national report for Malta. This finding is complemented with other findings in the same study, which measured various aspects of cognitive, affective and psychological well-being. Maltese children were in the top five in terms of happiness among 35 countries.

[29] See below; Yu, S. and Zhao, X. (2021). The negative impact of bullying victimization on academic literacy and social integration: Evidence from 51 countries in PISA. Social Sciences and Humanities Open, 4 (1), 100151.

[30] The socio-economic status is measured by the PISA index of economic, social and cultural status (ESCS). A socio-economically disadvantaged (advantaged) school is a school in the bottom (top) quarter of the index of ESCS in the relevant country/economy.

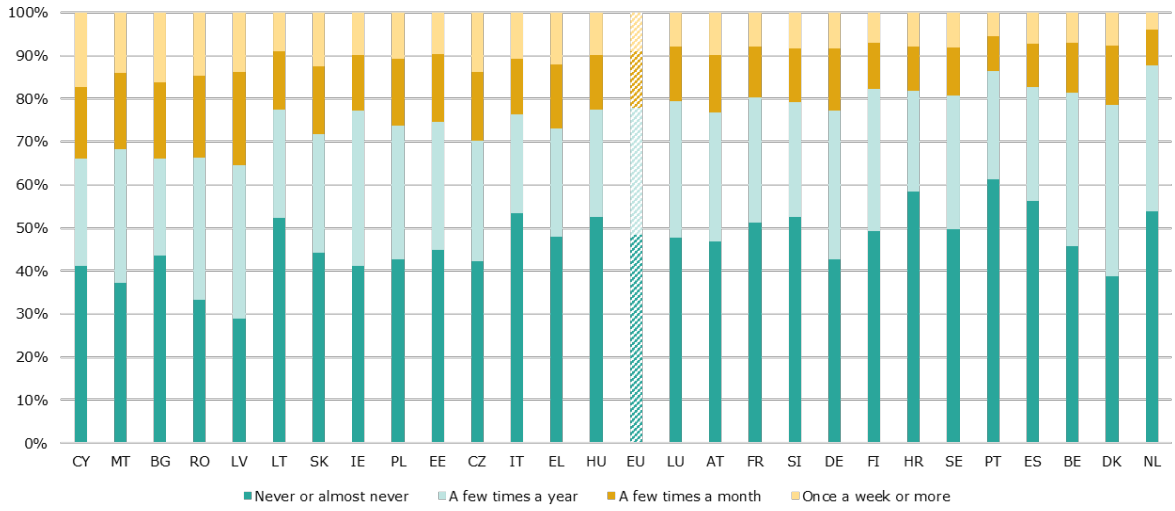
[31] OECD PISA 2018.

[32] Oliveira, F. R., de Menezes, T. A., Irffi, G. and Oliveira, G. R. (2018). Bullying effect on student's performance. EconomiA, 19(1), 57-73.

[33] European Union (2020). Anti-bullying Practices from the Repository of the European Platform for Investing in Children.

or perceived power imbalance"[34]. A power imbalance and repetitive nature as well as an "intention to harm" are key characteristics[35]. Bullying can take different forms, including: (1) direct bullying, which takes place in person and can either involve physical violence and/or verbal insults; (2) indirect bullying, spreading rumours or ignoring the victim, and characterised by psychological or social aggression; (3) discriminatory bullying aimed at, but not limited to, the race, ethnicity, gender identity, sexual orientation or religion of the individual; or (4) cyber bullying, harmful behaviour that occurs between peers online, and includes the dissemination of pictures, videos and messages designed to humiliate the victim. The PISA dataset that provided the data for the analysis focused mostly on the first three forms.

Figure 15: Frequency of being bullied [%]



Source: OECD PISA 2018.

Note: The index of exposure to bullying includes the following statements: "Other students left me out of things on purpose"; "Other students made fun of me"; and "I was threatened by other students". Higher values in the index indicate more exposure to bullying.

Bullying appears to be widespread in the EU, with more than 50% of students having experienced bullying. In 19 EU Member States, more than half of all students experience bullying at least a few times a year. The rate of being "frequently bullied" stands at 6.9% in the EU, with values as high as 14.6% (Cyprus). Among the different types of bullying, being called names is by far the most prevalent, followed by having nasty rumours spread about you[36].

Box 6: Anti-bullying NGO "Friends" in Sweden

Friends is a non-profit organisation working since 1997 to prevent bullying and violence within schools and sports associations throughout Sweden. On their website, Friends provides information, advice, videos and online courses for teachers, students and parents about various forms of bullying and possible actions to take. The NGO can also develop programmes tailored to an individual school's problem areas and resources, including staff training. The programme will run for 3 years. It includes an annual school survey for students and staff on security and well-

34 Ibid.

35 Cefai, C., Simões, C. and Caravita, S. (2021). A systemic, whole-school approach to mental health and well-being in schools in the EU. A NESET report for the European Commission.

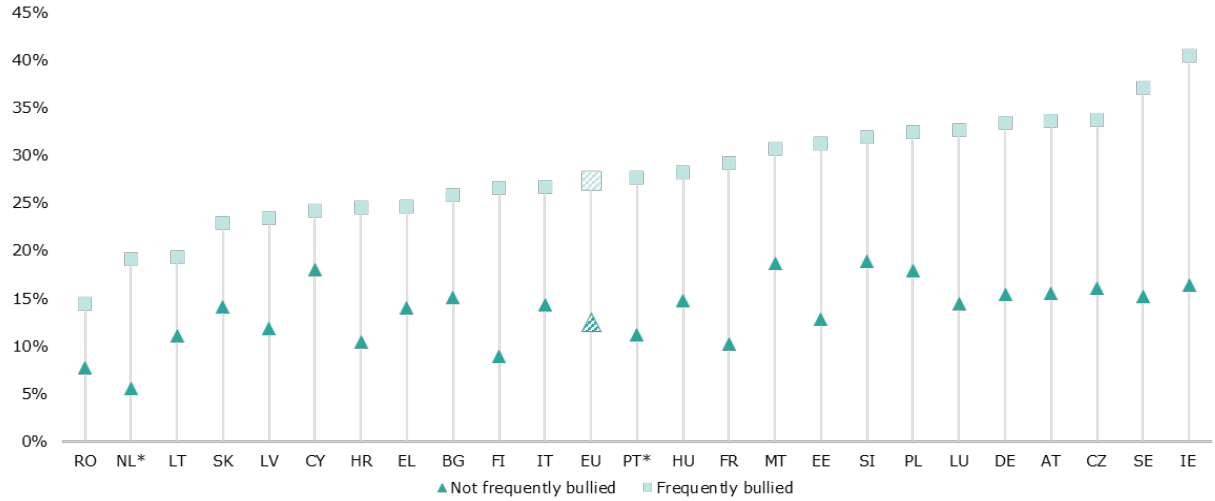
Gaffney, H., Ttofi, M. M. and Farrington, D. P. (2019). Evaluating the effectiveness of school-bullying prevention programs: An updated meta-analytical review. In: Aggression and violent behaviour, 45, 2019, 111-133.

36 OECD (2019). PISA 2018 Results (Volume III): What School Life Means for Students' Lives.

being issues, with the survey's results used as a basis for further targeted action. The organisation is financed through donations and fees from participating schools. It has also initiated an international and multidisciplinary forum to broaden the understanding of bullying, harassment, discrimination, racism, and other forms of violence among and against children and youth, cf. The World Anti-Bullying Forum.

Frequent bullying has a considerable detrimental effect on students' life satisfaction, an element of well-being[37]. Figure 16 shows that, in 2018, the EU average share of students with low life satisfaction was nearly 15 pps higher if they also reported being bullied frequently. This "life satisfaction gap" stood at more than 20 pps in two Member States (Sweden and Ireland), indicating the severity of the effect bullying has on students.

Figure 16: Students' low life satisfaction, by frequency of being bullied [%] (2018)



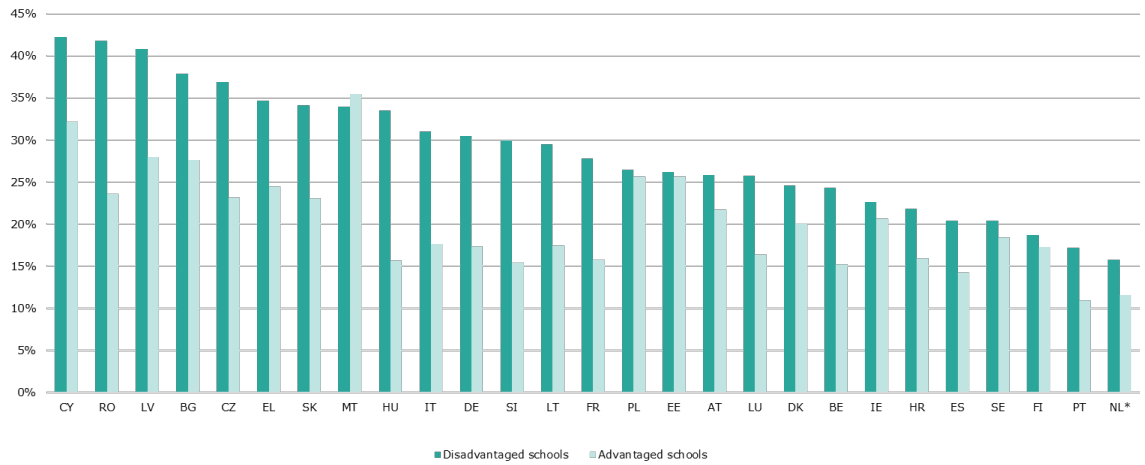
Source: OECD PISA 2018.

Note: Countries are presented in ascending order for the survey response "frequently bullied". Data not available for BE, DK and ES. *Data did not meet the PISA technical standards but were accepted as largely comparable. A student is classified as "not satisfied" with life if they reported between 0 and 4 on the life-satisfaction scale. The life-satisfaction scale ranges from 0 to 10.

Looking at who is most vulnerable to and most affected by the phenomenon of bullying, PISA 2018 data unequivocally show that socio-economically disadvantaged groups and students from disadvantaged schools are disproportionately affected.

[37] Life satisfaction differs from other elements contributing to well-being in that it is based on personal criteria rather than generalisable standards of evaluation; Borgonovi, F. and Pál, J. (2016). 18. A framework for the analysis of student well-being in the PISA 2015 study: Being 15 in 2015, OECD Education Working Papers, No. 140.

Figure 17: Students who reported being bullied at least a few times a month, by school's socio-economic status [%]



Source: OECD PISA 2018.

Note: The socio-economic status is measured by the PISA index of economic, social and cultural status (ESCS). A socio-economically disadvantaged (advantaged) school is a school in the bottom (top) quarter of the index of ESCS in the country or entity in question.

Figure 17 shows the gap in the percentage of students who reported being bullied at least a few times per month, by the socio-economic status of their schools. In all but one Member State (Malta), the share of bullied students was higher in disadvantaged schools than in advantaged ones. In the EU, the gap between advantaged and disadvantaged schools stood at 7.9% in 2018. A lower socio-economic school environment is therefore clearly linked with the prevalence and propensity for school bullying, a finding that has been corroborated by recent studies using PISA data in- and outside of the EU[38].

Box 7: The index of economic, social, and cultural status in PISA 2018

In PISA 2018, the index of economic, social, and cultural status (ESCS) is built from indicators of parental education, parental occupation, and home resources. The indicator of home resources is built of responses to a set of questions asking students about availability of various items, such as a room of their own, a quiet place to study, a desk, a computer and other electronic devices, cars, but also cultural items, such as books or works of art or musical instruments. The specific list of items used in the question varies across countries. The three indicators are combined to form a single composite index. Instead of using values of the index, it is often convenient to divide students — separately in each country — into four equally sized groups, such that the highest group comprises 25% of students with the highest ESCS score, the lowest group comprises 25% of students with the lowest ESCS scores, etc.

[38] Yu, S., and Zhao, X. (2021). The negative impact of bullying victimization on academic literacy and social integration: Evidence from 51 countries in PISA. In: Social Sciences and Humanities Open, 4(1), 100151.

A 2018 analysis by the OECD suggests that differences in socio-economic status of peers and their schools has a direct effect on students' chances of success[39]. Other factors such as fewer resources, lower-skilled teachers and local services may also explain the higher prevalence of bullying in socio-economically disadvantaged schools. The need to balance out pre-existing socio-economic disparities and promote inclusion and equity in schools is therefore crucial[40].

Box 8: Monitoring and tackling violence in schools in Poland: the RESQL system

RESQL is an innovative, research-based system that supports schools in resolving problems of peer violence. It was created in collaboration with the school community itself (students, teachers, principals and parents) and its measures were piloted in primary and secondary schools before being rolled out further. For example, in 2019-2020, a team of psychologists and educators from the University of Social Sciences and Humanities in Warsaw piloted lessons on peer violence, leading to the development of a set of lessons on: relationship violence, cyberbullying, response to violence and the role of witnesses, resolving conflicts, and socio-moral thinking. The system allows heads of schools to monitor, report on and analyse the problems, and give appropriate pedagogical advice. The system consists of:

1. A mobile application enabling students to anonymously report incidents to teachers.
2. Materials on how to respond in crisis situations and in various peer violence scenarios, to help school staff take appropriate decisions and actions.
3. Tested scenarios for lessons on violence-related issues.

Source: The resql.pl website (in Polish).

In addition to the socio-economic gap, PISA data points to a clear gender gap in bullying. The EU average for bullied boys (at least a few times a month) was nearly 5 pps higher than that of girls (24.4% vs 19.7%). The recent report analysing the PISA data confirms the increased likelihood of boys to being bullied, and points to further characteristics such as class repeaters and students prone to truancy in middle school[41]. Finally, low-achievers in reading are twice as likely to be bullied as high-achievers[42].

1.3.3 Possible approaches to increase student well-being

One specific protective factor against bullying is the awareness and response of schools, school principals and teachers. However, when asked whether bullying hinders student learning, principals in different EU countries give significantly different responses.

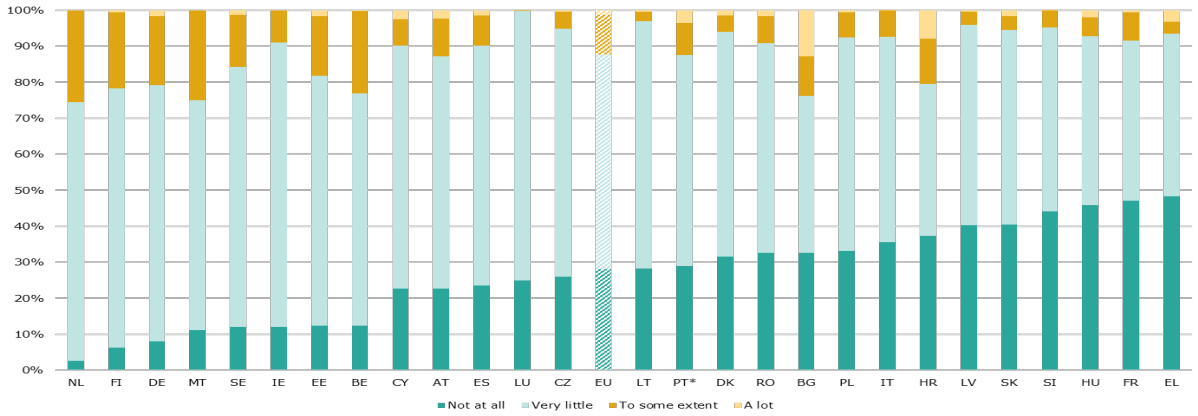
39 Agasisti, T., Avvisati, F., Borgonovi, F., and Longobardi, S. (2018). Academic resilience: What schools and countries do to help disadvantaged students succeed in PISA.

40 Also acknowledged as the first strategic priority of the Council Resolution of 18 February 2021 on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030) 2021/C 66/01.

41 Yu, S. and Zhao, X. (2021). The negative impact of bullying victimization on academic literacy and social integration: Evidence from 51 countries in PISA. In: Social Sciences and Humanities Open, 4(1): 11.

42 OECD (2019). PISA 2018 Results (Volume III): What School Life Means for Students' Lives.

Figure 18: Percentage of students in schools whose principal reported that learning is hindered to the following extent by students intimidating or bullying other students



Source: OECD PISA 2018.

Note. *Data did not meet the PISA technical standards but were accepted as largely comparable.

As can be seen in Figure 18, the vast majority of students attend schools where the principal considers that learning is hindered "very little" by students intimidating or bullying their peers. This share ranges from to 42.3% (Croatia) to 79% (Ireland). In 22 Member States, more than half of all students are in schools where principals indicated "very little" hindrance to learning by bullying.

The PISA data on the high prevalence of bullying in general, and in particular its effects on socio-economically disadvantaged groups, compared with data on the perception of bullying, may indicate that bullying is not taken as seriously as it should be at leadership level[43]. Viewed together with the notion that school staff are rarely equipped to treat bullying as a serious mental health issue[44], these results warrant further attention. For anti-bullying campaigns and interventions to succeed, the involvement of school staff and educators from all levels is key[45]. The Repository of the European Platform for Investing in Children (EPIC) has compiled a list of national and transnational campaigns to combat bullying. They include a Greek curriculum-based initiative and a British-German computer-based anti-bullying programme, both aimed at fostering peer intervention and training teachers in intervention methods[46]. EPIC is evaluating national and transnational interventions based on three factors: how effective they are, how transferable their approaches are, and how enduring their impact is. The evaluation provides interesting insights into the efficacy and proposed designs of interventions. Firstly, they need to encompass all aspects of students' school and social lives to provide balanced, sensible solutions such as classroom interventions and information sessions for parents. Secondly, measures must be tailored to the changing nature of bullying given the rise of cyber bullying and the current digital transformation.

In general, analysing student feelings when assessing well-being is relatively new, as is the understanding of how student well-being can best be safeguarded, and negative feelings mitigated. It is clear, however, that a sense of belonging can be achieved when students have meaningful social connections and relationships with their peers and their teachers[47].

43 Foody, Mairéad, Murphy, Helena, Downes, Paul and James O'Higgins Norman (2018). Anti-bullying procedures for schools in Ireland: principals' responses and perceptions, Pastoral Care in Education.

44 Ibid.

45 Ybarra, Michele L., et al. (2019). Perceptions of middle school youth about school bullying. In: Journal of adolescence 75, 2019, 175-187.

46 European Union (2020). Anti-bullying Practices from the Repository of the European Platform for Investing in Children.

47 OECD (2019). PISA 2018 Assessment and Analytical Framework.

Among the various options, school-level interventions are the best for improving student well-being, as they can counteract socio-economic inequalities[48]. One remarkable school-level initiative involves health literacy classes to help overcome inequalities in the long term[49]. By contrast, ill-advised school interventions may increase inequalities rather than reduce them. An analysis of Finnish upper secondary schools concluded that improving students' well-being and self-esteem requires long-term interventions tailored to individual students[50]. Systemic interventions that cover the whole school and that concentrate on building individual competences, developing school policies, and improving social relationships, are most likely to have an impact[51].

A key consideration is the increasing linguistic and cultural diversity in European schools. According to PISA 2015 data, more than one in ten 15-year-olds in European schools are first or second-generation migrants – with first-generation migrants accounting for 4.8% of the PISA student cohort, and second-generation migrants (i.e. students with foreign-born parents who were born in the country of assessment) accounting for 6.5%[52].

The same PISA 2015 data reveal that an average of around one in ten (9%) 15-year-old learners across the EU speak a different language at home to the one they are taught in[53].

Poor command of the language of instruction can contribute considerably to students' feelings of alienation and lack of well-being. Language deficiencies can also be a source of bullying. Data show[54] that primary school students who do not speak the language of schooling at home have a lower sense of belonging at their school, and they report being more frequently bullied by their peers.

The traditional approach to dealing with linguistic differences has been to try to make students focus completely on the language of schooling, ignoring and often actively suppressing their home languages. There is however ample evidence that such practices can be detrimental to students' self-esteem and well-being. Recognising students' individual linguistic capital and using it as stepping stones towards acquisition of better competences in the language of schooling yields better academic results[55].

Linguistic support measures should ideally endeavour to maintain students' existing languages while developing their proficiency in the language of schooling, since this is known to have a positive impact on functional literacy, including educational success as a whole[56]. At the same time, these diverse linguistic backgrounds add value to the host country's classroom, as a means of engaging with migrant learners. Promoting language awareness among the whole school

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48 Moore G. F. (2020). Socioeconomic status, mental wellbeing and transition to secondary school: Analysis of the School Health Research Network/Health Behaviour in School-aged Children survey in Wales.

49 Flecha, A., García, R. and Rudd, R. (2011). Using Health Literacy in School to Overcome Inequalities. In: European Journal of Education, 46: 209-218.

50 Cefai, C., Simões, C. and Caravita, S. (2021). A systemic, whole-school approach to mental health and well-being in schools in the EU. A NESET report for the European Commission.

Holopainen, L., Waltzer, K., Hoang, N. and Lappalainen, K. (2020). The Relationship between Students' Self-esteem, Schoolwork Difficulties and Subjective School Well-being in Finnish Upper-secondary Education. In: International Journal of Educational Research, 104, 101688.

51 Cefai, C., Simões, C. and Caravita, S. (2021). A systemic, whole-school approach to mental health and well-being in schools in the EU. A NESET report for the European Commission.

52 European Commission (2016). Pisa 2015: EU performance and initial conclusions regarding education policies in Europe.

53 European Commission/EACEA/Eurydice (2017). Key data on Teaching Languages at School in Europe: 2017 Edition. A Eurydice Report, p. 22.

54 EC/EACEA/Eurydice (2019). Integrating Students from Migrant Backgrounds into Schools in Europe: National Policies and Measures.

55 Van Der Wildt, A., Van Avermaet, P. and Van Houce, M. (2017). Multilingual school population: ensuring school belonging by tolerating multilingualism. International journal of bilingual education and bilingualism, 20(7), 868–882.

56 Cummins, J. (2001). Bilingual Children's Mother Tongue: Why is it important for education? In: Sprogforum *19* (2), p. 15-20.

population increases tolerance and inclusion while encouraging all learners to develop their linguistic skills[57].

Analyses on classroom and school variables have also found a direct link between teacher and student well-being[58]. Involving teachers in strategies to improve student well-being is sensible as they have close day-to-day interactions with their students[59].

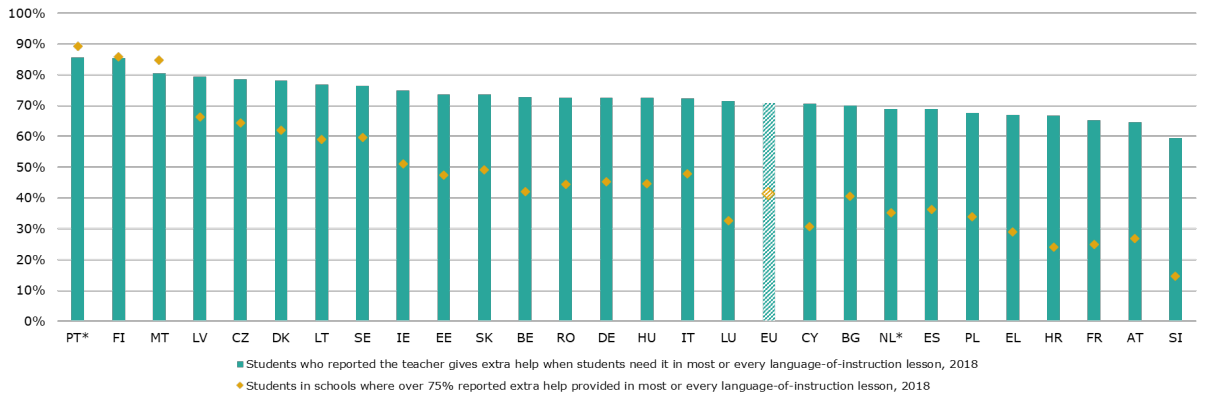
1.4 Teachers' perspective and the role of school governance in shaping well-being

1.4.1 The role teachers play in students' well-being

A teacher's role is to support students in their learning process, and their social and emotional development. They can make students feel confident in their skills, and feel supported and understood. Teaching behaviour and school practices can foster a pleasant climate and increase students' well-being. There is a clear link between the mental health of teachers and that of students[60]. There is also evidence[61] that students' perceptions of teachers' support are significantly correlated with greater life satisfaction.

According to PISA 2018, an average of 71% of students in the EU reported that their teacher gives extra help when needed in most or in every lesson taught in the language-of-instruction. The proportions varies across the EU, ranging from 85.6% in Portugal to 59.4% in Slovenia.

Figure 19: Students who reported that the teacher gives extra help when they need it in most or every language-of-instruction lesson, 2018 [%]



Source: PISA 2018.
Note: *Data did not meet the PISA technical standards but were accepted as largely comparable. Original OECD Table III.B1.6.4

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57 See Herzog-Punzenberger, B., Le Pichon Vorstman,E. and Siarova, H. (2017). Multilingual Education in the Light of Diversity: Lessons Learned. A NESET network report for the European Commission.

58 Van Petegem, K., Aelterman, A., Van Keer, H. and Rosseel, Y. (2008). The influence of student characteristics and interpersonal teacher behaviour in the classroom on student's wellbeing. Social indicators research, 85(2), 279-291.

59 Another approach is closely involving educators and empowering them through, *inter alia,* achievement motivation, environmental resilience (i.e. teaching educators how to focus on developing their students' strengths), and developing social competences; Morrison, G. M. and Allen, M. R. (2007). Promoting student resilience in school contexts. Theory into Practice, 46(2), 162-169.

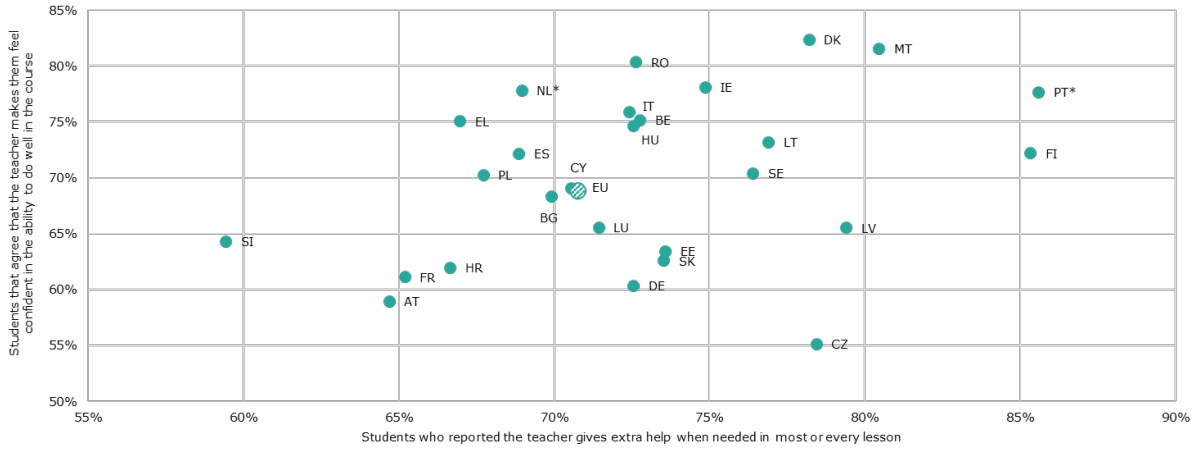
60 Cefai, C., Simões, C. and Caravita, S. (2021). A systemic, whole-school approach to mental health and well-being in schools in the EU. A NESET report for the European Commission.

61 Guess, P.E., and McCane-Bowling S.J. (2016). Teacher support and life satisfaction: an investigation with urban, middle school students. In: Education and Urban Society 48.1, 2016: 30-47.

Whether a consensus exists in these perceptions can be deduced from the proportion of students in schools where over 75% students reported extra help. As shown in Figure 19, countries with the highest share of students reporting teachers' extra help correspond to the ones where the majority agrees with this perception. Conversely, a low percentage of students in schools where 75% reported extra help shows that students' differ on their perception, not reporting help similarly in all schools. Indeed, in the EU, there is still disparity of students' opinions regarding the extra help provided by teachers: only 41.4% of students are in schools where at least three out of four agreed that the teacher gives extra help when needed in.

In addition to educational help, teachers provide students with emotional support, which makes them more confident in their skills and ability to participate in class, and thus contributes to their well-being. As shown in Figure 20, among EU countries, there is generally a positive relationship between students reporting that extra help was provided when needed, and students reporting that the tutor makes them feel confident in their ability to perform well. Denmark (82%), Malta (82%) and Romania (80%) are the countries where most students agreed that the teacher's behaviour helped give them confidence to perform well.

Figure 20: Teacher's extra help versus self-reported confidence influenced by the teacher, 2018



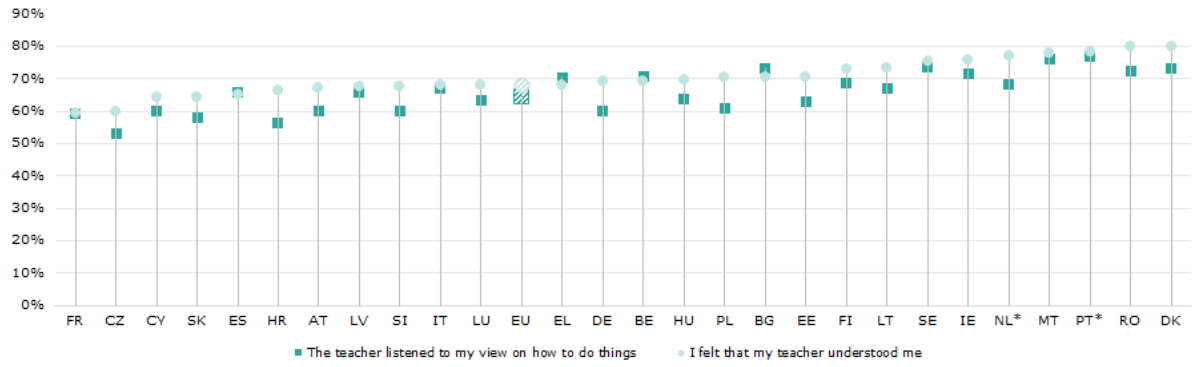
Source: PISA 2018.

Note: *Data did not meet the PISA technical standards but were accepted as largely comparable. Original OECD Table III.B1.6.4

Developing a classroom environment where questions are encouraged is one of the factors that makes students more likely to perceive support from teachers. This support is also perceived when teachers try to connect with students on an emotional level, including by demonstrating fairness or acknowledging academic success. According to the same study, teacher support accounted for 16% of the variance in students' subjective well-being.

Teachers who listen and consider students' opinions can help their students to feel understood. A supportive teacher-pupil relationships can therefore increase a schools' potential to support student well-being. An average of 64% of students in the EU agreed that their teacher listens to their views on how to do things, but there is a 20 pps difference across countries. On average, 68% of EU students felt that their teacher understands them, but again there are large variations across EU countries, ranging from 60% in France and Czechia to 80% in Romania and Denmark. Figure 21 shows that countries where fewer students report that the teacher listened to their views coincide with the ones with lower proportions of students who felt understood by the instructor.

Figure 21: Students who agreed or strongly agreed that the following occurred during the previous two language-of-instruction lessons, 2018 [%]



Source: PISA 2018.

Note: *Data did not meet the PISA technical standards but were accepted as largely comparable. Original OECD Table III.B1.6.2.

The quality of teacher-students interactions also matters for educational outcomes and student well-being. To be able to learn, students need to be understood by their teachers and have them recognise the challenges they face outside school. At-risk students reported better outcomes when teachers worked with them respectfully and provided opportunities to exercise more autonomy[62].

A study[63] comparing the influence of support on students' social, academic and emotional adjustment, found that – although support from parents, classmates and friends also had an influence on their adjustment – emotional support from teachers was particularly predictive of better social skills and academic competence. Consequently, greater emotional support provided to disadvantaged students can help close the gap between socio-economic backgrounds by boosting social and academic competences in this group. In this sense it is reassuring that PISA 2018 shows that students from disadvantaged schools perceive support from teachers to a greater extent than their counterparts in advantaged schools[64]. This was the case in 23 EU Member States, and in 16 of them this difference was statistically significant. The negative difference was most pronounced in Austria (-0.52), Germany (-0.43) and Bulgaria (-0.41). In contrast, in only four countries (Cyprus, Denmark, Finland, Sweden) students from disadvantaged schools reported lower perceptions of teachers' support than students in advantaged schools.

In general, across the EU, satisfaction with the quality of school life seems to be more common than dissatisfaction. However, in some countries (cf. Figure 22) interpersonal teacher-student interactions was rated as negative[65]. Improving teacher-student interactions and students' sense of achievement requires comprehensive support systems. To improve perceived quality of life, the same study suggests the need of pre-service and in-service training for teachers on monitoring

62 Sanders, J., Munford, R., and Liebenberg, L. (2016). The role of teachers in building resilience of at risk youth. In: International Journal of Educational Research 80, 2016, 111-123.

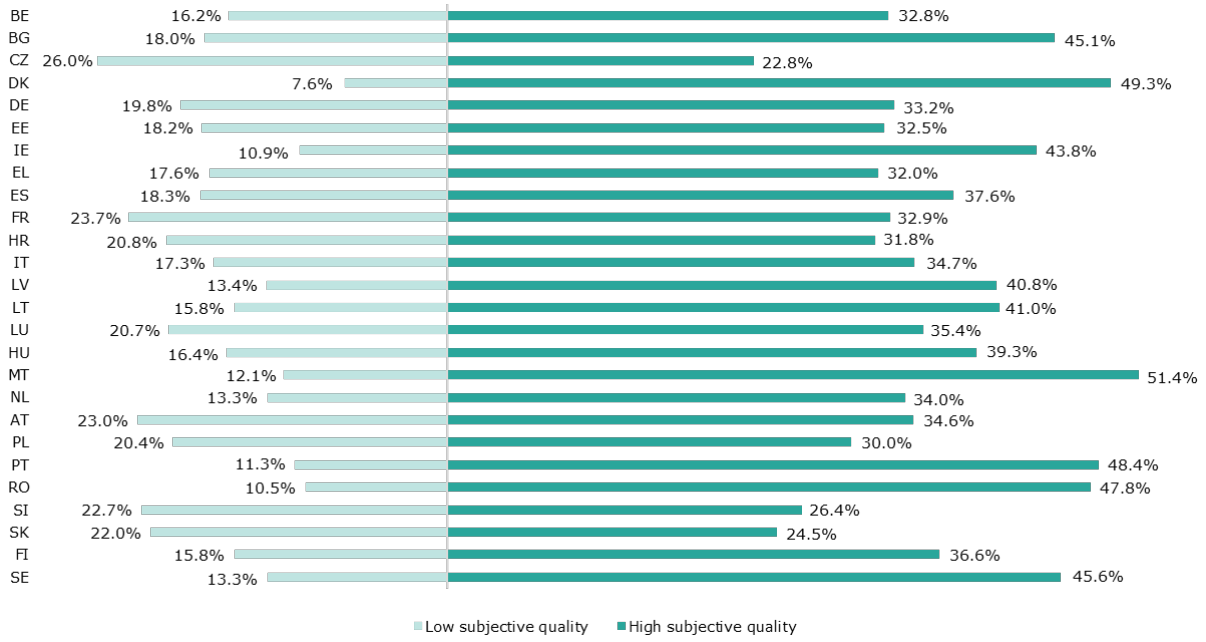
63 Malecki, C. K. and Kilpatrick Demaray, M. K. (2003). What type of support do they need? Investigating student adjustment as related to emotional, informational, appraisal, and instrumental support. In: School psychology quarterly 18.3, 2003, 231.

64 In 2018, there was a negative difference in the EU (-0.23 points difference) in the PISA index of teacher support in advantaged and disadvantaged school. For the index students were asked about the occurrence of following statements: "The teacher shows an interest in every student's learning"; "The teacher gives extra help when students need it"; "The teacher helps students with their learning"; and "The teacher continues teaching until students understand". Students' responses were combined to create the index of teacher support.

65 Hristova A. and Tosheva, E. (2021). Quality of School Life in Europe in the Light of Large-Scale International Assessments. An EENEE network report for the European Commission.

emotions, identifying and addressing destructive behavioural patterns and promoting constructive interactions. Teachers' programmes should therefore aim at improving self-efficiency in classroom management, in teaching, in engaging students and working in multicultural environments[66].

Figure 22: Share of students perceiving the quality of teacher-student relations as low or high



Source: PISA 2018, calculations by the EENEE network of experts.

Note: CY was not included in the EENEE study.

To have a positive impact on students, a teacher's well-being is essential, but this can depend on their working environment and practices. Teachers in the EU still experience high levels of work-related stress, according to the OECD's 2018 Teaching and Learning International Survey, which affects their mental health.

Teachers point to administrative tasks, changing requirements from authorities and being held responsible for students' achievements as major sources of stress. Among the top five sources of stress across the EU[67], only two ("having too much marking" and "maintaining classroom discipline") are directly related to the tasks of teaching. Factors inducing lower levels of stress are a collaborative school environment, perceived autonomy in their job, and self-confidence in motivating students[68].

66 For tools available to teachers for assessing the quality of classroom climate Cf. a NESET network project A formative, inclusive, whole school approach to the assessment of Social and Emotional Education in the EU.

67 European Commission/EACEA/Eurydice (2021). Teachers in Europe: Careers, Development and Well-being. A Eurydice report. EU refers to all European Union countries/regions that participated in TALIS survey 2018, including UK.

68 European Commission/EACEA/Eurydice (2021). Teachers in Europe: Careers, Development and Well-being. A Eurydice report.

1.4.2 Teachers' and school governance's influence on well-being

Considering students' life satisfaction, well-being and resilience can help schools themselves become more successful and resilient to long-term challenges. The Council conclusions on "European teachers and trainers for the future"[69] stressed that: "In order to support both the achievement and well-being of teachers and trainers, as well as learners, it is beneficial to build and promote collaborative learning communities, and a collaborative team culture between teachers and trainers, their peers and institution leaders, learners, parents, and other stakeholders, such as employers".

School climate is a determinant of resilience and well-being[70]. Schools and teachers are therefore important protective assets for students. Higher levels of school discipline and order have been associated with lower probability and frequency of behavioural problems[71]. Sufficient security policies and practices, students' respect for teachers and school property, clear rules of conduct as well as the consistent and fair enforcement of rules influence teachers' perceptions of safety and order in schools across the EU. In 2019, between 45% and 60% of fourth grade students in EU countries for which TIMSS data is available (

Figure 23) were in schools considered "very safe and orderly" by teachers, with some countries scoring higher than others. For example, Ireland (78%), Spain (76%), Bulgaria (73%) and Portugal (71%) were on the higher end of the scale while the Flemish community of Belgium (28%), France (37%), Sweden (37%) and Finland (31%) were on the lower end.

Box 9: Strengthening teacher policies in Bulgaria

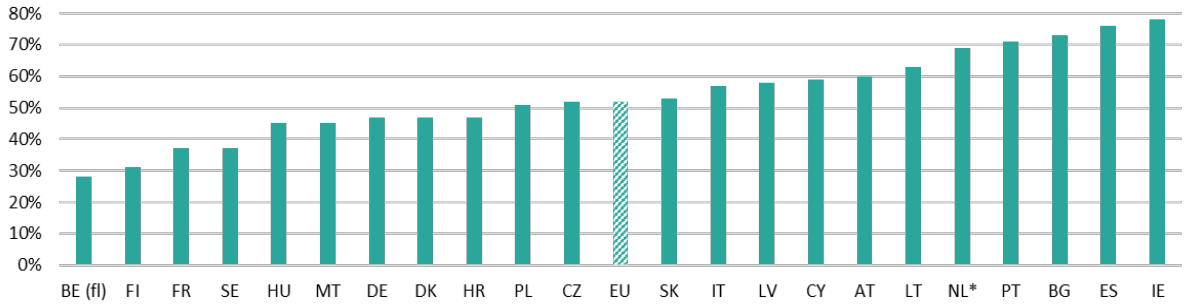
Bulgaria has taken additional measures to strengthen initial teacher education (ITE) and continuous professional development (CPD). New requirements for the acquisition of teacher professional qualifications were adopted in February 2021 with a focus on strengthening the competence-based approach in both ITE and CPD. The State requirements for obtaining a vocational teacher qualification have also been updated. Compulsory disciplines were introduced in various fields of pedagogy, while others were reinforced with additional hours of training. Furthermore, the proportion of teachers taking part in professional development has increased in recent years. In 2021-2027, the European Social Fund (ESF+) will continue to provide support to upgrade the competences of teachers. Significant efforts have also been made in recent years to increase teachers' salaries and therefore the attractiveness of the teaching profession.

69 Council conclusions of 26 May 2020 on European teachers and trainers for the future, OJ C 193, 9.6.2020, C 193/16.

70 Cohen J. (2013). Creating a Positive School Climate: A Foundation for Resilience. In: Goldstein S., Brooks R. (eds) Handbook of Resilience in Children. Springer, Boston, MA.

71 Wang, M. T., et al. (2010). A tobit regression analysis of the covariation between middle school students' perceived school climate and behavioral problems. In: Journal of Research on adolescence 20.2, 274-286.

Figure 23: Percentage of students in schools that are "very safe and orderly" according to the teachers, 2019 (TIMSS).



Source: IEA TIMSS 2019.

Note: Students were scored according to their teachers' responses to eight statements on the Safe and Orderly School scale. Cut scores divide the scale into three categories. Students in "very safe and orderly" schools had a score at or above the cut score corresponding to their teachers "agreeing a lot" with four of the eight statements and "agreeing a little" with the other four, on average.
(*) indicates data are available for at least 70% but less than 85% of the students.

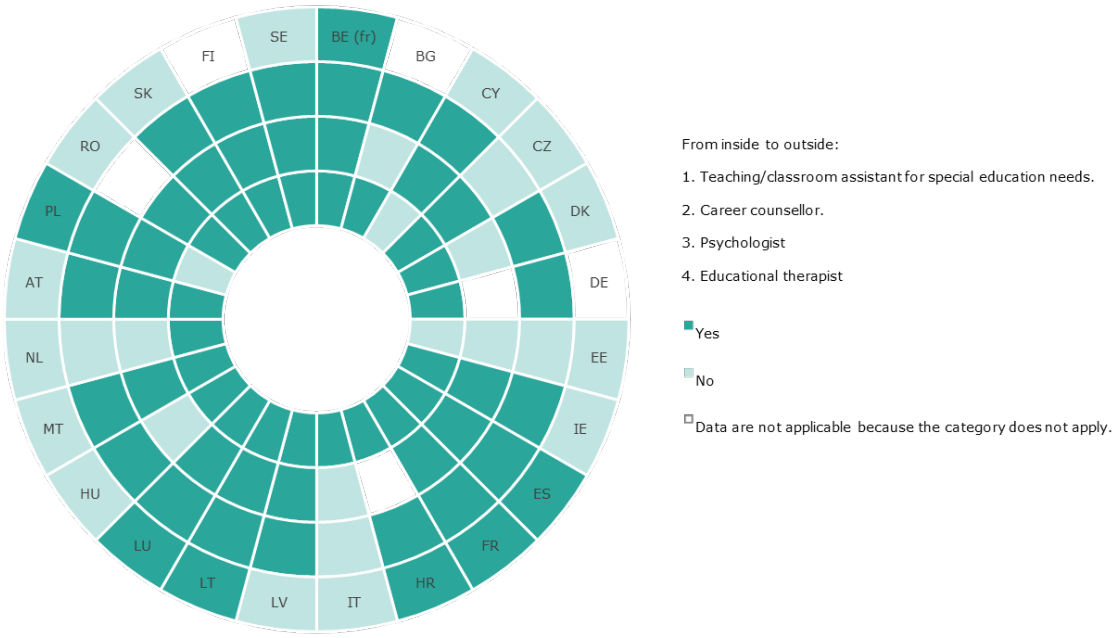
School-level support measures and help enable learners to overcome academic, social and personal difficulties. Multi-professional teams and integrated strategic responses can give tailored assistance to students to improve their resilience. EU countries have therefore been adopting policies and regulations to integrate specific support staff in schools. Assistant teachers for special education needs are the most widespread support staff in primary, lower secondary and upper secondary education (Figure 24). In 21 countries this support is mandatory in at least two out of the three levels mentioned, and in 18 of them, it applies to all three. The support of psychologists is also widespread in EU educational systems. In only four EU countries, for which data are available, the presence of psychologists is not required at any level (Czechia, Estonia, Italy and the Netherlands). To help students in serious emotional distress, emotional counselling is provided in a range of EU countries. Some countries, such as Poland, provide one-to-one academic tutoring and psychological support, other countries offer psychological or socio-emotional support to students at risk of early school leaving[72] to reduce drop-out rates[73].

Requirements for having educational therapists in schools are less widespread, as are requirements for having career counsellors. The latter are present in only nine countries for all three educational levels and in four countries for both secondary levels (Austria, Cyprus, France and Luxembourg).

[72] Donlevy, V., Day, L., Andriescu, M., Downes, P. (2019). Assessment of the Implementation of the 2011 Council Recommendation on Policies to Reduce Early School Leaving. Final Report July 2019. Directorate General, Education, Sport, Youth and Culture.

[73] Quiroga,C. V., Janosz, M. and Bisset, S. (2013). Early adolescent depression symptoms and school dropout: Mediating processes involving self-reported academic competence and achievement. Journal of Educational Psychology, 105, 2, 552–560.

Figure 24: School support staff required by policy or regulation to provide access to students in schools, general programmes 2018.



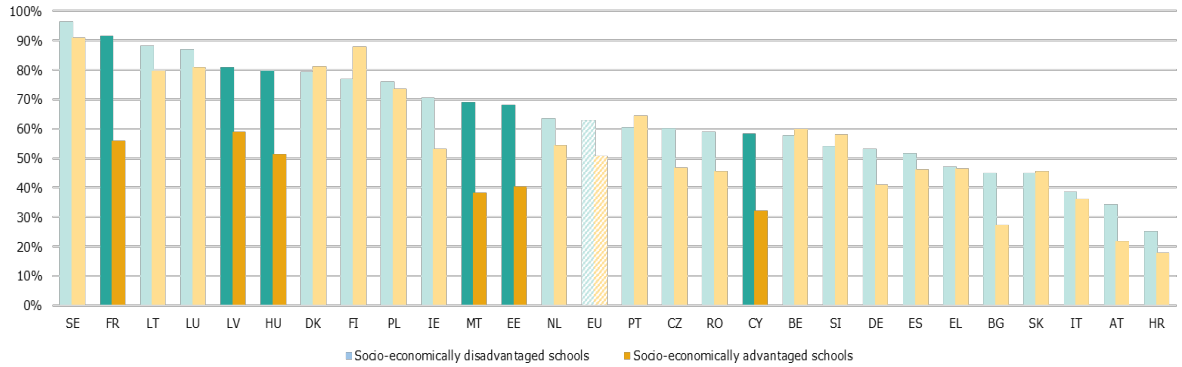
Source: PISA 2018 system-level data collection.

Note: Responses are marked as "yes" if at least 2 out of 3 levels have the staff (primary education, lower secondary education, upper secondary education). Data are missing for BE (fl), EL, SI and PT. Data for career counsellor at primary level does not apply to IE and SE due to inapplicability of the category. Federal states or countries with highly decentralised school systems may experience regulatory differences between states, provinces or regions. For further information see: System-level data collection for PISA 2018.

At a personal level, positive and respectful teacher-student relationships that empower students, can increase resilience, particularly for students in the high-risk category. On average, EU students from disadvantaged schools (63%) receive more support from school staff to do their homework than students in advantaged schools (51%). Schools can therefore help to protect at-risk students[74] and help narrow gaps due to socio-economic background. Help with homework is very widespread in schools in Sweden, Lithuania, Latvia, Denmark, Finland and Poland. Some countries focus on disadvantaged students where the difference with their advantaged peers is significant, such as France (35 pps), Malta (31 pps), Hungary (28 pps), Estonia (28 pps) and Cyprus (26 pps). On the other hand, regardless of schools' socio-economic status, fewer than 40% of students received help with homework in Italy, Austria and Croatia (Figure 25).

[74] Sanders, J., Munford, R. and Liebenberg, L. (2016). The role of teachers in building resilience of at risk youth. In: International Journal of Educational Research 80, 2016: 111-123.

Figure 25: Percentage of students in schools where staff provides help with homework, by school's socio-economic status, 2018.

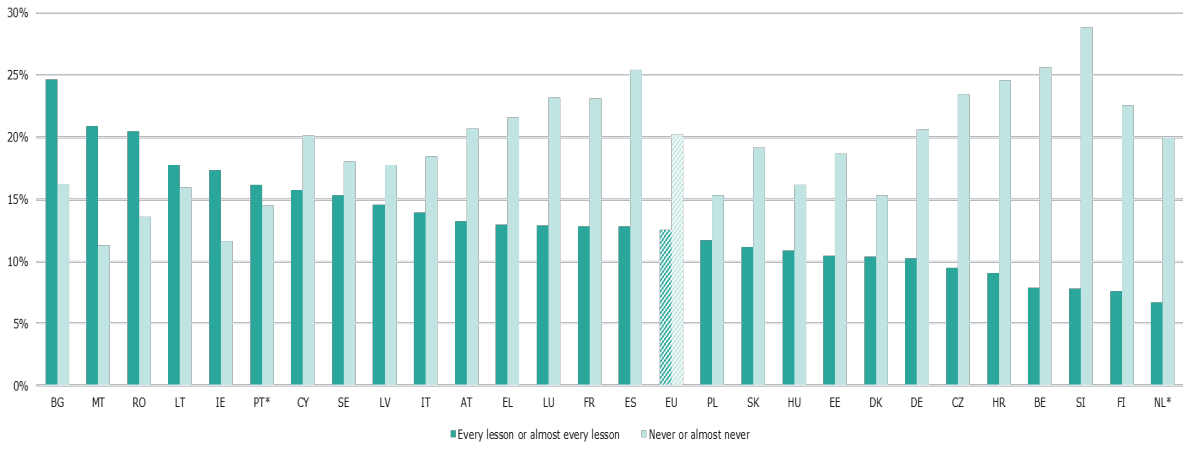


Source: PISA 2018.

Note: a socio-economically disadvantaged (advantaged) school is a school in the bottom (top) quarter of the PISA index of economic, social and cultural status (ESCS) in the country/education system in question. Values of the percentage point difference between both that are statistically significant (20 pps or more) are shaded. Data sorted in descending order according to socio-economically disadvantaged schools' values.

Guidance and feedback from teachers on their tasks can help students to develop their abilities and figure out how to solve similar problems in the future. However, the data show that students across the EU do not perceive that they receive extensive feedback, or guidance to improve. On average, 13% of EU students reported that the teacher tells them how to improve their performance in every lesson or almost every lesson while 20% reported that this never or almost never happened (Figure 26). This is worrisome, as the percentage of those that claim to receive guidance exceeds the percentage that claim the opposite (i.e. guidance is (almost) never given) in only six EU countries. These countries (Bulgaria, Malta, Romania, Lithuania, Ireland and Portugal) are also those where students are more likely to report that constant feedback for improvement is given. In 12 EU Member States, over one fifth of the students reported that they never or almost never receive feedback for improvement (Figure 26). This can hamper the capacity of students to develop resilience.

Figure 26: Percentage of students reporting that the teacher tells them how to improve their performance by frequency, 2018.

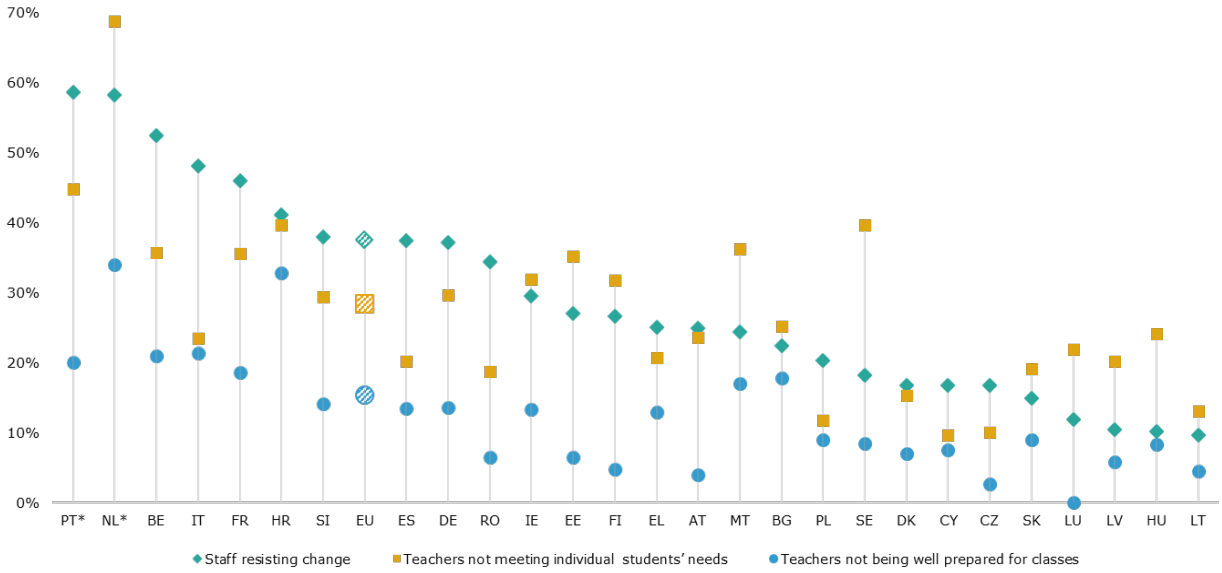


Source: PISA 2018.

Note: *Data did not meet the PISA technical standards but were accepted as largely comparable. Data based on student's reports and in descending order according to "every lesson or almost every lesson" values. Original table III.B1.6.3.

In addition, 28% of students attend a school where the principal considers the inability of teachers to meet individual students' needs to be a hindrance (Figure 27). This problem may be linked to a lack of staff, which remains a concern across the EU and is reported as being a hindrance for 28.5% of students. Also according to school principals, teachers' resistance to change affects 37% of learners across the EU. Yet, equipping students with tools and skills to adapt to changing and unexpected circumstances is crucial for strengthening their resilience and their ability to overcome life challenges.

Figure 27: Percentage of students in schools whose principal reported that the following behaviours hinder student learning to some extent or a lot, 2018.



Source: PISA 2018.

Note: Countries are presented in descending order according to the survey response "Staff resisting change". *Data did not meet the PISA technical standards but were accepted. Original table III.B1.7.1

Finally, evidence has shown that structured outdoor learning measures increase resilience and a growth mind set[75]. Extracurricular activities provided by the school and outdoor programmes can help balance the negative health impacts caused by excessive screen time. They can also help students to develop non-cognitive skills and increase their sense of belonging at school. On average, creative extracurricular activities were more frequently offered in advantaged schools (2.01 in PISA index of creative extracurricular activities[76]) than in disadvantaged ones (1.53 in PISA index). However, with variations across countries, on average in the EU the difference between cities (1.78 in PISA index) and rural areas (1.74 in PISA index) was minimal, and inexistent between private and public schools.

[75] O'Brien, K. and Lomas T. (2017). Developing a Growth Mindset through outdoor personal development: can an intervention underpinned by psychology increase the impact of an outdoor learning course for young people? In: Journal of Adventure Education and Outdoor Learning 17.2, 2017: 133-147.

[76] The PISA index of creative extracurricular activities at school was computed as the total number of the following music- and art-related activities that are offered at school: band, orchestra or choir; school play or school musical; and art club or art activities. Values in the index range from 0 to 3. Higher values in the index indicate greater number of creative extracurricular activities at school.

Building students' resilience and prioritising their well-being requires a joint effort from the whole community. This has become even clearer in the last 2 years when the COVID-19 pandemic forced learners and teachers to adapt to new educational challenges, highlighted the importance of well-being and resilience and revealed the need of efforts across the EU to ensure that no one is left behind.

1.5 Effect of COVID

The COVID-19 pandemic, which led to physical school closures in many countries worldwide coupled with a move to online teaching, considerably reduced the intensity of students' social interactions with their peers and teachers. This reduction in social contact due to the pandemic is expected to be particularly detrimental to vulnerable students (OECD, 2020)[77].

Harmonised and internationally comparable sources allowing to analyse what happened to children's well-being during the pandemic across the EU are still rare. This chapter sets out to draw conclusions from several surveys undertaken to clarify the picture: the "Kids' Digital lives in COVID-19 Times" (KiDiCoTi) survey, coordinated by the European Commission's Joint Research Centre[78], the COVID-19 International Student Well-being Study (C19 ISWS), a global survey on "Student perceptions of remote learning" and an online survey conducted by the European Commission in 2020 on how Vocational Education and Training (VET) ensured continuity of learning and teaching during the COVID-19 lockdown measures[79].

1.5.1 Well–being during COVID-19: evidence from the KiDiCoTi Survey

The project on "Kids' Digital lives in COVID-19 Times" (KiDiCoTi) aimed to understand how children at the end of primary education and in secondary education (10-18 year-olds) and their parents engaged with digital technologies while staying at home and how these experiences may have affected children's online safety and overall family well-being. The survey was carried out during the COVID-19 lockdown in spring 2020 and involved nine EU Member States (Austria, France, Germany, Ireland, Italy, Portugal, Romania, Slovenia and Spain), plus Switzerland and Norway.

In these 11 countries, Figure 28 shows, very few students continued with regular face-to-face schooling during the lockdown (maximum 1%), while between 1 and 4% of the children did not receive any education. Depending on the intensity of the lockdown and the preparedness of the system, other countries moved education for most of the respondents to remote education totally[80] or partially[81]. On the effects physical school closures had on schoolwork (as a sum of school hours and homework), no unified image emerged in the participating countries.

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77 OECD. The impact of COVID-19 on student equity and inclusion: Supporting vulnerable students during school closures and school re-openings (2020).

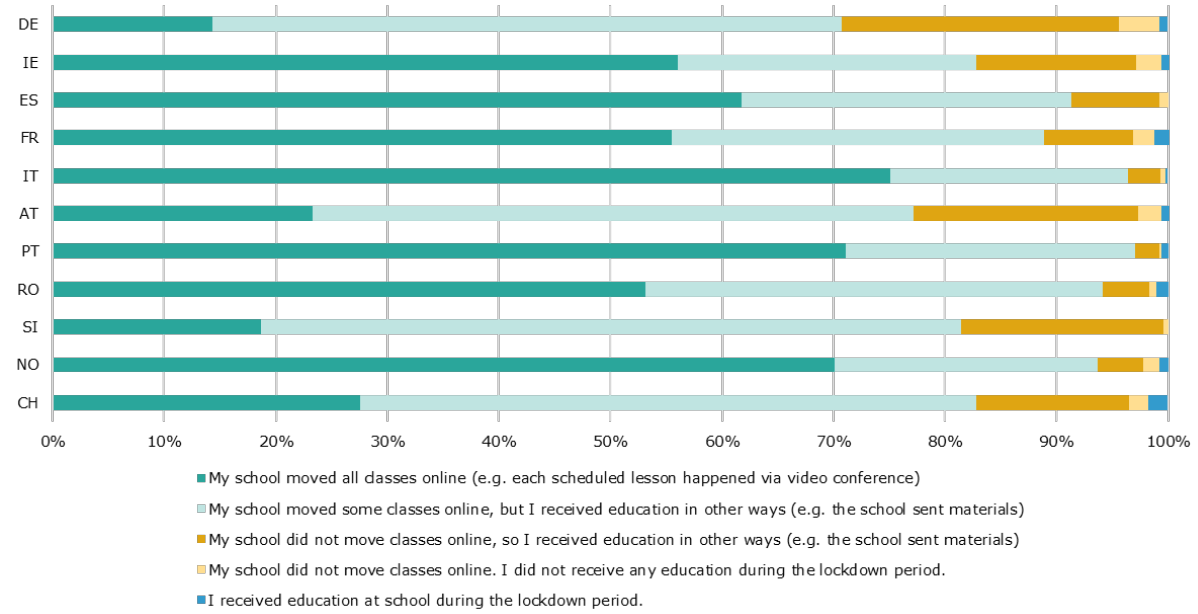
78 In a partnership with the research office of UNICEF and 26 research centres in 15 European countries.

79 European Vocational Skills Week 9-13 November 2020.

80 IT (75%), PT (71%), NO (70%), ES (62%), FR (56%) and RO (53%).

81 SI (63%), DE (56%), CH (55%) and AT (53%).

Figure 28: Different modes of emergency remote schooling during the lockdown



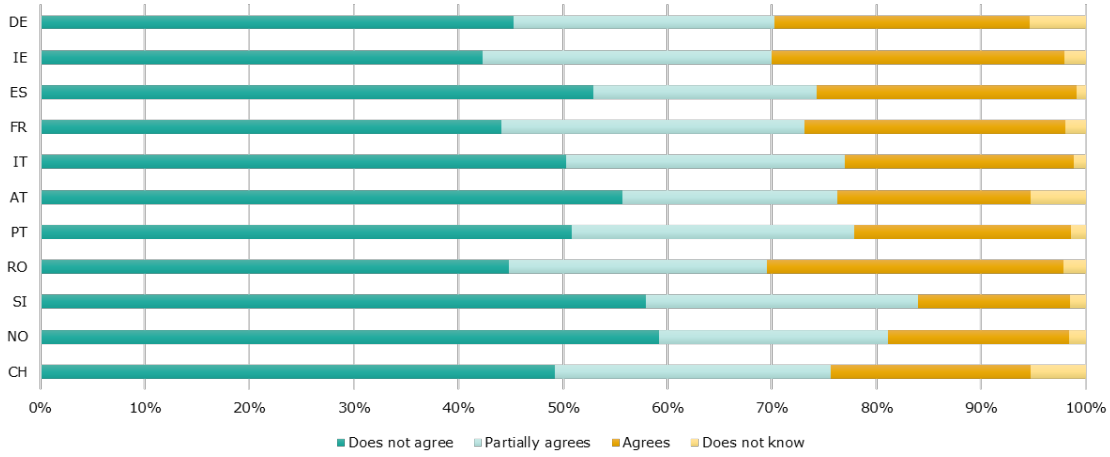
Source: KiDiCoTi consortium calculations.

Physical school closures caused concern among children that they would not be able to keep up with the workload, and among parents that the school closure could negatively affect their children's education[82]. While several factors – e.g. readiness of the education system to react to the COVID-19 challenge – may have affected the perceived difficulties, there was a correlation between the share of children whose classes were moved partially or entirely on line and the extent of their worries.

Indeed, a specific burden on students was the helplessness they felt when doing school activities and homework online, as shown in Figure 29: Ireland (28%), Romania (28%), France (25%), Spain (25%) and Germany (24%) are the countries where around one quarter of the students said they feel "helpless" when facing on-line learning.

82 Vuorikari, R., Velicu, A., Chaudron, S., Cachia, R. and Di Gioia, R. (2020). How families handled emergency remote schooling during the Covid-19 lockdown in spring 2020 – Summary of key findings from families with children in 11 European countries, A JRC Science for policy report, p. 10ff.

Figure 29: Share of students agreeing/disagreeing with the following sentence: "I feel helpless when I have to do school activities and homework online"



Source: KiDiCoTi consortium calculations.

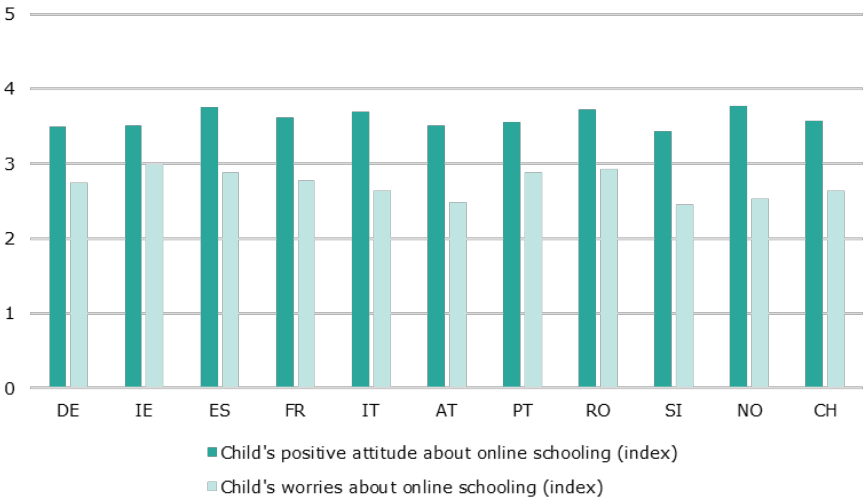
A broader indication of the effects of remote learning due to COVID-19 on children's well-being can be derived from two indices calculated on the basis the KiDiCoTi responses, one of negative[83] and one of positive[84] attitudes related to remote learning. Both indices are measured on a scale from 0 (lowest) to 5 (highest).

Figure 30 shows that, overall, a positive attitude prevails in all countries, with the highest positive values recorded in Norway (3.8), Spain (3.8), Italy (3.7), and Romania (3.7). At the same time, some countries did experience stronger negative attitudes, notably Ireland (3.0), Portugal (2.9), Romania (2.9), and Spain (2.9). In some countries the gap between negative and positive attitudes is high, which indicates a potential polarisation in the student population. This is true in Norway (1.3), Italy (1.1), Austria (1), Switzerland (1), Slovenia (0.9), and Spain (0.9).

83 This index uses the replies to the following statements capturing students' negative attitudes related to on-line learning: (a) I get nervous participating in on-line activities; b) I worry that it will be difficult for me in on-line activities; c) I worry that I will get poor grades because of on-line activities; d) I worry that it will be difficult for me in on-line activities; e) I worry that it will be difficult for me to complete school activities on-line; f) I feel helpless when I have to do school activities and homework on-line). The index is obtained by summing up the individual responses over the five items, computing the individual average first and the country average as a final step.

84 This index is a measure of the positive attitudes that students' have with respect to on-line learning, obtained from the following items: g) I am motivated to participate in on-line activities; h) I learn quickly how to participate in on-line activities; i) I can follow even the most difficult teaching during on-line activities; l) have always believed that I am good with on-line activities. The index is obtained by summing up the individual responses over the four items, computing the individual average first and the country average as a final step.

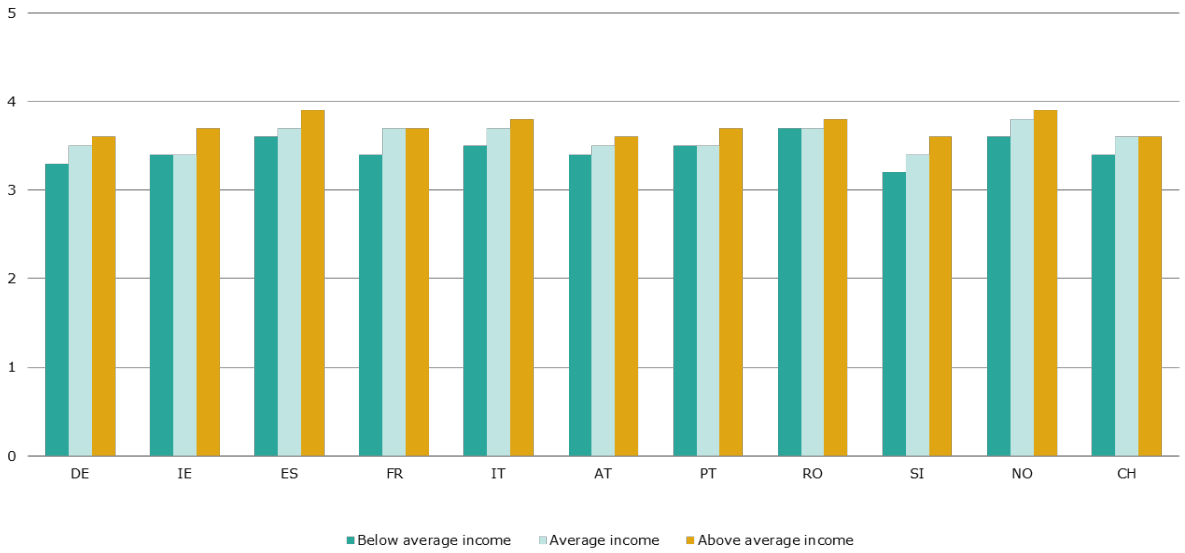
Figure 30: Child's positive and negative attitudes towards online learning (index)



Source: KiDiCoTi consortium calculations.

Positive and negative attitudes across different income[85] groups reveal a clear socio-economic gap, with a more positive view among children from above average income households (Figure 31 and Figure 32) and a more negative outlook in students (with the exception of Germany and Italy) from below-average income households. As further data becomes available it would be interesting to analyse whether a similar difference in impact will also be apparent in learning outcomes.

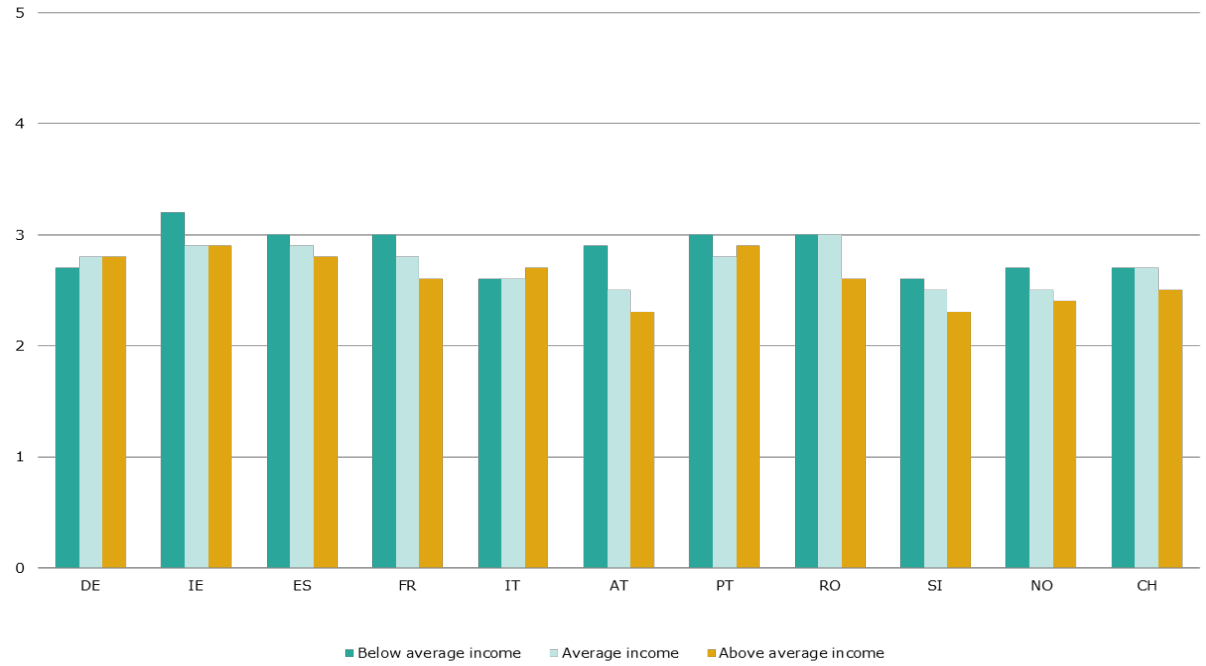
Figure 31: Child's positive attitudes towards online learning (index): by income group



Source: KiDiCoTi consortium calculations.

85 This is the perception of household income relative to the "average" by the parent responding to the questionnaire.

Figure 32: Child's negative attitudes towards online learning (index): by income group



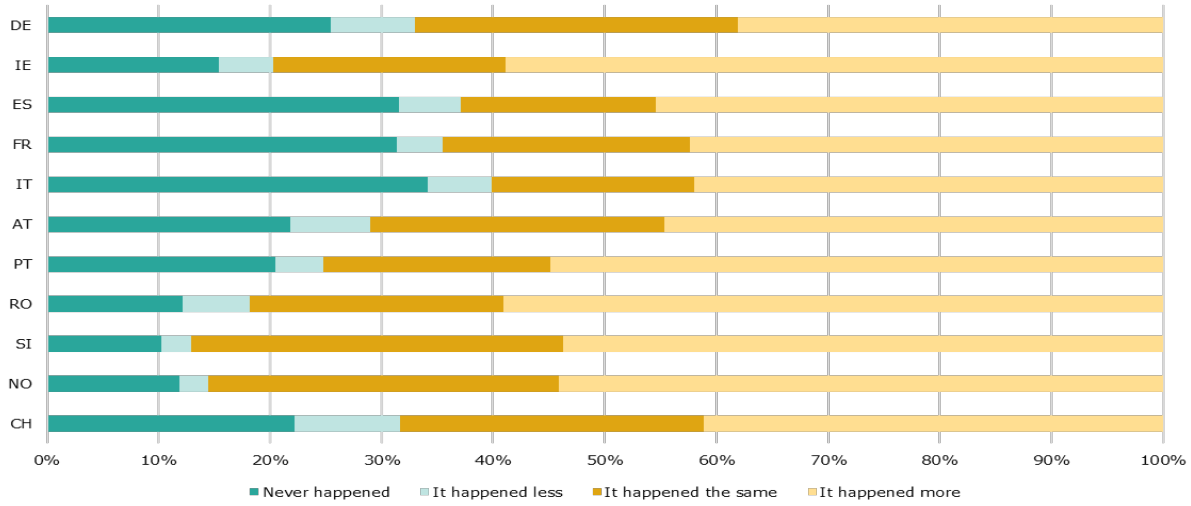
Source: KiDiCoTi consortium calculations.

On how schoolchildren spent their time during lockdown[86], KiDiCoTi data show that students spent close to 3.5 hours per day on digital technologies for school activities only. Many hours per day, close to 40% of their available time[87], were spent on the internet or using digital technologies (including digital games). This is somewhat expected, given the limitations to social activities during the lockdown, but it also signals a potential risk for the physical and mental well-being of students. Indeed, many students felt that they spent too much time on the internet or using digital devices, compared to pre-lockdown (Figure 33). The share of students reporting overuse of such tools was especially high in Romania (59%), Ireland (59%), Portugal (55%) and Norway (54%). In fact, a significant proportion of KiDiCoTi respondents across all countries replied that they were unable to sleep or eat because of the amount of time spent on the internet during the lockdown (and compared to the pre-lockdown period).

86 For an analysis of the risks related to the use of internet and digital devices during the lockdown see: Lobe, B., Velicu, A., Staksrud, E., Chaudron S., Di Gioia, R. (2021). How children (10-18) experienced online risks during the COVID-19 lockdown – Spring 2020. A JRC Technical Report.

87 Assuming that 8 hours are devoted to sleeping.

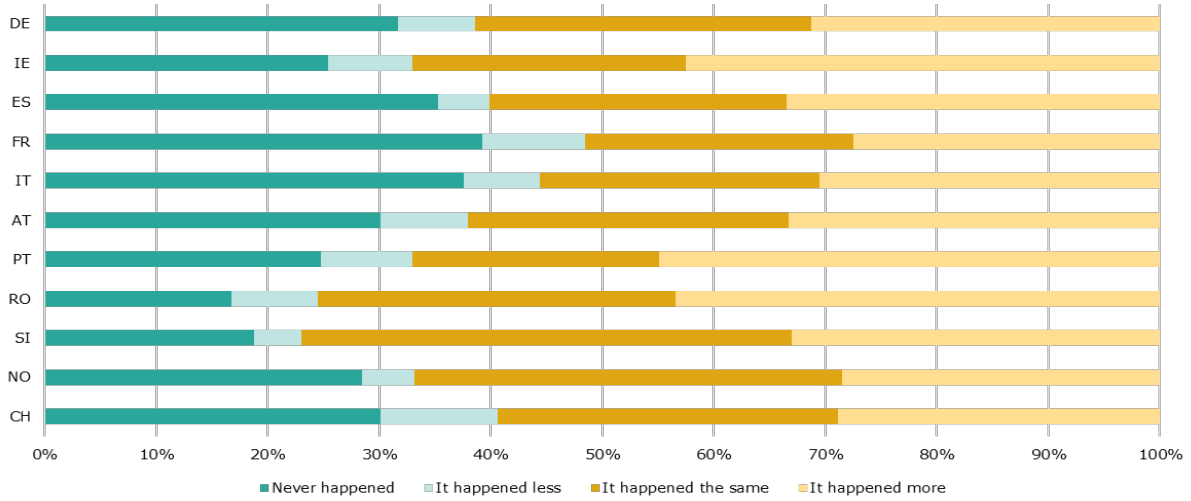
Figure 33: Share of students declaring to overuse internet or digital devices during lockdown (compared to pre-lockdown)



Source: KiDiCoTi consortium calculations.

It is worrying that in all countries a large proportion of students has unsuccessfully tried to reduce the time spent on the internet or on digital devices. Figure 34 shows that this has been especially the case in Portugal (45%), Romania (43%), and Ireland (43%), not surprisingly 3 of the 4 countries with the highest number of hours spent on-line or on digital devices.

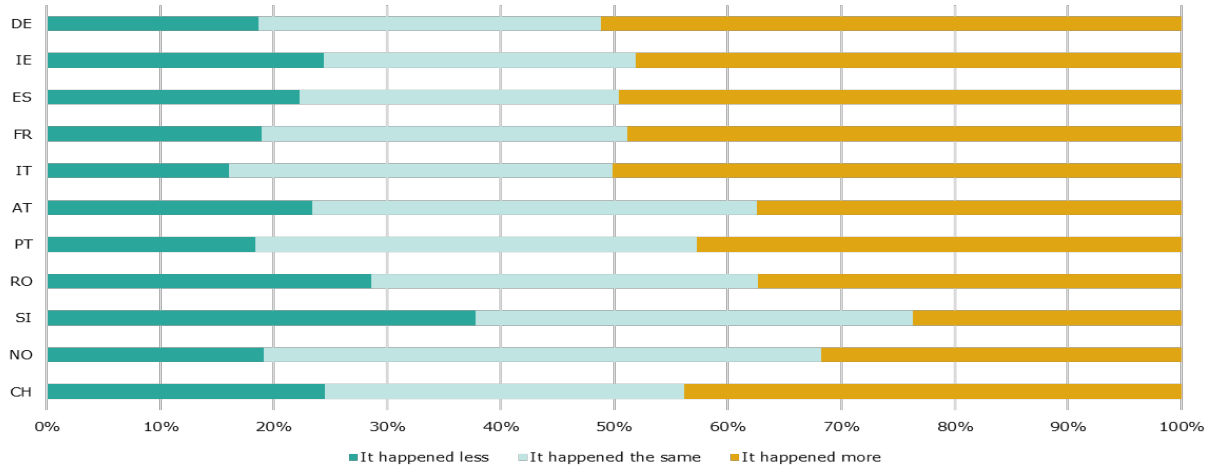
Figure 34: Share of students declaring to have been unable to reduce the number of hours spent on the internet or digital devices



Source: KiDiCoTi consortium calculations.

Given the substantial amount of time during lockdown spent using digital devices, an analysis of the occurrence of cyberbullying[88] during the lockdown is called for (Figure 35). The data show that in five countries (Germany, Italy, Spain, France and Ireland) around 50% of students have been more exposed to at least one form of cyberbullying during the lockdown than before[89]. Moreover, an average of 44% (across the 11 countries covered by the survey) reports a higher exposure to cyberbullying during the lockdown whereas only 22% report a reduction during the same period.

Figure 35: Share of students who have been the victim of cyberbullying (CB) during the lockdown (compared to the pre-lockdown period)



Source: KiDiCoTi consortium calculations.

Finally, parents were asked for their opinions on the types of interventions schools could put in place to support parents and children during the lockdown. Three interventions stand out in the responses: (1) support to activities that allow interaction with schoolmates; (2) guidance on how to support the children with distance learning activities and homework; and (3) ideas for extracurricular activities that could be done at home. This indicates that parents, children, teachers and schools were ill-prepared for a sudden move to remote and on-line learning, but it also fits very well with conclusions from the pre-COVID evidence on the importance of need for social interaction for students' well-being.

1.5.2 COVID-19 and the well-being of higher education students

COVID-19 and the related containment measures have posed a great challenge to student well-being, especially well-being of higher education students. As individuals progress through the education system, academic challenges increase and so does the pressure to perform well. Add to this lifestyle changes, relocation to a different geographical area or even abroad, a newly gained freedom to make decisions, and a higher form of mental pressure is to be expected. Indeed, evidence shows depressive symptoms occur more often among university students than among the general population[90].

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88 The KiDiCoTi questionnaire qualifies four behaviours as cyberbullying: (1) "nasty or hurtful messages sent to me" (i.e. to the student answering the question); (2) "nasty or hurtful messages about me were passed around or posted where others could see"; (3) "I was left out or excluded from a group or activity on the internet"; (4) "I was threatened on the internet".

89 Some of this phenomenon may have been a "transfer" of in-person bullying, which was no longer possible as children were only interacting with their peers online.

90 Wörfel F., Guys, B., Lohmann, K., Töpritz, K. and Kleiber, D. (2016). Mental health problems among university students and the impact of structural conditions. Journal of Public Health, 24(2), 125–33.

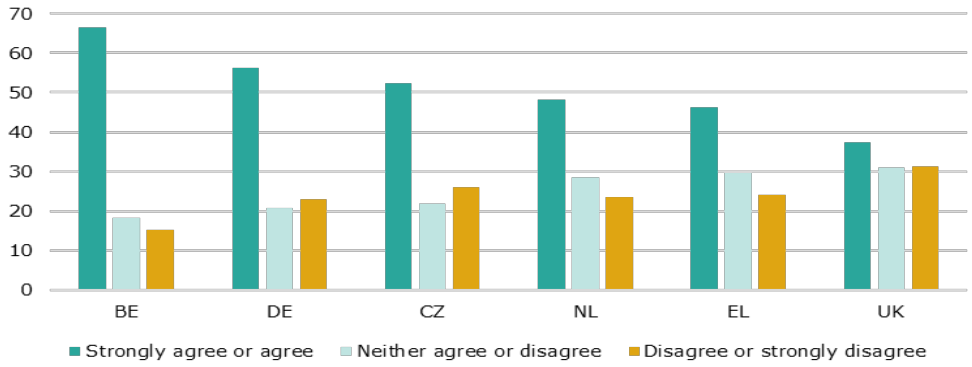
During the COVID-19 pandemic several factors may have negatively affected the well-being of higher education students. These include changes in social and family life, lack of social life and fear of illness, the sudden switch to remote teaching and learning, the cancellation or postponement of important events such as graduation ceremonies or participation in study exchange programmes or traineeships, the loss of part-time jobs, and the increased uncertainty about labour market prospects after graduation.

One cross-country data source that examines the impact of COVID-19 on higher education students' well-being is the COVID-19 International Student Well-being Study (C19 ISWS)[91]. Several studies based on the C19 ISWS data make it possible to take a closer look at students in one or more higher education institutions in Greece, Germany, the Netherlands, Belgium, Czechia and the United Kingdom[92].

Following the COVID-19 pandemic, most higher education institutions around the world were quickly forced to move their courses online. It might be expected that such an unexpected change could pose a serious threat to student well-being by inducing academic-related stress and anxiety, in turn leading to a reduced memory span, distraction, lack of confidence and poor reasoning power[93].

As shown in Figure 36, in all the European countries here considered a large proportion of students perceive a significantly increased workload during the COVID-19 pandemic; this perception, it should be noted, may be biased.

Figure 36: "My university/college workload has significantly increased during the COVID-19 outbreak"



Source: C19 ISWS Survey

[91] Data were collected on students from 110 higher education institutions located in 26 different countries during the spring of 2020. Participants were contacted online and asked to compare their current situation with that before the COVID-19 outbreak. For more information on C19 ISWS, see Van de Velde S., Buffel, V., Bracke, P., Van Hal, G., Somogyi, N.M., Willems, B., Wouters, E. and C19 ISWS consortium (2021). The COVID-19 International Student Well-being Study. In: Scandinavian Journal of Public Health, 49(1), 114-122.

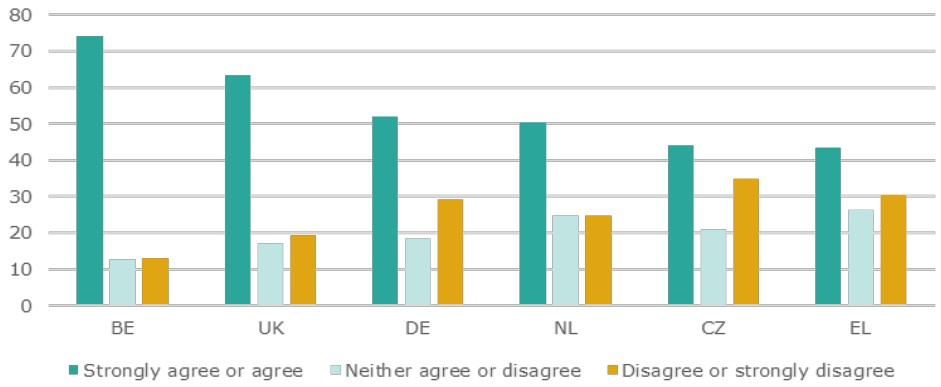
[92] Stathopoulou T., Mouriki A. and Papaliou O. (2020). Student well-being during the COVID-19 pandemic in Greece. Results from the C19 ISWS Survey. A National Centre for Social Research paper (EKKE); Busse, H. and Zeeb, H. (2020). International COVID-19 Student Well-being Survey (C19 ISWS). Kurzbericht zu Ergebnissen der Online-Befragung für den Standort Bremen; Super, S. and van Disseldorp, L. (2020). COVID-19 International Student Well-being Study (C19 ISWS). Data from Wageningen University and Research. De Man, Buffel, V., van de Velde, S. Bracke, P., Van Hal, G.F. and Wouters, E. (2021). Disentangling depression in Belgian higher education students amidst the first COVID-19 lockdown (April-May 2020). Archives of Public Health, 79(1), 1-10; van de Velde, S., Buffel, V., Wouters, E., Van Hal, G.F., Bracke, P. and Colman, L. (2020) COVID-19 International Student Well-being Study. Eerste resultaten Belgische cijfers. Klusáček, J. Kudrnáčová, M. and Soukup, P. (2020). Studenti VŠ v první vlně pandemie: COVID-19 International Student Well-being Study. Rabiee-Khan, F. and Biernat, K. (2021). Student well-being during the first wave of COVID-19 pandemic in Birmingham, UK. Results from the C19 ISWS Survey.

[93] Aronen, E.T., Vuontella, V., Steenari, M.R., Salmi, J. and Carlson, S. (2004). Working memory, psychiatric symptoms, and academic performance. In: Neurobiology of Learning and Memory, 83(1), 33-42.

Furthermore, following COVID-19 and the related lockdown, a high percentage of students, especially in Belgium and Greece, reported concern about their ability to successfully complete the academic year.

The change in teaching methods resulting from the COVID-19 pandemic created a source of stress for higher education students (Figure 37) like it did for the respondents of the KiDiCoTi survey (see above). This seems to be especially the case in Belgium and in the United Kingdom. Possible reasons include not having a computer, affordable access to the internet, a stable internet connection or even basic digital skills.

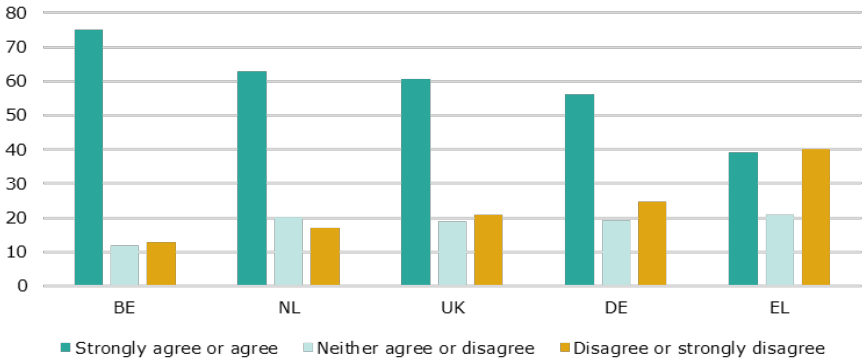
Figure 37: "The change in teaching methods resulting from the COVID-19 outbreak has caused significant stress to me"



Source: C19 ISWS Survey

Indeed, the move to an online learning environment was a major adjustment. For instance, the content of many courses, which was originally designed for face-to-face teaching, had to be revised, and student assessments had to be changed to an online format. As shown in Figure 38[94], the implications of the sudden switch to online learning created a lot of uncertainty among students. The percentage of students being uncertain about expectations since the pandemic was high, particularly in Belgium.

Figure 38: "I have known less about what is expected of me in various course modules/units since the COVID-19 outbreak"

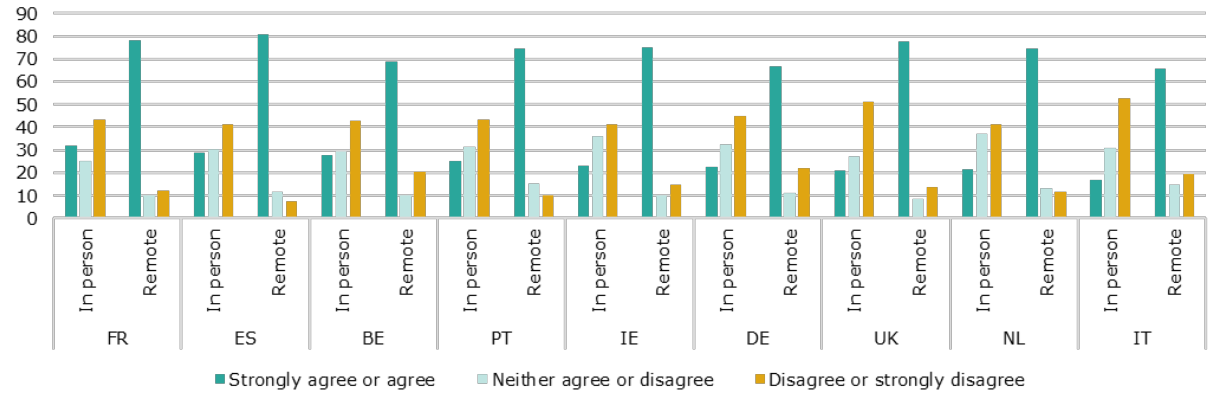


Source: C19 ISWS Survey

[94] Data from CZ are not shown in this table given that the wording of the relevant question is slightly different from that in the other countries.

Data from a global survey on "Student perceptions of remote learning"[95], which contacted participants through Instagram, corroborate the hypothesis that the switch from in-person to online learning was a source of great preoccupation for higher education students, affecting their learning motivation as well as their ability to concentrate. Considering only those European countries for which the number of respondents is 99 or more, there is consistent evidence indicating that motivation in online learning environments is considerably lower compared to in-person classes[96]. Students from different European countries systematically report to be *more distracted in online* environments compared to in-person settings (Figure 39).

Figure 39: "I am often distracted when doing course work or attending classes"



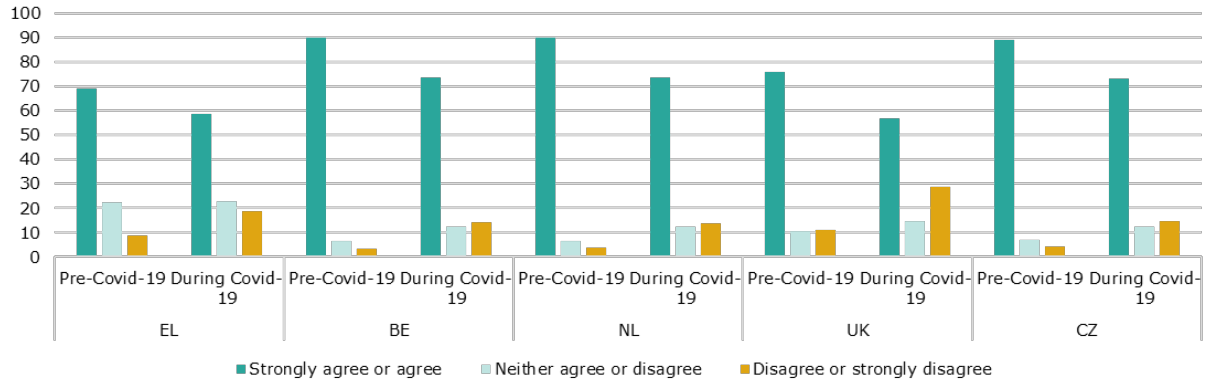
Source: Student perceptions of remote learning.

In addition to academic stress, COVID-19 is likely to cause increased financial stress, for example due to job loss or parents' decreased ability to contribute to the cost of their children's education, having a negative impact on higher education students' well-being. Financial stress can cause depression and lack of sleep. It may have a negative impact on cognitive ability because of concentration problems. As illustrated in Figure 40, the C19 ISWS survey shows that the pandemic had a negative impact on students' ability to cover their monthly costs. The proportion of students reporting to be financially stressed has significantly increased during COVID-19.

[95] Stein, G. (2020). Student perceptions of remote learning, Harvard Dataverse, V1.

[96] One should bear in mind that the samples from the two surveys used here are both convenience samples and hence are not representative of the student population in higher education. This means that the results should be interpreted cautiously as they may be subject to some bias. E.g. it is possible that participation in the surveys was higher among students suffering from stress due to COVID-19 compared to their peers who did not experience any stress. A study of student motivation during the remote learning during pandemic should not necessarily lead to more general conclusions on student motivation in online learning environments in non-crisis periods (e.g. students who follow exclusively-online masters' courses). The motivation of a student who expected to attend physical classes but was forced to go online due to a pandemic, and the motivation of a student who chooses to do an online degree, will not be the same as their initial expectations were not the same.

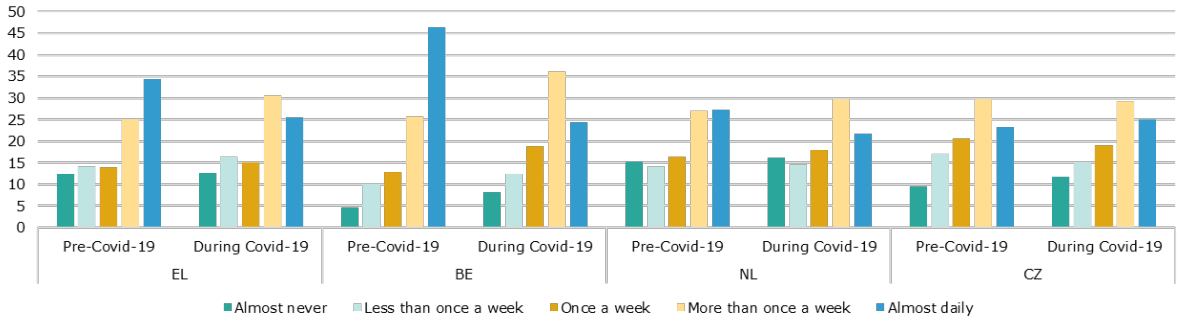
Figure 40: "I had sufficient financial resources to cover my monthly costs"



Source: C19 ISWS Survey.

Regular physical activity contributes to well-being: research has demonstrated that physical exercise may improve mood, the ability to sleep and self-esteem and can enhance cognitive functioning[97]. Fewer occasions to exercise through lockdown measures as well as greater anxiety caused by both academic and financial stress as a result of COVID-19 could be expected to have increased physical inactivity among students. Findings from the C19 ISWS survey[98] indeed show a decrease in the share of students performing almost daily "moderate" physical activities (e.g. easy cycling, walking) in all countries considered but Czechia (Figure 41). The opposite result, however, is observed in Figure 42 for "vigorous" physical activities (defined as at least 30 minutes of fast cycling, aerobics, running, lifting heavy weights): the proportion of students who engage almost daily in these types of activities increased during the pandemic (with the exception of Dutch students).

Figure 41: Frequency of moderate physical activity before and during COVID-19

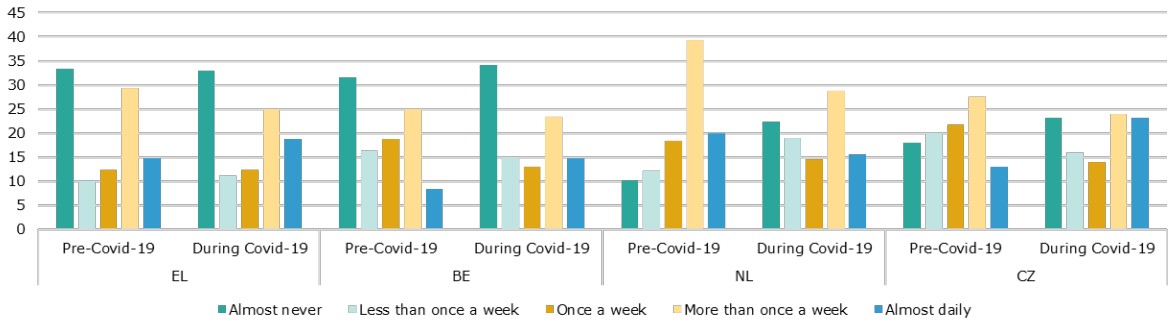


Source: C19 ISWS Survey.

97 Lambourne, K. (2006). The relationship between working memory capacity and physical activity rates in young adults. Journal of Sports Science and Medicine, 5(1), 149–153.

98 Relevant information about the UK, though available, is unfortunately not comparable with data from other countries since UK respondents were given the possibility to select an additional option, i.e. "twice a week".

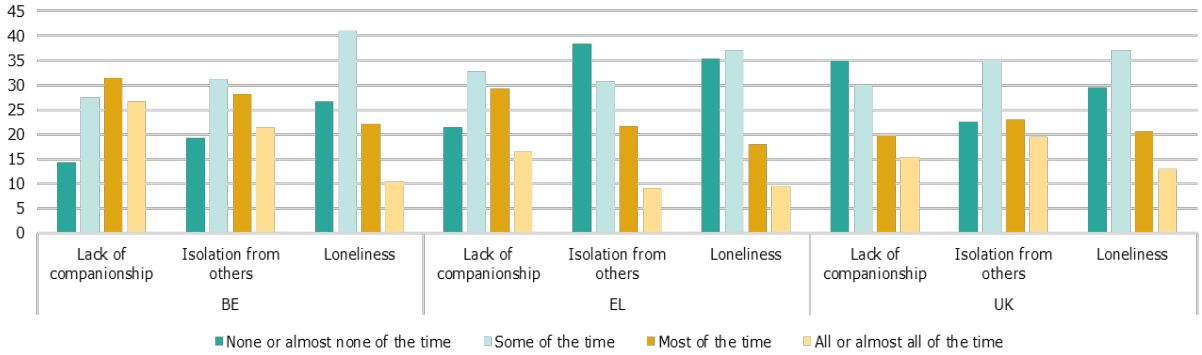
Figure 42: Frequency of vigorous physical activity before and during COVID-19



Source: C19 ISWS Survey.

COVID-19 social distancing and lockdown measures meant that students could not meet up with their family (unless they were in the same household), friends and colleagues, impacting negatively on their well-being. Indeed, evidence associates loneliness with clinical insomnia[99], depression and anxiety[100]. C19 ISWS data from Belgium, Greece and the United Kingdom indicate that a relatively large proportion of students reported a lack of companionship, isolation from others, and loneliness at least some time during the week prior to the interview (Figure 43).

Figure 43: Feelings of loneliness during the pandemic



Source: C19 ISWS Survey.

Overall, the available evidence suggests that the pandemic had a negative impact on higher education students' well-being, with increased academic and financial stress, a lack of regular moderate physical activity (partially compensated by an increase in regular vigorous physical activity) and an increased sense of isolation and loneliness.

This may have consequences in both the short- and long-term both at micro and macro level. For example, anxiety is associated with lower academic performance, a higher drop-out risk, delays in graduation[101] and worse labour market prospects. At macro level, since higher education is heavily

99 Kokou-Kpolou, C.K., Megalakaki, O., Laimou, D. and Kousouri, M. (2020). Insomnia during COVID-19 pandemic and lockdown: prevalence, severity, and associated risk factors in French population. In: Psychiatry Research, 290, 113–128.

100 Hoffart, A., Sverre U.J., Ebrahimi, O.V. (2020). Loneliness and social distancing during the COVID-19 pandemic: Risk factors and associations with psychopathology. In: Frontiers in Psychiatry.

101 Using data on Swedish university students, a study (i.e. Andersson, C., Johnsson, K.O., Berglund, M. and Öjehagen, A. (2009). Stress and hazardous alcohol use: Associations with early dropout from university. Scandinavian Journal of Public Health, 37(3), 713–719) finds a close association between stress and dropout. According to the American College of Health Association, in 2015 30% of students stated that stress interfered with their academic achievement within the previous year. Finally, there is some evidence that financial stress makes college students less likely to graduate on time.

subsidised by governments, higher drop-out rates may lead to an inefficient use of public money and a lower future economic growth. To alleviate these effects and assist students in these difficult circumstances, higher education institutions could put in place mechanisms to monitor stress among their students. Easy, accessible mental help support could be provided by these institutions (e.g. mindful mediation can be quite effective in reducing stress and anxiety in higher education students[102]).

1.5.3 Well-being and resilience of VET students under COVID-19

The analysis so far has made it clear that the transition from the physical space of schools and workplaces to being secluded at home and learning online has come at a cost. The extraordinary experience of this pandemic has placed a lot of stress on the education and training systems as well as on career guidance and counselling services. Besides the obvious challenges, it is possibly even more important to find out how countries were able to support vocational learners (both in school-based VET and apprenticeships) in this overnight transition.

According to Cedefop's *Network of Ambassadors tackling early leaving from Vocational Education and Training*[103], the socio-economic impact of COVID-19 was felt hardest by the most vulnerable learners across Europe. While the consequences of the crisis might be similar irrespective of the level of education, they are expected to be more serious for the VET sector. According to an online survey conducted by the European Commission in 2020 on how VET ensured continuity of learning and teaching through COVID[104], VET learners may be at a greater disadvantage than those from other educational tracks. For many of them, living in poverty with no digital devices and/or web access at home, or living in remote areas with a lack of learning materials or school supplies, the school closures due to COVID-19 have plunged them further into hardship.

Cedefop CareersNet[105] experts drew attention in particular to similar issues concerning guidance and counselling, for example the social digital divide, the potential higher drop-out rates in VET, geographical disparities, and an increase in anxiety and psychological disorders in relation to the COVID-19 crisis. They noted that demand for psychosocial support increased considerably, reflecting the uncertainty created by the pandemic for specific groups, particularly end-year learners. To help VET learners stay in education and training and cope with increased anxiety and psychological disorders, the approach taken by education and training systems and lifelong guidance systems (educational sector) was broadly the same even though the level of actual implementation might have differed across countries. On the one hand, the goal was to make tailored support available to vulnerable individuals based on their specific needs or support the whole family rather than the individual where necessary. Although distant support was the default, face-to-face services were not excluded if deemed necessary and where resources were available. Attempts were made to establish personal contact with learners over the phone, e.g. to support those at risk of early leaving from education and training (ELET). Where necessary and possible, both learners and their parents were provided with support. Finally and in the best case scenario, the support was generally wide-ranging, involving teachers, guidance practitioners, social workers and psychological counsellors. The aim was to support learning and well-being, and qualities such as resilience and adaptability.

E.g. Letkiewicz, J., Lim, H., Heckman, S., Bartholomae, S., Fox, J. and Montalto, C.P. (2014). The path to graduation: Factors predicting on-time graduation rates. In: Journal of College Student Retention: Research, Theory and Practice, 16(3), 351-371.

102 Bamber, M.D and Schneider, J.K. (2016). Mindfulness-based meditation to decrease stress and anxiety in college students: A narrative synthesis of the research. Educational Research Review, 18, 1-32.

103 Cedefop (2020). Digital gap during COVID-19 for VET learners at risk in Europe. Synthesis report based on preliminary information on seven countries provided by Cedefop's Network of Ambassadors tackling early leaving from VET.

104 European Vocational Skills Week 9-13 November 2020.

105 Cedefop (2020). Note on lifelong guidance and the COVID-19 pandemic. Responses from Cedefop's CareersNet.

Particular attention should be paid to apprentices, who, unlike school-based VET learners, spend an extensive period of their studies at an employer, with whom they have a contractual link and receive remuneration. While they face the same challenge as their peers in school-based VET and may need the same type of support (as outlined above), they also face additional issues such as the closure of their training company. During the lockdown, apprentices lost key learning outcomes (work and interpersonal skills) that they would have gained at the workplace[106]. Key challenges related to COVID-19 included: (i) a decrease in the supply of apprenticeships; and (ii) severe disruptions in the normal provision of education and training for those apprentices who remained in training[107].

Some initiatives were taken, often by public employment services and/or educational authorities, to mitigate the economic impact on apprentices, such as allowing those working under the labour code to access labour market measures or unemployment benefits, until they could resume their in-company training. Apprentices whose contracts were not covered by the labour code, usually received a State grant. Measures are now needed to enable apprentices to catch up on learning.

The current crisis has shown that there is no digital inclusion without social inclusion. Marginalised and vulnerable learners are less likely to be involved in distance learning procedures; disconnecting for a longer period may lead them to drop-out from their VET programme. At the same time, evidence shows that existing digital learning formats do have their limits and thus cannot replace or bring the same social benefits as the physical space of schools and workplaces.

106 Cedefop (2020). How are European countries managing apprenticeships to respond to the COVID-19 crisis? Synthesis report based on information provided by Cedefop community of apprenticeship experts.

107 According to the European Alliance for Apprenticeships (EAfA) Pledge Monitoring Survey of EAfA members, conducted between February and April 2021; EAfA Monitoring Survey 2019-2020, Apprenticeship Support Services.

Part 2

Seven EU-level targets towards the European Education Area and beyond (2021-2030)

2 Seven EU-level targets towards the European Education Area and beyond (2021-2030)

With the ET2020 drawing to a close last year, on 18 February 2021, the Council of the EU adopted a Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030). This Resolution established a new cycle of cooperation in education with an updated set of seven EU-level targets for education and training.

Thus, the previous "2020 benchmarks" have been superseded by the "EU-level targets 2021-2030" The following table compares the two monitoring schemes in a simplified form. The sequence of indicators follows the current framework. A detailed comparison of the two frameworks including the modified numerical target values is presented in the Annex (Figure 75).

Figure 44: Simplified correspondence table between the current EU-level targets towards the EEA and beyond (2021-2030) and the former ET2020 benchmarks

	EEA and beyond 2021-2030	ET2020
1	Low achieving 15-year-olds in basic skills	
2	Low achieving eight-graders in digital skills	Employment rates or recent graduates
3	Early childhood education and care	
4	Early leavers from education and training	
5	Tertiary educational attainment	
6	Exposure of VET graduates to work based learning	Learning mobility
7	Participation of adults in learning	

Source: Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030) (2021/C 66/01) of 21 February 2021.

Note: The order of indicators corresponds to the 2021 February Council Resolution. no. 1 underwent minor changes in wording. No. 4. received a complementary indicator ("upper secondary attainment"). No. 7 saw a change in the reference period. For details see Figure 75 in the Annex.

2.1 Underachievement in basic skills

In a nutshell

Underachievement at age 15 focuses on students who perform below the minimum level in reading, maths or science[108] necessary to participate successfully in society. Failing to meet this very basic proficiency level lowers a pupil's future chances both on a personal and professional level. The corresponding EU-level target for 2030 is to ensure that the total average underachievement in these three domains across the EU is below 15%. On average across the EU, the EU-level target – an underachievement rate of less than 15% – has not been reached in any of the three domains tested by PISA 2018. In 2018, the underachievement rate stood at 22.5% in reading, 22.9% in mathematics and 22.3% in science[109]. Despite progress in 2009-2018 in some countries, performance in science and reading deteriorated at EU level and remained stable in mathematics. PISA results suggest that countries tend to obtain similar results across the three domains. Countries such as Estonia, Finland, Ireland and Poland have low underachievement rates in all three domains. By contrast, in Bulgaria, Romania Cyprus and Malta, more than one in five students underachieve at the same time across all three domains.

2.1.1 Progress towards the EU-level target: reading

In 2018, reading performance showed large variation across the Member States (Figure 45). Four countries met the 15% EU-level target for low achievement: Estonia (11.1%), Ireland (11.8%), Finland (13.5%) and Poland (14.7%) and Denmark was just above the target (16.0%). By contrast, the underachievement rate exceeded 30% in Malta (35.9%), Slovakia (31.4%) and Greece (30.5%), and even 40% in Bulgaria (47.1%), Cyprus (43.7%) and Romania (40.8%).

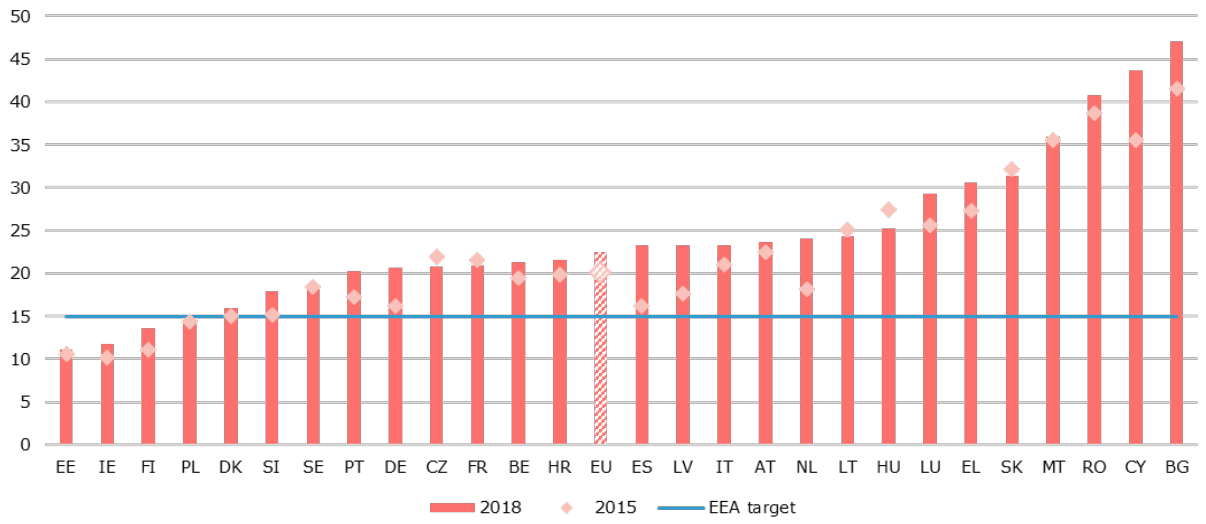
Performance worsened in most countries compared to the previous 2015 PISA round. This is reflected in the slightly increased EU average, from 20.0% in 2015 to 22.5% in 2018. The deterioration was statistically significant in Cyprus (+8.1 pps), the Netherlands (+6.0 pps), Latvia (+4.8 pps), Germany (+4.5 pps), Luxembourg (+3.6 pps), Slovenia (+2.7 pps) and Finland (+2.5 pps).

Looking at reading performance over a longer time span, performance did not change substantially in most countries between 2009 and 2018. In eight countries (the Netherlands, Slovakia, Greece, Hungary, Finland, Latvia, Belgium and Luxembourg) the underachievement rate increased at a statistically significant rate. Only Ireland and Slovenia experienced a statistically significant decline. Overall, EU reading performance deteriorated, with the 2009 EU average underachievement rate at 19.2%.

[108] Data stem from the OECD PISA, which targets 15 year-olds, takes place every three years and is the largest international competence test for school students. All EU Member States participated in PISA 2018, involving 7 854 schools and 207 851 students across the EU. The three PISA domains of reading, mathematics and science are all tested in each wave of the survey, with one domain being chosen as "core" each time. In PISA 2018, reading was the core domain. This section features a summary of the PISA 2018 data with regard to the EEA 2030 target. A new PISA study is scheduled only for 2022 with the data likely to become available at the end of 2023.

[109] EU27 (without the UK).

Figure 45: Underachievement rate in reading, 2015 and 2018 [%]



Source: PISA 2018, OECD.

Note: In 2018, some regions in ES conducted their high-stakes exams for tenth-grade students earlier in the year than in the past, which resulted in the testing period for these exams coinciding with the end of the PISA testing window. Because of this overlap, a number of students were negatively disposed towards the PISA test and did not try their best to demonstrate their proficiency. Although the data of only a minority of students show clear signs of lack of engagement (see PISA 2018 Results Volume I, Annex A9), the comparability of PISA 2018 data for ES with those from earlier PISA assessments cannot be fully ensured.

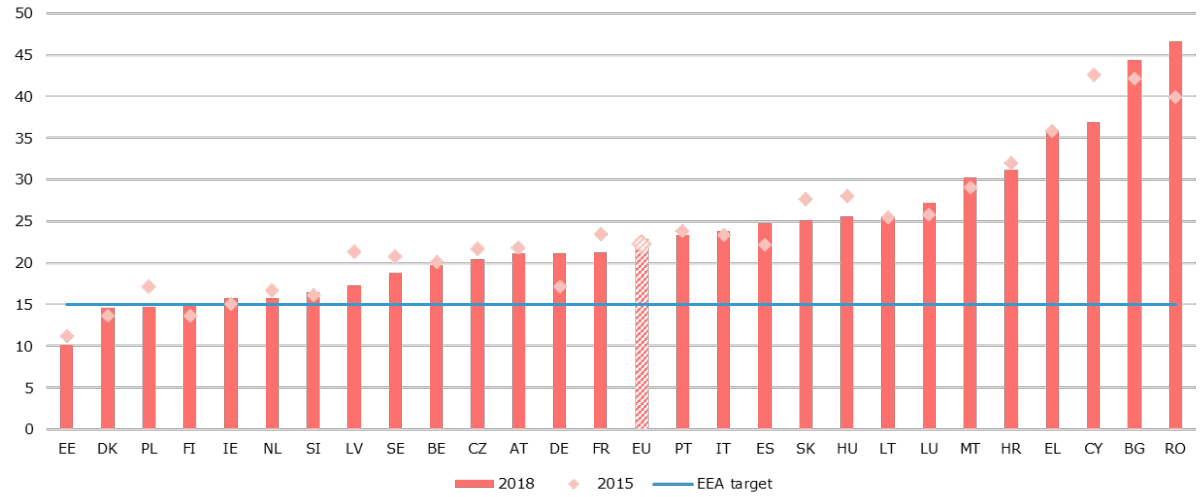
2.1.2 Progress towards the EU-level target: maths

The 2018 pattern of underachievement in mathematics is similar to that for reading (Figure 46). Four countries met the 15% target: Estonia (10.2%), Denmark (14.6%), Poland (14.7%) and Finland (15.0%). Ireland (15.7%), the Netherlands (15.8%) and Slovenia (16.4%) were just above the EU-level target. The underachievement rate exceeded 30% in Romania (46.6%), Bulgaria (44.4%), Cyprus (36.9%), Greece (35.8%), Croatia (31.2%) and Malta (30.2%).

Performance remained rather stable in many Member States between 2015 and 2018. A slight majority of countries experienced a decline in the underachievement rate, but it was statistically significant only in Cyprus (–5.7 pps) and Latvia (–4.1 pps). The only statistically significant increases took place in Romania (+6.6 pps) and Germany (+3.9 pps). Consequently, the EU average, at 22.9%, remained stable compared to 2015, when it stood at 22.2%.

The EU average performance in mathematics remained stable also over the longer window of 2009-18, although trends differ across Member States. Three countries experienced a statistically significant increase of their share, namely Finland (+7.1 pps), Slovakia (+4.1 pps) and Luxembourg (+3.3 pps). At the same time, four Member States registered a statistically significant decrease: Poland (–5.8 pps), Latvia (-5.2 pps), Ireland (-5.1 pps) and Slovenia (-3.9 pps).

Figure 46: Low achievers rate in mathematics, 2015 and 2018 [%]



Source: PISA 2018, OECD.

Note: Data in ascending order according to 2018 values.

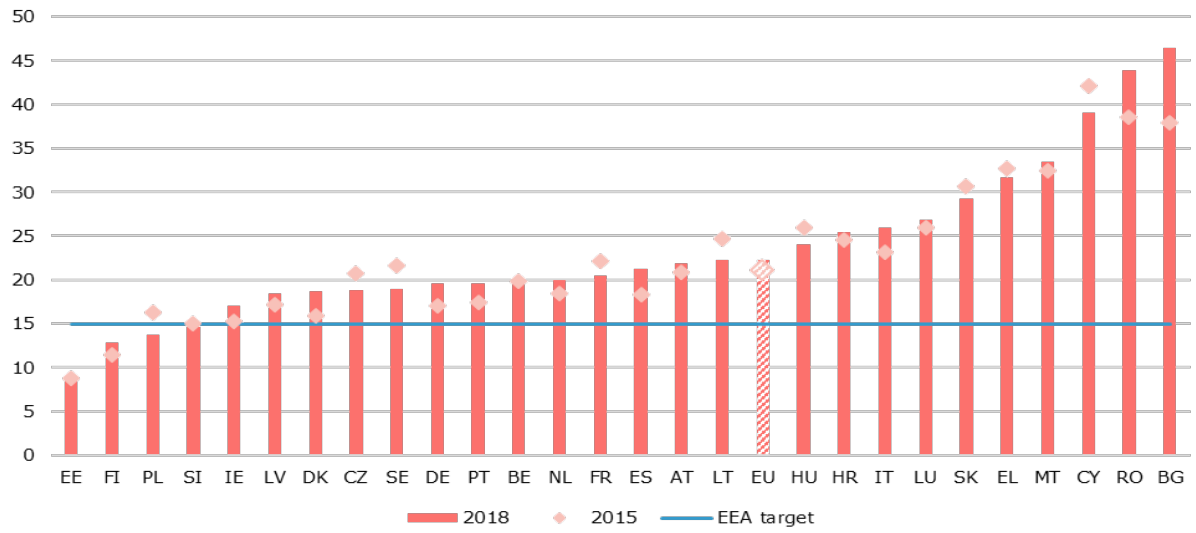
2.1.3 Progress towards the EU-level target: science

The rate of low achievers in science also shows a mixed picture across EU Member States (Figure 47). Four countries met the 15% target in 2018: Estonia (8.8%), Finland (12.9%), Poland (13.8%) and Slovenia (14.6%). By contrast, the rate of low achievers was higher than 30% in Bulgaria (46.5%), Romania (43.9%), Cyprus (39.0%) and Greece (31.7%).

In a few Member States the rate of low achievers increased with statistical significance between 2015 and 2018 (+8.6 pps in Bulgaria, +3.0 pps in Spain, +2.8 pps in Denmark), while Cyprus and Poland experienced a statistically significant decline (—3.2 pps and —2.4 pp, respectively). The EU average slightly increased, from 21.1% to 22.3%.

Long-term trends (2009-18) for science are more negative than for reading or mathematics. The EU average rate of low achievers increased by 4.2 pps over the past decade. No EU country was able to reduce significantly its share of low achievers over the decade. The share increased significantly in Hungary (+10.0 pps), Slovakia (+10.0 pps), Bulgaria (+7.7 pps), Croatia (+6.9 pps), Finland (+6.9 pps), Greece (+6.5 pps), Italy (+5.2 pps), Lithuania (+5.2 pps), Germany (+4.8 pps) and Latvia (+3.8 pps). In many cases, the largest increase took place between 2012 and 2015.

Figure 47: Rate of low achievers in science in 2015 and 2018 [%]



Source: PISA 2018, OECD.

Box 10: Girls in science, technology, engineering and mathematics (STEM)

Performance on the OECD's PISA scale for science has proved to be a strong predictor of STEM and ICT career aspirations. Girls aspiring to STEM careers are better performers in science than girls with non-STEM career aspirations or boys with STEM career aspirations. On average across OECD countries, boys and girls are almost equally likely to expect to work in a science-related field – although this does not apply for all fields in the sciences. Some 25% of boys and 24% of girls expect to be working in a science-related occupation when they are 30, a small (yet statistically significant) difference. In most countries, similar shares of top-performing boys and girls expect a career in a science-related field; and in Denmark and Poland, top-performing girls are significantly more likely than top-performing boys to expect a career in one of these fields.

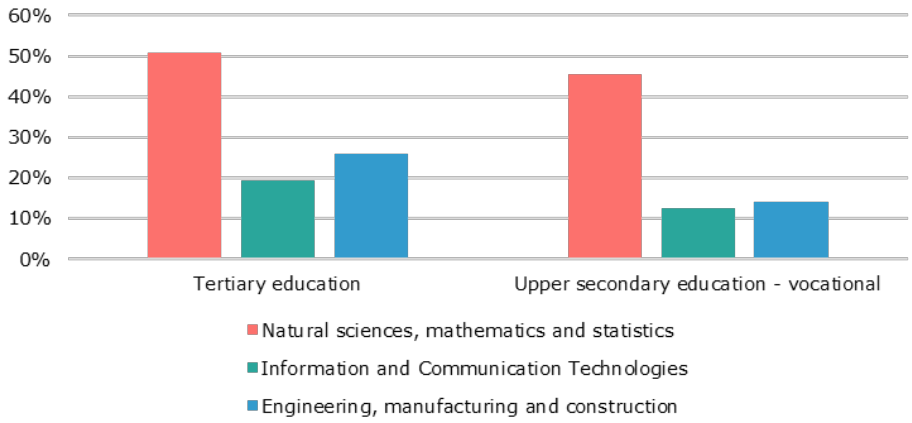
As shown in the figure below, the percentage of new entrant girls in 2019 was low both in tertiary and upper-secondary vocational education. Equally, on the labour market, women are underrepresented in high value sectors. In 2019, 41% of scientists and engineers working in the EU were women, and just 21% in high-technology sectors. Similarly, a mere 18% of ICT specialists in the EU were women.

Attracting more women into STEM education and subsequent employment could help to address labour supply and skills shortages in these occupations, as well as avoid talent loss to drive innovation and growth. Additionally, closing the gender gap in STEM is predicted to contribute to an increase in EU GDP per capita by 0.7–0.9% by 2030 and between 2.2% and 3.0% (€610-820 bn) by 2050. Some possible policy initiatives include introducing career counselling in schools, offering gender-sensitive training to staff, as well as providing advice and guidance during the early years. According to the 2021 OECD report Future at Five: Gendered Aspirations of Five-year-olds, children aspire to roles that are known to them. Exposure to STEM jobs and female role models is therefore essential. Several initiatives exist under the 2021-2027 digital education action plan, actions 12 and 13, respectively:

- a series of workshops, training and placement activities for female students at primary, secondary and tertiary education by the European Institute of Innovation and Technology and its Knowledge and Innovation Communities. This will boost digital skills applied to social challenges.

- developing new higher education programmes for STEM, by reinforcing the arts aspect and basing them on the concept of STEAM (STEM plus arts subjects). This will be done by building on the EU STEM Coalition's expertise to incorporate sustainability and creativity and include guidance and mentorship, to be more attractive for women.

Figure 48: Share of female students in STEM fields by education level in the EU, 2019 [%]



Source: Eurostat, New entrants by education level, programme orientation, sex and field of education. Online data code: [educ_uoe_ent02].

2.1.4 Policy takeaways

The PISA 2018 results show that one in five students cannot complete very basic tasks in reading, mathematics and science. This is not only a worrying social issue, but also a drag on EU future economic competitiveness and resilience. Yet some EU countries have been able to improve their PISA performance over time by putting in place structural education reforms. This section highlights some key takeaways from a few top-performing countries.

Among Member States, Estonia, Poland and Ireland show consistently outstanding results in PISA. Estonia gives particular attention to equity and inclusiveness: every school has coordinators who provide services to students with special needs, and a mandate to give additional personalised support to prevent students from dropping out of education, so that no one is left behind. Factors contributing to Estonia's strong performance may include compulsory attendance at school until completion (or until the student is 17 years old), the high degree of autonomy enjoyed by schools and the obligation to conduct self-evaluations every three years.

Poland's good results are likely due to factors such as increased school autonomy and a rapid expansion of early childhood education and care. Evidence shows that past reforms[110] have contributed to a significant reduction in education inequalities, in particular among children from rural areas. Supported by EU funding, Poland has also invested extensively in supporting teachers through continuous professional development programmes, as well as online teaching tools and resources.

A stronger focus on equity and the early years is also one of the main features of the Irish education system. Past initiatives[111] have helped reduce the impact of students' socio-economic background on their performance, and this extends to students from an immigrant background. Moreover, teachers are recruited from among high academic performers, and they benefit from extensive professional development.

[110] For instance, in 1999, PL introduced an educational reform setting up lower secondary schools (*gimnasia*), which delayed channelling learners into different educational tracks until the age of 16. These changes were followed by a new competence-based core curriculum, new examination and assessment systems as well as increased school autonomy.

[111] For instance, student performance has benefited from the "Strategy to Improve Literacy and Numeracy", the "Delivering equality of opportunity in schools" programme and from extensive support for special educational needs.

2.2 Low achieving eight graders in digital skills

In a nutshell

Member States have agreed on a new EU-level target on digital skills, aiming to reduce the share of underachieving students in grade 8 to less than 15% by the end of the decade. Over the past two years, the COVID-19 crisis has emphasised the importance of both basic and advanced digital skills for sustaining economies and societies. Notably, digital skills became a prerequisite for participating in learning, working and socialising during the many lockdowns. In future, it is expected that 90% of jobs in all sectors will require some form of digital skills, highlighting the need to develop these skills from an early age in support of the digital transformation.

2.2.1 Assessment of digital skills

The EU-level target is to reduce the share of low-achieving eighth-graders in computer and information literacy to below 15% by 2030. The source of this new target (not covered in previous frameworks) is the indicator used to measure progress towards the digital skills target – the International Computer and Information Literacy Study (ICILS). The study is conducted every five years by the International Association for the Evaluation of Educational Achievement (IEA), and targets students in their eighth year of schooling. ICILS directly measures students' digital skills through computer-based assessments in computer and information literacy and computational thinking[112].

The digital skills indicator is a measure of the share of students in their eighth year of schooling who perform below the level 2 threshold on the ICILS computer and information literacy achievement scale[113]. Low achievement in digital skills means that students are unable to use computers to complete basic and explicit information-gathering and management tasks. Examples of such tasks include locating simple information on a website with multiple pages and entering information in a specified cell in a spreadsheet[114].

Box 11: Digital Education Action Plan in the Flemish Community of Belgium

The plan was adopted in December 2020 to help enhance digital education in schools. The Covid-19 crisis has shown that the Flemish education system was not ready for distance digital teaching. The plan has four objectives: a future-oriented and secure ICT infrastructure in schools; a supportive and efficient ICT school policy; digitally competent teachers and teacher trainers, plus digital resources; and a Knowledge and advice centre (KAAC) for digital school education. The National Recovery and Resilience Plan will support a large share of the €375 m plan. Measures include the use of ICT devices for all students from grade 5 to 12, better ICT infrastructure and connectivity in all schools, strengthening the number and role of ICT-coordinators in schools, an efficient ICT school policy with measures against cyberbullying and promotion of e-inclusion, training to improve the digital teaching skills and the use of ICT in education for teachers and teacher trainers, access for all schools to high-quality and innovative

112 In addition to data on pupil achievement, ICILS collects contextual data on pupils' home and school environments.

113 Level 2 is one of four defined proficiency levels, and performance below this threshold can be defined as low achievement. The proficiency levels describe the nature and the complexity of the tasks pupils are able to solve. At level 1, pupils demonstrate a functional working knowledge of computers as tools and a basic understanding of the consequences of computers being accessed by multiple users. At level 2, pupils use computers to complete basic and explicit information gathering and management tasks. At level 3, pupils demonstrate the capacity to work independently when using computers as information gathering and management tools. At level 4, pupils select the most relevant information to use for communicative purposes. They evaluate usefulness of information based on criteria associated with need and evaluate the reliability of information based on its content and probable origin.

114 Further examples of tasks associated with each level of the computer and information literacy scale are presented in table 3.2 of the ICILS 2018 international report.

learning resources and platforms and digital forms of evaluation, including through single sign-in. The KAAC will support schools and pedagogical guidance services with digital educational practices and data, and provide input for data-driven education policies.

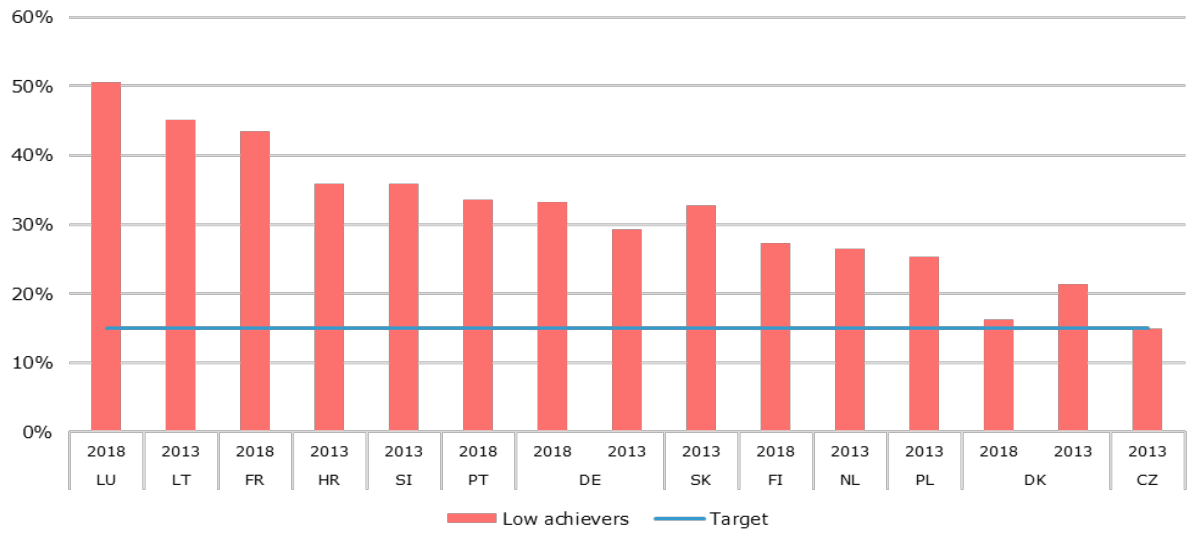
Source: Flemish Ministry for Education, Sport, Animal Welfare and the Flemish Rim (in Dutch).

Two ICILS cycles (2013, 2018) have been completed to date[115], albeit with limited participation from EU Member States. The next ICILS cycle will see a substantial increase in coverage, but data collection is not due to start until 2023, with results becoming available in 2024. In total, 14 EU Member States participated in the initial ICILS cycles, nine in 2013[116] and seven in 2018[117]. Denmark and Germany participated in 2013 and 2018, but only Germany has comparable results across cycles[118].

2.2.2 Progress towards the EU-level target

Figure 49 presents the distribution of students performing below the threshold for low achievement in EU Member States participating in ICILS 2013 and ICILS 2018.

Figure 49: Low achievement among 8th-graders in computer and information literacy, 2013 and 2018



Source: IEA, ICILS 2018 and ICILS 2013.

Note: Low achievement is defined as performance below the level 2 threshold (492 score points) on the ICILS computer and information literacy scale. Italy participated in ICILS 2018, but the results are not comparable with those of other Member States and have been excluded from the figure. For country notes, see Table 3.4 in the respective international reports for ICILS 2013 and ICILS 2018.

115 Low coverage of EU Member States in the two initial cycles limits our ability to generalise for the EU, and does not allow for the calculation of a meaningful weighted EU average at this point. Moreover, the field of digital education is undergoing a rapid development, accelerated by the COVID-19 pandemic. Results from 2013 and 2018 may thus no longer give a representative insight into the current skill level of grade eighth pupils in the participating countries. With these considerations in mind, the data should be interpreted with caution.

116 CZ, DK, DE, HR, LT, NL, PL, SI and SK.

117 DK, DE, FR, IT, LU, PT and FI. Italy participated in ICILS 2018, but the results are not comparable to those of other EU Member States due to the age of the pupils tested.

118 DK did not meet the sample participation rate in 2013.

Considering the two initial cycles of ICILS jointly, the share of low achievers in digital skills only approached the EU level target value in two EU Member States: Czechia in 2013 (15.0%) and Denmark in 2018 (16.2%). In the other participating countries, the share of low achievers ranged from 21.4% in Denmark (2013) to 50.6% in Luxembourg (2018). The data from ICILS 2013 and 2018 suggest that significant effort will be necessary to reduce the share of low achievers in digital skills across all EU Member States, if the EU level target is to be achieved by 2030.

Box 12: Digital sciences are being introduced in secondary education in Luxembourg

Since the school year 2020-21, coding has been embedded in maths classes in cycle 4 (age 10-11) and starting in 2021-22 it is being taught across all subjects in cycles 1 to 3 (age 4-9). In secondary education, computer science is a new subject in 2021-22, including coding and computational thinking. As of 2021-22, some 18 secondary schools – about half of all secondary schools – are participating in a pilot, introducing digital sciences as of grade 7 through the three years of lower-secondary education. This is to be extended to all secondary schools as of 2022-23. As part of the strategy for improving digital education, new continuing professional development courses are offered to both primary and secondary school teachers by the National Teacher Training Institute Source: IFEN – Luxembourgish Training Institute for National Education).

There is evidence of a gender gap in digital skills in the data from ICILS 2013 and ICILS 2018. On average in the participating Member States, boys perform worse than girls[119]. Figure 50 shows the share of low achievers in digital skills by sex. We see that the difference ranges from 4.5 pps in Czechia (2013) to 16.9 pps in Slovenia (2013).

Although girls on average perform better than boys do, there were only two countries, Czechia (2013) and Denmark (2018), where the share of low achievers among girls was lower than the new EU level target of 15%. The share of low achievers among boys was not below the overall target value in any of the Member States participating in the initial two ICILS cycles.

[119] An interesting observation from the ICILS results is that the difference between the shares of boys and girls performing at the higher end of the ICILS achievement scale is substantially lower than it is below the level 2 threshold (not shown in the figure). In nine countries (2018: DK, FR, DE, LU, PT; 2013: DE, HR, LT, SI), this difference between the share of boys and girls performing at level 4 was below 1 pp.

Figure 50: Low achievers in digital skills by sex [%]

Source: IEA, ICILS 2018 & ICILS 2013.

Note: Low achievement is defined as performance below the level 2 threshold (492 score points) on the ICILS computer and information literacy scale. Italy participated in ICILS 2018, but the results are not comparable with those of other Member States and have been excluded from the figure. For country notes, cf. Table 3.4 in the respective international reports for ICILS 2013 and ICILS 2018.

2.2.3 Spotlight on socio-economic status

Similar to the digital divide between girls and boys, ICILS data suggests that there is a digital divide associated with the socio-economic status of students[120]. That is, students from more advantaged backgrounds perform better in computer and information literacy than their peers from less advantaged backgrounds. This pattern is consistent across the 14 Member States participating in ICILS.[121]

Lower socio-economic status is associated with poorer labour market prospects, partly due to the low level of skills, including digital skills. Moreover, higher levels of digital skills tend to correlate positively with more favourable labour market positions. Basic digital skills are found to enhance employability, while advanced ICT skills lead to higher wages[122]. With over 90% of jobs in all sectors expected in future to require some form of digital skills, developing basic digital skills at an early age is key.

120 Socioeconomic background can be captured using a variety of proxies. In ICILS, responses from the student questionnaire on parental education, their occupational status and the number of books at home is sourced to derive three socioeconomic background variables.

121 Pupils in the from more affluent socioeconomic backgrounds performed statistically significantly higher than pupils from less advantaged backgrounds across the three proxies used to measure socioeconomic background in both ICILS 2013 and ICILS 2018.

122 Karpiński, Z., Biagi, F. and Di Pietro, G. (2021). Computational thinking, socioeconomic gaps, and policy implications. IEA Compass: Briefs in Education No. 12.

Box 13: Socio-economic gaps and labour market disadvantage

A recent IEA Compass Briefs in Education prepared by the Joint Research Centre identified significant different levels of ICT skills among students depending on their family background in the data from ICILS 2018[123]. Key to their findings is that the socio-economic gap in computational thinking[124] test scores is consistently larger than the corresponding gap in computer and information literacy test scores. This suggests that the labour market disadvantage associated with lower levels of ICT skills among individuals from a lower socio-economic status may be larger than previously thought, highlighting the importance of collecting evidence on multiple dimensions of ICT competence. Although even simple and routine jobs require individuals to be able to use ICT at some level, more and more occupations in future will be based on advanced problem-solving abilities. The results suggest that students with a lower socio-economic status are likely to experience unequal opportunities in the labour market by facing a higher risk of being excluded from the best jobs. This may potentially lead to larger social inequality, income and job polarisation, and higher poverty rates.

Addressing socio-economic differences at an early age will be a contributory factor to achieving the EU-level target on digital skills among eighth graders. Reducing the share of underachieving students can also be a factor in meeting the newly proposed EU level target of at least 80% of those aged 16-74 having basic or above-basic digital skills by 2030[125]. Considering data from the EU survey on the ICT usage in households and by individuals[126], we see a similar pattern to that identified by ICILS – namely that the level of digital skills in the population is associated with socio-economic status.

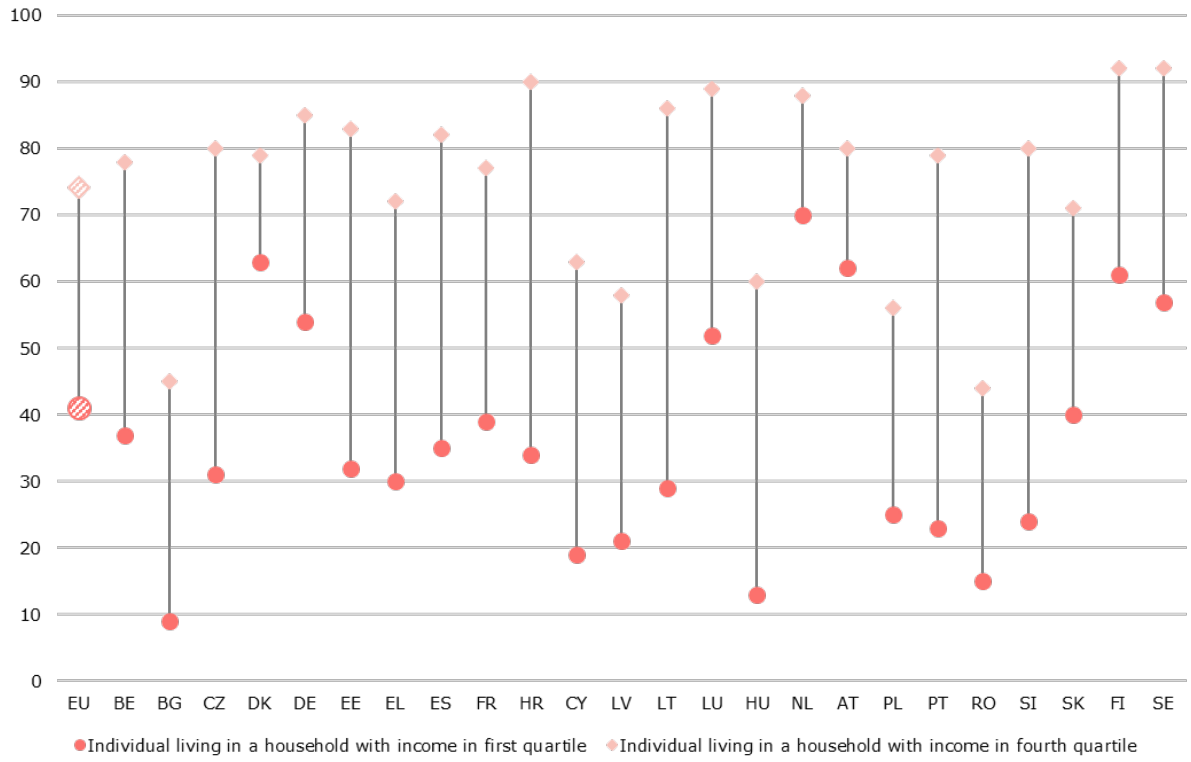
123 Ibid.

124 Computational thinking encompasses an individual's ability to recognise aspects of real-world problem, which are appropriate for computational formulation and to evaluate and develop algorithmic solutions to those problems so that the solution could be operationalised by a computer.

125 Put forward in the European Pillar of Social Rights Action Plan.

126 The digital skills indicator based on the Community Survey on ICT usage in households and by individuals is proxy of the digital competences and skills of individuals. It is a composite indicator based on selected activities performed by individuals aged 16-74 on the internet in four specific areas (information, communication, problem solving and content creation). It is assumed that individuals having performed certain activities have the corresponding skills.

Figure 51: Individuals with basic or above-basic digital skills by income quartile, 2019 [%]



Source: Eurostat (ESS: Community survey on ICT usage in households and by individuals) Online data code: [isoc_sk_dskl_i].

Note: Data not available by income quartile for IE, IT and MT. Break in time series for CZ, LV and LU. Data for SE has low reliability.

Figure 51 compares individuals living in households with incomes in the bottom and the top income quartiles. There is a difference of more than 30 pps in the share of individuals with basic or above basic digital skills between the top and the bottom income quartiles in 20 Member States[127]. In the top income quartile, more than 80% of individuals have basic or above-basic digital skills in 10 Member States. This is in contrast to the bottom income quartile, where the share of individuals with basic or above-basic digital skills is below 40% in 16 Member States.

2.2.4 Policy takeaways

Digital skills are becoming crucial for all citizens to participate in an increasingly digital world. Over the past two years, the COVID-19 crisis has further emphasised the importance of both basic and advanced digital skills for sustaining our economies and societies. Particularly during the widespread lockdowns, basic digital skills became a prerequisite for activities such as learning, working and socialising, thereby accelerating the digital transformation. More than 95% of the respondents contributing to the open public consultation on the digital education action plan consider the COVID-19 crisis to be a "turning point" for how technology is used in education and training.[128]

[127] Data by income quartiles is available for 25 EU Member States.

[128] Digital Education Action Plan 2021-2027.

The 2030 Digital Compass points to digital skills as essential to reinforce our collective resilience as a society, noting that access to education allowing the acquisition of basic digital skills should be a right for all EU citizens[129]. The European Pillar of Social Rights action plan sets out that at least 80% of those aged 16-74 should have at least basic digital skills by the end of the decade[130]. In 2019, this number stood at 56% according to the Digital Economy and Society Index[131].

In the area of education, COVID-19 brought on a rapid and widespread shift to distance, online and blended learning and teaching. This shows the importance of providing teachers, students with adequate digital infrastructure and skills. Evidence suggests that the pandemic aggravated pre-existing inequalities in the school system, in particular affecting students from lower socio-economic backgrounds. Going forward, it will be important to enrich data collections and develop policy responses to reach those at risk of being left behind.

2.3 Participation in early childhood education and care

In a nutshell

Member States have agreed on a new EU-level target for participation in early childhood education and care (ECEC) at EU level: 96% of children between 3 years old and the starting age for compulsory primary education to participate in ECEC. The latest available data from 2019 puts that share at 92.8%, for the EU as a whole, with increases during the preceding five years observed in most countries. The EU-level target should be seen in conjunction with policy guidance on the quality of ECEC provision. Member States are working both on increasing the accessibility of ECEC and improving the quality of staff and curricula. At EU level, a Working Group on ECEC supports the development of high quality ECEC through peer learning, monitoring and evaluation.

2.3.1 Progress towards the EU-level target

During the last decade, considerable steps have been taken to improve the participation of children in early childhood education and care all over Europe[132]. To keep the momentum, Member States have agreed on a new, ambitious EU-level target for this, ensuring that the early years in a child's education are kept in the spotlight.

The EU-level target states that, by 2030, at least 96% of children between 3 years old and the starting age for compulsory primary education should participate in ECEC[133]. Setting the target high should also help vulnerable children to benefit from the policy measures taken.

The latest (2019) EU average for the new ECEC target stands at 92.8%[134] (Figure 52). This is an increase of 2.1 pps over the preceding 5 years. In 2019, five Member States (Belgium, Denmark,

129 2030 Digital Compass: the European way for the Digital Decade.

130 The European Pillar of Social Rights Action Plan COM (2021) 102. Adopted on 3 March 2021.

131 Digital Economy and Society Index (DESI) 2020.

132 The now superseded ET2020 benchmark aimed for at least 95% of children between age of four and the age for starting compulsory primary education to participate in ECEC. This was reached in 2019, with an EU average of 95.3%.

133 The source data come from the joint UOE data collection (online data code: [educ_uoe_enra21]). The EEA target should not be confused with the Barcelona target (online data code: [ilc_caindformal]), which focuses on formal childcare. The share of participation in early childhood education and care as used for the EEA target captures attendance of ECEC programmes that fall under the ISCED 0 category.

134 As can be expected at this young age, the sex distribution of children participating in ECEC is very balanced, with never more than a percentage point difference between boys and girls.

Ireland, Spain and France) reached the target level and Sweden came very close to reaching 96% participation. Ireland[135] and France have reached 100% participation rates.

The universal legal entitlement to ECEC is from the age of 2.5 years in Belgium, 6 months in Denmark, 3 years in Spain and Poland, and 1 year in Sweden. The Irish Early Childhood Care and Education Scheme provides 15 hours per week free of charge for 38 weeks of the year, from the age of 2 years and 8 months. In France, the starting age of compulsory education has been lowered to 3 since September 2019[136].

To support further upward convergence among Member States of participation in early childhood education and care up to the age of 3, the Commission will propose in 2022 the revision of the Barcelona targets.[137]

Box 14: Increasing participation in early childhood education and care in Lithuania

The low participation rate in early childhood education and care and imbalances in its provision have prompted Lithuania to take action. The aim is to increase access and encourage participation addressing inequalities and improving student outcomes. Currently, primary education starts at the age of 7 and the last year of ECEC has been compulsory since 2016. From September 2023, the compulsory entry age to pre-primary education will be lowered from 6 to 5 years. An update of the pre-primary education curriculum is also being planned to better match the learning needs of younger children. As of September 2021, children from families at risk of poverty should be guaranteed access to pre-school education.

The legal entitlement to pre-school education will gradually be extended. Municipalities should ensure provision of ECEC for all children of 4-year-olds whose parents require a place in 2023, for all 3 year-olds in 2024 and for all 2-year-olds in 2025. Municipalities will be financially supported in this by central government, through announced increases in education spending. The Recovery and Resilience Facility will fund a feasibility study in 2021 on how to adapt existing ECEC infrastructure and develop transport services and whether a further expansion of capacities is needed to meet the increasing needs and tackle imbalances in ECEC provision.

In the last five years of available data, most countries have seen the ECEC participation of children between the age of 3 years and the mandatory school age increase, with Cyprus, Ireland, Croatia, Poland and Luxembourg recording the fastest improvements[138]. Seven countries saw participation in this age group fall between 2014 and 2019; in decreasing order of the size of the drop these are Bulgaria, Romania, Malta, Greece[139], Germany, Italy and the Netherlands[140]. It is worth noting that out of these countries only Germany guarantees a place in ECEC for the youngest children[141].

135 For Ireland, the ECE rate includes participation in ECEC centres, and also in primary schools, which are attended by many 4-5 year olds.

136 European Commission/EACEA/Eurydice (2020). Structural indicators; European Commission/EACEA/Eurydice (2019). Key indicators. Data on ECEC.

137 A Union of Equality: Gender Equality Strategy 2020-2025, EU strategy on the rights of the child.

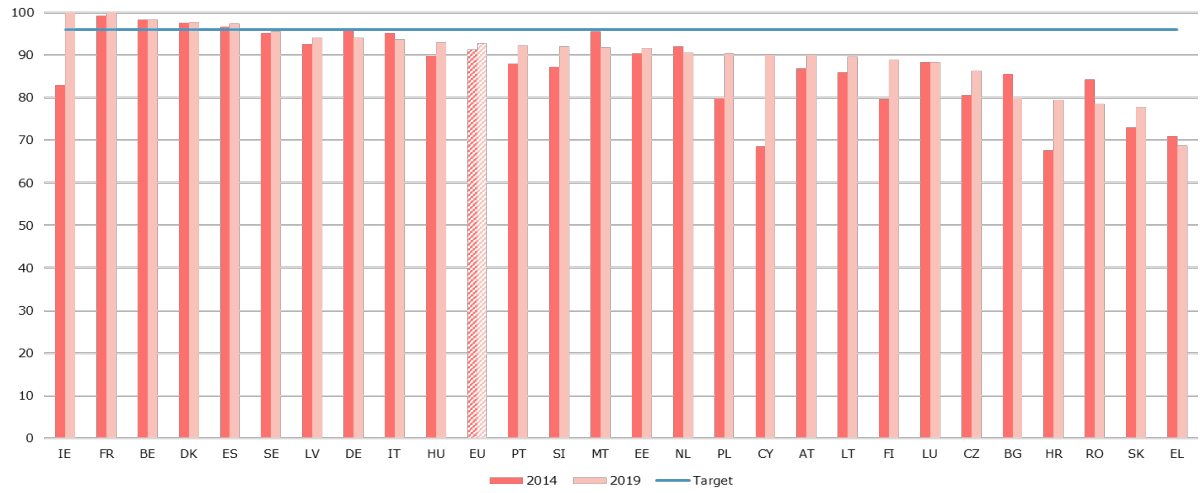
138 In CY, the starting age of compulsory ECEC is 4 years and 8 months. Legal entitlement in PL and LU starts at the age of 3.

139 For EL there are breaks in the time series between 2014 and 2019.

140 For NL, the content of the data of 2018 and later is different than before due to a change in the childcare system in 2018, especially for children younger than 4 year of age.

141 In DE, a place is guaranteed from the age of 1 year.

Figure 52: Participation in ECE of children between 3 and the age of starting compulsory primary education, 2019 [% of the population of the corresponding age, target 96%]



Source: Eurostat (UOE). Online data code: [educ_UOE_enra21].

Notes: 2014: FR break in time series; RO estimated; ES, EU definition differs. 2019: IE estimated; FR provisional; PT definition differs; PL estimated.

The age bracket of children from 4 years old to the mandatory primary school age[142] shows a similar pattern to the 3+ group (Figure 53). The six top-performing countries mentioned above all have a participation rate above 96% for this age group and they are joined by eight further countries, meaning that more than half of the Member States have a participation rate above 96% for the 4+ age bracket, with an EU average of 95.1%. Greece, Luxembourg, Austria, Cyprus and the Netherlands have much higher participation rates for the 4+ age bracket than for the 3+ age bracket[143].

Box 15: The "*Gute-KiTa-Gesetz*" (Act on Good Early Childhood Education and Care) – Germany

The German federal level supports efforts at regional and local level to improve access, provision and quality of ECEC. The most important instrument is the so called "Gute KiTa Gesetz" (Act on Good Early Childhood Education and Care), which provides financial support worth €5.5 bn to upgrade the quality of ECEC places and lower the fees. The Gute KiTa Report 2020[144] observed the baseline and first progresses in different fields of quality by regions. Beginning in 2021, two additional programmes "Kita-Einstieg: Brücken bauen in frühe Bildung" (Stepping into Childcare: Building bridges into early childhood education) and "Sprach-Kitas: Weil Sprache der Schlüssel zur Welt ist" (Language day care centres) have been extended, making an additional €520 m available for quality improvement up to 2022.

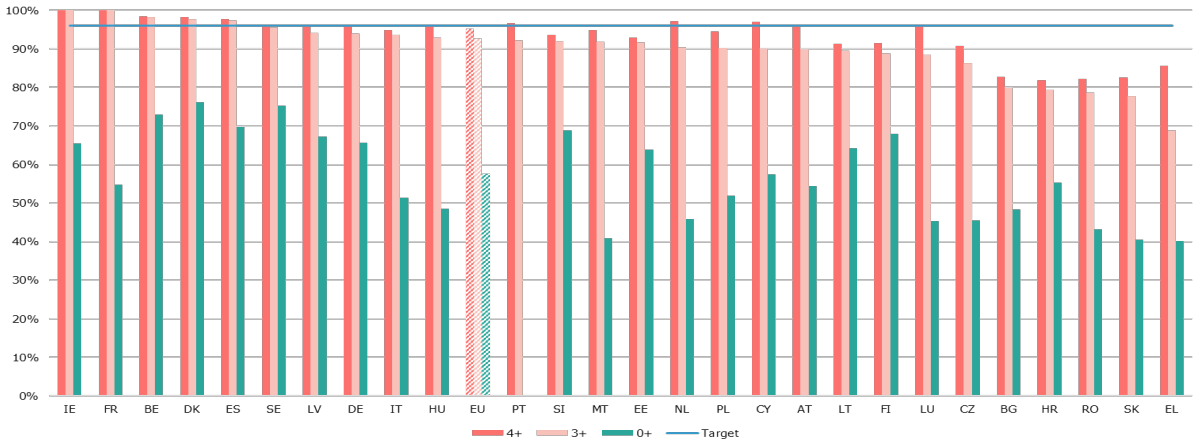
142 Note that this age bracket was used for the now superseded ET2020 benchmark, with a target value of at least 95% by 2020.

143 In EL and NL, the organisation of pre-primary education is split between the age groups above and below 4. In LU, children are legally entitled from the age of 3 to pre-primary education, but the first year of *éducation précoce* is optional, while the following two years of *éducation préscolaire* are compulsory. In CY, ECEC is compulsory from the age of 4 years and 8 months.

144 Gute KiTa Bericht 2020.

The much broader age bracket from 0 to the start of mandatory primary education, for which the EU average is 57.7%, shows a comparable distribution, with Denmark, Sweden and Belgium having participation rates over 70%, and Spain close behind. The largest differences between the 3+ and the 0+ age ranges can be seen in Malta, the Netherlands[145], France[146], and Hungary.

Figure 53: Participation in ECE by children between 0, 3 and 4-years-old, and the starting age of compulsory education, 2019 [% of the population of the corresponding age]



Source: Eurostat (UOE). Online data code: [educ_uoe_enra10] and [educ_uoe_enra21] and [educ_uoe_enra23].

Flags: 3+: IE estimated; FR provisional, PL estimated, PT definition differs. 4+: IE estimated, France provisional, PL estimated; 0+: BE definition differs, FR provisional, MT definition differs, PL estimated, PT not available.

2.3.2 Policy takeaways

The first principle of the European Pillar of Social Rights states that "everyone has the right to quality and inclusive education, training and lifelong learning in order to maintain and acquire skills that enable them to participate fully in society and manage successfully transitions in the labour market." Moreover, the 11th principle explicitly acknowledges the importance of high-quality ECEC, stating that "children have the right to affordable early childhood education and care of good quality."

Box 16: Child Group Act in Czechia

In Czechia, an amendment to the Child Group Act entered into force in July 2021. It is expected to provide stable public funding for child groups which, to date, are often EU-funded. These groups, turned into nurseries, will welcome children up to the age of 3. New requirements in terms of infrastructure and staff profiles are designed to improve childcare quality. The transition from rather informal child groups to more institutional nurseries is underpinned by funding from the EU's Recovery and Resilience Facility. The government plans to increase the number of childcare facilities by 40% until the end of December 2025. It will also run a study to investigate barriers to participation in early childcare. Due to a shortage of places as well as socio-economic factors, participation of under 3-year-olds in early childhood education and care is currently the lowest in the EU. This leads not only to gender imbalances on the labour market, but also to learning gaps and socio-economic inequality.

145 European Commission/EACEA/Eurydice (2019). Key indicators. Cf. figure B7, which shows that in MT and NL the demand for ECEC was met for the earliest age of children.

146 Provisional data.

Evidence shows that participation in high-quality ECEC correlates with better social and emotional well-being, lowering risks of school dropout and even contributing to higher learning and employment outcomes later in life[147]. Its positive contribution proves particularly beneficial for children from disadvantaged socio-economic backgrounds. An equitable ECEC system with high coverage rates increases equal opportunities and social mobility. Providing every child with an equally strong starting position is an effective and efficient way to set children on a trajectory to achieve their maximum learning potential[148].

Of course, the benefits of ECEC are dependent on the quality of its provision. ECEC quality has emerged over the last few years as an important policy focus in many Member States. However, the quality of ECEC services still often differs by children's age. More than half of the EU27 countries do not require a bachelor's degree for staff working with children under age 3 (Figure 82). Educational guidelines were available in all countries at least for children from the age of 3, and in many cases for the entire ECEC phase[149].

At EU level, the EU-level target is accompanied by comprehensive policy guidance in the field of ECEC quality[150]. In 2021, a new Working Group on ECEC has been set up as part of the governance structure to achieve and further develop the EEA. The Working Group will help Member States implement the 2019 Council Recommendation for high-quality ECEC systems[151] and the EU Quality framework for ECEC[152]. It will mainly support peer learning, monitoring and evaluation of quality.

2.4 Early leavers from education and training

In a nutshell

As part of the seven EU-level targets, Member States have agreed that the share of early leavers from education and training should be less than 9% by 2030[153]. In 2020, this share was 9.9% across the EU on average, with pronounced differences between and within countries. The average share of early leavers from education and training is 3.8 pps higher among young men (11.8%) than it is among young women (8%) and there are striking disadvantages for foreign-born young people. Regional discrepancies are wide in many Member States.

Reducing the proportion of young people who leave education and training before they have completed upper secondary attainment remains a priority of the EU in the field of education and training[154]. Member States have also acknowledged the overall aim to decouple academic

147 OECD (2020). Early Childhood Education: Equity, Quality and Transitions Report for the G20 Education Working Group; OECD (2017). Starting Strong 2017: Key OECD Indicators on Early Childhood Education and Care, Starting Strong; UNICEF (2019). A World Ready to Learn: Prioritizing Quality Early Childhood Education.

148 UNICEF (2019). A World Ready to Learn: Prioritizing Quality Early Childhood Education.

149 Cf. part 4 below (annex).

150 Under ET2020, an ECEC Working Group delivered a toolkit for inclusive ECEC as well as guidelines on how to recruit, train and motivate well-qualified ECEC staff. Its final report summarised the conclusions of the inclusion toolkit and the guidelines.

151 European Union (2019). Council Recommendation of 22 May 2019 on High-Quality Early Childhood Education and Care Systems.

152 European Commission/DG EAC (2014). Proposal for key principles of a Quality Framework for Early Childhood Education and Care. A report of the working group on ECEC.

153 The share of early leavers of education and training refers to the proportion of young people aged between 18 and 24 years-old with, at most, lower secondary educational attainment (ISCED level 0-2) and who were not enrolled in any (formal or non-formal) education or training activity in the 4 weeks preceding the EU labour force survey. This means that those with an ISCED 0-2 qualification who participate in short, non-formal trainings, are not considered early leavers. The indicator is based on the EU Labour Force Survey, Eurostat online data code: [edat_lfse_14].

154 The 2021 Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030) highlights that "efforts must continue to bring down the rate of early leaving from education and training and aiming for more young people to obtain an upper secondary education qualification".

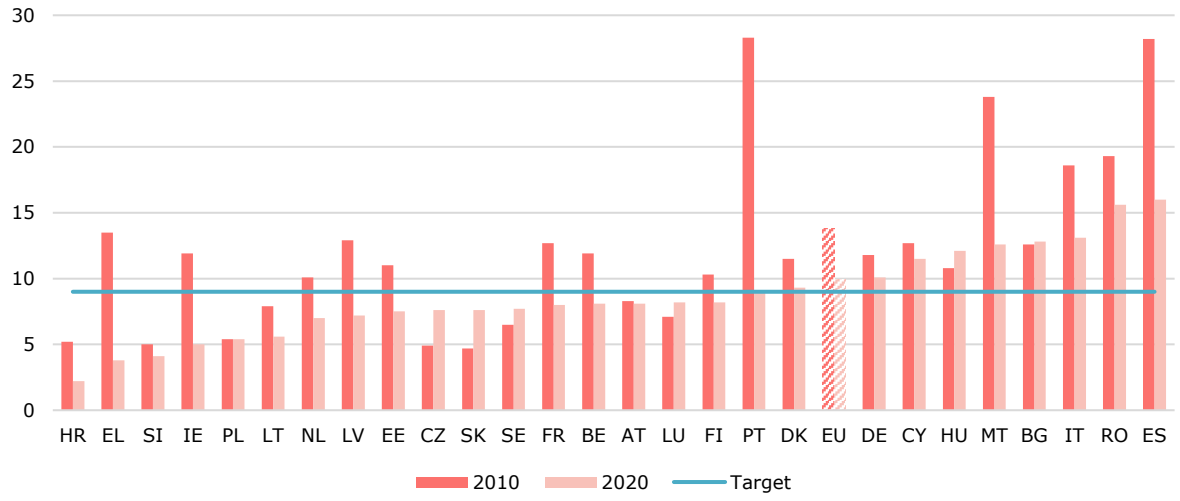
attainment and achievement from social, economic and cultural status, or from other personal circumstances[155].

The below 9% early leaver EU-level target is accompanied by an upper secondary completion indicator[156]. The European Pillar of Social Rights action plan also calls for early school leaving to be further reduced and participation in upper secondary education increased, and the share of early leavers from education and training is a headline indicator in its revised social scoreboard[157].

2.4.1 Progress towards the EU-level target

Across the EU on average, the share of early leavers from education and training was 9.9% in 2020. The share has decreased by 3.9 pps since 2010. A decrease of 2.7 pps over the period 2010 to 2014 was followed by a smaller reduction of 1.1 percentage point since 2015, to reach the now superseded ET2020 benchmark of 10% in 2020.

Figure 54: Early leavers from education and training, 2010-20 [%]



Source: Eurostat (edat_lfse_14).

Note: 2020 data for HR have low reliability and 2020 data for DE are provisional (the reliability of the 2020 LFS in DE has strongly impacted by COVID-19).

Differences between countries remain pronounced, even if they have narrowed in recent years. In some countries, more than 15% of the young population are early leavers from education and training. This is the case in Spain (16.0%) and Romania (15.6%). The share of early leavers is also well above the 9% target in Italy (13.1%), Bulgaria (12.8%), Malta (12.6%), Hungary (12.1%) and Cyprus (11.5%). In 18 Member States, the share of early leavers from education and training is currently less than 9% and Denmark is close to reaching the 9% target. Croatia has the smallest proportion of early leavers (2.2%).

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155 The 2021 Council Conclusions on equity and inclusion in education and training in order to promote educational success for all call for "promoting comprehensive educational success strategies at national and regional level (…), in order to foster the successful completion of upper secondary (or equivalent) education and training pathways and to reduce early leaving from education and training and low achievement".

156 The upper secondary completion indicator measures the share of the young population aged between 20 and 24 years with, at least, an upper secondary qualification, thus successful completion of formal education (ISCED level 3-8). Participation in non-formal education or training is not taken into account in the calculation of the upper secondary qualification indicator. The indicator is based on the EU Labour Force Survey, Eurostat. Online data code: [edat_lfse_03].

157 Cf. The European Pillar of Social Rights and its Action Plan.

Box 17: A new data warehouse to tackle early school leaving in Malta

The Data Warehouse Project was launched by the Maltese Ministry for Education to be implemented by 2022, according to the Maltese National Recovery and Resilience Plan.

Its primary objective is to identify gaps in tackling early school leaving by collecting data on students from the beginning to the end of their schooling. Collecting data and information about school attendance, student assessment, socio-economic status, etc. will allow more targeted, evidence-based interventions and more effective monitoring and evaluation of the measures that are implemented.

The project will start by processing all the data from state schools, from grade 1 to 11, followed by state post-secondary schools and tertiary institutions. Independent and church schools should also be part of the monitoring in the coming years.

Several countries where the share of early leavers from education and training is well above 9%, such as Spain, Romania, Italy and Malta, have seen very marked reductions over time, though these have levelled off in more recent years. In other countries where the share of early leavers exceeds the 9% target, a reversal in the recent trend will be needed. This is the case especially in Cyprus and Hungary, where the share of early leavers has increased since 2015[158].

Box 18: Action plan to tackle early school leaving– The French Community of Belgium

The French Community of Belgium is preparing a comprehensive action plan to tackle early school leaving and is funding personalised support to students to fight lower educational outcomes as a result of COVID-19.

The French Community, in its National Recovery and Resilience Plan (NRRP) has committed to adopt an action plan against school dropout by December 2022. It will review decrees in four key areas: the work of the CPMS (Centres for Psychological, Medical and Social Support) to prevent school dropout will be strengthened; the reasons for excluding students from schools will be limited and a single board of appeal will be established; the prevention and intervention mechanisms for students showing signs of alienation or dropout from schools will be strengthened; and compensation mechanisms will be promoted for students who dropped out by providing transitional support (from the *système d'accrochage scolaire*) or through internships and citizen projects. This plan comes under the Pact for excellence in education, a systemic reform aiming at improving the quality of education. In 2021-2022 the NRRP will also fund personalised support for 30 000 students in compulsory education through multi-disciplinary teams to address mental, educational and pedagogical difficulties, lower educational outcomes and potential school dropout as a result of COVID-19 (€26.9 m). This project is a follow-up to similar projects that were run in school year 2020/2021.

Portugal and Greece are among the countries that have made most progress, with the share of early leavers reduced to one third of the level in 2010, as well as Latvia, Spain, Croatia and Ireland, where it was halved, or nearly so.

The proportion of early leavers from education and training in the EU is 3.8 pps higher among young men (11.8%) than young women (8%). Young men are more likely to be early leavers from education and training in all countries, except Romania (where young women are at a 1.9 pps disadvantage) and Czechia (with women at a 0.1 percentage point disadvantage). The gender gaps are particularly large — 5.0 pps or above — in Spain, Portugal, Cyprus, Italy and Luxembourg.

158 In recent years, it has also increased in LU, AT, CZ and LT, though here figures remain below 9%.

The EU-level target is complemented by an indicator measuring the share of people aged between 20 and 24 years with at least an upper secondary qualification (ISCED 3 level)[159]. Across the EU on average, 84.3% of 20 to 24 year-olds had at least an upper secondary qualification in 2020. Young women (87.1%) have a clear advantage over young men (81.5%). The young population is increasingly likely to have completed upper secondary education, with only few countries seeing a decrease or limited change in the proportion.

Figure 55: Percentage of people aged 20-24 who have successfully completed at least upper secondary education [%]

	2018			2019			2020		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
EU	**83.2**	**80.7**	**85.8**	**83.5**	**81.0**	**86.2**	**84.3**	**81.5**	**87.1**
BE	84.8	81.7	87.9	85.6	82.4	88.8	85.7	82.3	89.1
BG	86.0	85.6	86.3	84.4	83.6	85.4	85.4	84.7	86.1
CZ	89.5	88.5	90.5	88.3	88.1	88.6	87.4	87.8	87.0
DK	75.0	69.9	80.4	75.8	70.9	80.9	76.1	71.2	81.1
DE	77.4	74.9	80.3	77.5	75.0	80.2	79.2	75.6	82.9
EE	82.6	77.3	87.9	84.8	80.1	89.5	87.7	86.2	89.2
IE	94.4	93.7	95.2	94.1	93.6	94.7	94.9	94.8	94.9
EL	93.9	92.2	95.5	94.5	93.4	95.7	94.9	94.3	95.6
ES	72.7	67.7	77.9	74.0	68.5	79.7	75.9	70.2	81.9
FR	88.3	85.7	90.8	88.5	86.4	90.7	89.7	87.4	92.0
HR	96.2	96.6	95.9	97.3	97.5	97.1	97.2	96.7	97.8
IT	81.1	78.5	84.1	82.0	79.7	84.5	83.3	80.6	86.3
CY	91.5	90.1	92.8	92.3	91.4	93.0	88.4	85.3	91.1
LV	88.3	83.8	93.1	87.1	85.5	88.9	88.0	85.1	91.0
LT	92.1	90.0	94.4	92.5	91.0	94.1	90.1	88.1	92.2
LU	76.8	73.0	80.4	77.5	78.4	76.7	75.4	70.8	80.0
HU	85.0	84.6	85.4	86.6	85.7	87.5	85.7	84.4	87.0
MT	77.4	76.5	78.5	78.1	76.2	80.3	81.1	77.8	85.0
NL	82.5	79.4	85.6	82.2	78.9	85.6	83.1	80.1	86.2
AT	88.0	85.7	90.3	87.3	84.4	90.3	86.1	82.6	89.7
PL	91.2	89.6	92.8	90.8	88.4	93.2	89.9	87.9	92.1
PT	80.8	76.6	85.2	82.9	78.6	87.2	85.3	80.1	90.6
RO	81.7	81.6	81.7	83.4	83.8	83.0	83.0	84.3	81.7
SI	91.5	89.5	93.7	92.4	91.5	93.5	92.8	91.7	94.0
SK	89.4	89.7	89.1	89.9	89.9	89.9	89.7	90.1	89.2
FI	87.4	86.5	88.2	88.2	87.9	88.6	89.1	88.0	90.2
SE	85.3	83.3	87.4	84.6	81.4	88.1	83.1	80.1	86.4

Source: Eurostat (edat_lfse_03)

Note. Educational attainment refers to ISCED (International Standard Classification of Education) 2011 level 3-8 for data from 2014 onwards and to ISCED 1997 level 3-6 for data up to 2013. DE: break in time series in 2020. The indicator is based on the EU Labour Force Survey.

2.4.2 Spotlight on vulnerable groups

Looking at specific groups of young people and their circumstances[160] can help identify where additional policy attention may be needed, especially given the impact the COVID-19 pandemic can have on students who were already disadvantaged before the crisis.

[159] The aim of the complementary indicator is to measure the proportion of the young population that is likely to have the minimum necessary qualifications for their active participation in society.

[160] Not all vulnerable groups are easily captured by cross-EU survey data. For instance, the EU academic literature on the relationship between early school leaving, (learning) disability and special education needs is scarce. Nonetheless, there is a consensus that students with such disadvantages are at much greater risk of dropping out of education than their

Young people who were born in another country (foreign-born) are generally at greater risk of leaving education without having completed more than a lower secondary level of education, compared to young people born in the reporting country (Figure 56). This is the case whether they were born in another EU country or in a country outside the EU.

The evidence about the exact underlying reasons is still lacking. Analysis by the Commission's Joint Research Centre[161] shows that determinants are the same for immigrant students and natives: socio-economic background, epistemological beliefs[162], pupils repeating a year and the average rate of early leavers from education and training[163].

Box 19: Tutoring and career counselling in Italy

Tutoring and career counselling is an educational intervention that could support immigrant pupils, as they may lack relevant networks and access to information.

In Italy, a randomised evaluation of the educational choices of children without Italian citizenship estimated the impact of a tutoring and career counselling programme called "Equality of Opportunity for Immigrant Students", which targeted immigrant and second generation seventh-grade students displaying high academic potential.

Results showed that the programme encouraged students to enrol in more demanding academic and technical schools and improved boys' academic performance, as measured by test scores, students repeating a year, and dropout rates. The intervention had no impact on girls, possibly because many did already enrol in the more demanding school tracks. The programme also had positive spill over effects on immigrant classmates who did not participate.

More research is needed to shed light on migrants' specific educational needs and the effectiveness of action that attempts to address them.

Source: Behaghel, L., Gurgand, M., Kuzmova, V. and Marshalian, M. (2018). European Social Inclusion Initiative, A Review Paper.

In 2020, among the 17 Member States for which data are available, the highest shares of foreign-born early leavers from education and training were in Italy (32.1%), Spain (29.0%), Malta (28.5%), Greece (27.0%), Cyprus (26.8%) and Germany (25.5%). The proportion of early leavers from education and training among the foreign-born young people was below 9% in two countries: Luxembourg (8.7%) and Slovenia (7.4%).

peers. See: Early School Leaving and Learners with Disabilities and/or Special Educational Needs: A Review of the Research Evidence Focusing on Europe.

161 Hippe, R. and Jakubowski, M. (2018). Immigrant background and expected early school leaving in Europe: evidence from PISA, A JRC Technical Report. The report differentiates among first generation immigrants and second generation and, where possible, among EU and non-EU students.

162 The PISA index of epistemological beliefs reflects how students see science and scientific enquiry. Students who score higher in the PISA index argue that "scientific knowledge is tentative" (to the extent that students recognise that scientific theories are not absolute truths, but evolve over time) and adhere "to beliefs about the validity and limitations of empirical methods of enquiry as a source of knowing" (OECD, 2016c, pp. 99–100).

163 Focusing on the specific situation of newcomers, young people who arrive to a new country past the start of primary education face a higher risk of falling behind at school compared to their native-born peers and compared to those who arrive at a younger age. This is partly because they need to adapt immediately to a new language of schooling. They are more likely to need support to gain proficiency in the language of schooling, as well as information and orientation on the education system. Those who arrive at an age towards the end of the compulsory schooling age are at high risk of not completing upper secondary education in the limited time that is available to them, and even more so if their previous education was interrupted. For more information, Cf. OECD (2015) Immigrant Students at School: Easing the Journey towards Integration; and OECD (2021) Making Integration Work Young People with Migrant Parents.

Young people who were born outside the EU are at the highest risk of being early leavers of education and training in all countries, with gaps exceeding 20 pps in Greece, Italy or Cyprus compared to native-born early leavers. The lowest gaps are in Czechia (0.6 pps) and Denmark (2.2 pps).

In all countries for which data for foreign-born young people disaggregated by sex is available, young men who are foreign-born are more likely to be early leavers than young women, and gender gaps are often wider than among the young population born in the reporting country.

Figure 56: Early leavers from education and training by sex, country of birth and degree of urbanisation, 2020 [%]

	Total	Sex		Country of birth			
		Men	Women	Native-born	Born in another EU country	Born outside the EU	Total foreign-born
EU	**9.9**	**11.8**	**8.0**	**8.8**	**19.9**	**23.3**	**22.4**
BE	8.1	10.2	5.9	7.5	7.2	15.6	12.1
BG	12.8	13.4	12.1	12.8	:	:	:
CZ	7.6	7.5	7.6	7.4	19.0	8.0	13.2
DK	9.3	11.7	6.8	9.2	:	11.4	10.4
DE	10.1	11.8	8.3	7.8	24.0	26.0	25.5
EE	7.5	9.2	5.8	7.6	:	:	:
IE	5.0	5.4	4.7	5.2	:	:	:
EL	3.8	4.4	3.1	2.9	:	28.0	27.0
ES	16.0	20.2	11.6	13.2	31.2	28.5	29.0
FR	8.0	9.7	6.3	7.5	16.3	13.8	14.2
HR	2.2	2.4	2.0	2.2	:	:	:
IT	13.1	15.6	10.4	11.0	22.1	35.2	32.1
CY	11.5	15.0	8.4	4.9	25.7	27.3	26.8
LV	7.2	9.5	4.7	7.2	:	:	:
LT	5.6	7.7	3.4	5.6	:	:	:
LU	8.2	10.7	5.7	7.8	8.7	:	8.7
HU	12.1	12.9	11.3	12.1	:	:	:
MT	12.6	14.7	10.2	:	:	:	20.1
NL	7.0	8.7	5.3	6.6	9.8	11.5	11.1
AT	8.1	10.0	6.3	5.7	16.2	24.0	20.4
PL	5.4	7.0	3.7	5.4	:	:	:
PT	8.9	12.6	5.1	8.8	:	:	10.8
RO	15.6	14.7	16.6	15.6	:	:	:
SI	4.1	4.6	3.4	3.8	:	7.4	7.4
SK	7.6	7.7	7.4	7.6	:	:	:
FI	8.2	9.4	7.0	7.7	:	20.3	17.4
SE	7.7	9.0	6.3	5.3	:	16.2	15.6

Source: Eurostat, EU Labour Force Survey 2020. Online data code: [edat_lfse_02] and [edat_lfse_30].

Note: Early Leavers from Education and Training (ELET) data has low reliability for HR. ELET data by country of birth have low reliability for BE, CZ, DK, HR, MT, SI and FI. ELET data by degree of urbanisation have low reliability for HR, EE, CY, LV, LT, LU, MT and SI. Data are not available for the three degrees of urbanisation in LU, LV and SK.

Evidence on Roma children (outside the official European Statistical System – Eurostat) suggests that as many as 10% of those at compulsory schooling age were not attending education across the EU in 2016[164]. This share was as high as 31% in EL and 23% in RO. In the nine surveyed Member States, the share of Roma early leavers from education and training was extremely high, ranging between 57% and 92%. Box 20 offers some additional findings on Roma children and their further setbacks during the COVID-19 induced lockdowns.

164 Communication from the Commission to the European Parliament and the Council "Midterm review of the EU framework for national Roma integration strategies", COM (2017) 458 final.

Box 20: Roma students

Since the outbreak of the COVID-19 pandemic, many Roma children from remote and marginalised communities were lacking the internet access and IT equipment necessary to participate in distance learning. This has increased their risk of dropping out of school or falling behind in education.

Evidence for Bulgaria suggests that Roma children were less prepared for the transition to distance learning, with significantly lower levels of access to the internet and digital devices among students speaking Romani at home, compared to students speaking Bulgarian at home. Romani-speaking children also experienced difficulties using electronic devices (56%, compared to 24% of Bulgarian-speaking children). Similarly, evidence for Slovakia highlights that almost 50 000 children – mainly from poor localities, many of them inhabited by Roma – did not participate in distance learning at all during the first wave of the pandemic.

The Educative Promotion Programme in Extremadura (Spain) supported 1 053 young Roma children with special needs to benefit from individualised mentorship aimed at helping prevent and reduce early-school leaving. Mentors, usually from the Roma community, help create links between the Roma community and the education system.

Source: European Commission (2021). A European Commission Staff Working Document Accompanying the Proposal for a Council Recommendation establishing a European Child Guarantee; European Commission (2017). Commission Communication on the midterm review of the EU framework for national Roma integration strategies; European Union Agency for Fundamental Rights (2020) Coronavirus pandemic in the EU – impact on Roma and Travellers – Bulletin 5; European Union Agency for Fundamental Rights (2020). Coronavirus pandemic in the EU – Fundamental rights implications: focus on social rights.

The available data suggest that location where young people live is also decisive. The last three columns in Figure 56 show the proportion of early leavers from education and training according to the degree of urbanisation, with regions classified as cities, towns and suburbs, or rural areas. The lowest share of early leavers in the EU is reported in cities (8.7%). The proportion of early leavers is the highest in towns and suburbs (11.2%), while it is somewhat lower in rural areas (10.5%). The picture is, however, quite uneven across Member States[165].

Importantly, where the young population is more concentrated in cities, the number of early leavers may be largest in absolute terms. Data from 2019 Eurobarometer poll suggest that the proportion of young people reporting that they live in rural area or village is 26%, while 74% report living in a town (40% in small or middle-sized towns and 34% in a large town)[166].

The EU average share of early school leavers among young men is higher than among young women across all degrees of urbanisation[167]. In 2020, the EU average gender gap was widest in towns and suburbs (4.8 pps), followed by cities (3.7) and rural areas (2.5)[168].

[165] Rural areas report the highest proportion of early leavers in their young population in a majority of countries, namely BG, DK, EE, EL, HR HU, NL, RO, PL, LT, FI and CY. In CZ, ES, FR, PT SI and SE, towns and suburbs reported the highest proportion of early leavers. Cities reported the highest proportion of early leavers in their young population in BE, IT, MT and AT, and the second highest in DE, IE, CY, NL and SI.

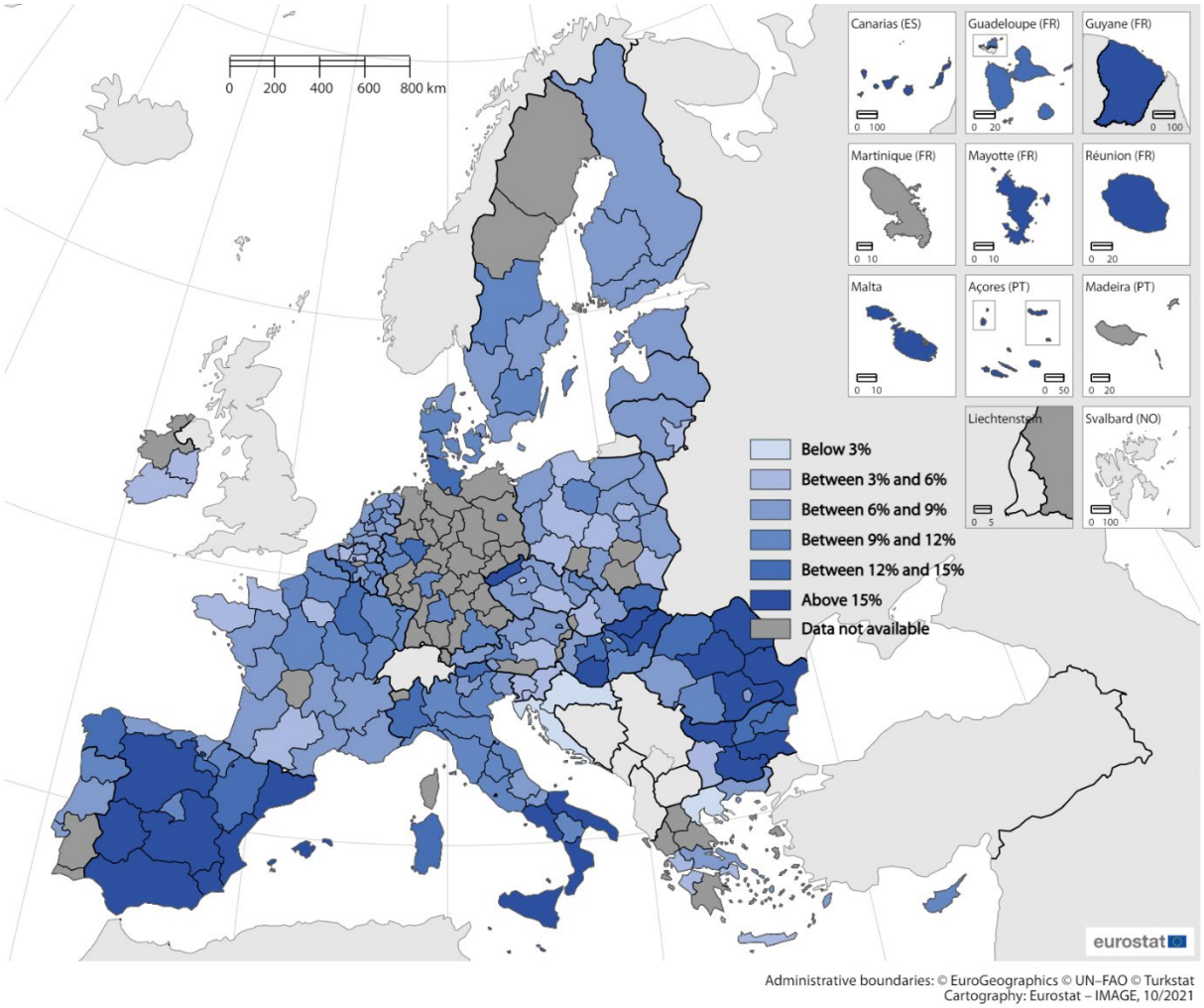
[166] See the Flash Youth Eurobarometer 478 of 2019 for further information. The sample refers to young people aged between 15 and 30 years. The urbanisation level is defined differently from Eurostat's LFS breakdowns, with the categories being as follows: rural area or village, small or medium-sized town, large town.

[167] Progress towards closing the gender gap has been faster in rural areas in the last 10 years, with reductions in the proportion of early leavers from education and training of 5.0 pps among young men versus 3.1 among young women. In cities, the reductions have been very similar among young women (3.2 pps) and young men (3.6). In towns and suburbs, the gender gap has widened with larger improvements among young women (a decrease of 2.9 percentage points) than young men (2.0).

[168] The data by sex and degree of urbanisation is partly not available for EE, IE, HR, CY, LV, LT, LU, MT, RO, SI and SK. The share of early leavers among young men is larger in towns and suburbs (13.5%) than in rural areas (11.7%) and cities (10.5%). Similarly, the proportion of early leavers among young women living in rural areas (9.2%) is larger than in towns and suburbs (8.7%) and cities (6.8%).

Figure 57 shows the wide disparities across regions at NUTS 2 level in 2020. Some of the lowest shares of early leavers from education and training are concentrated in Eastern Europe and in capital regions. The share of early leavers from education and training is also relatively high in most regions of southern Europe and across most regions of Bulgaria and Romania. Although the share of early leavers from education and training is comparatively low in western Member States such as Belgium or France, some regions[169] also record relatively high shares.

Figure 57: Early leavers from education and training by NUTS 2 regions, 2020 [%]



Source: Eurostat. Online data code: [edat_lfse_16].

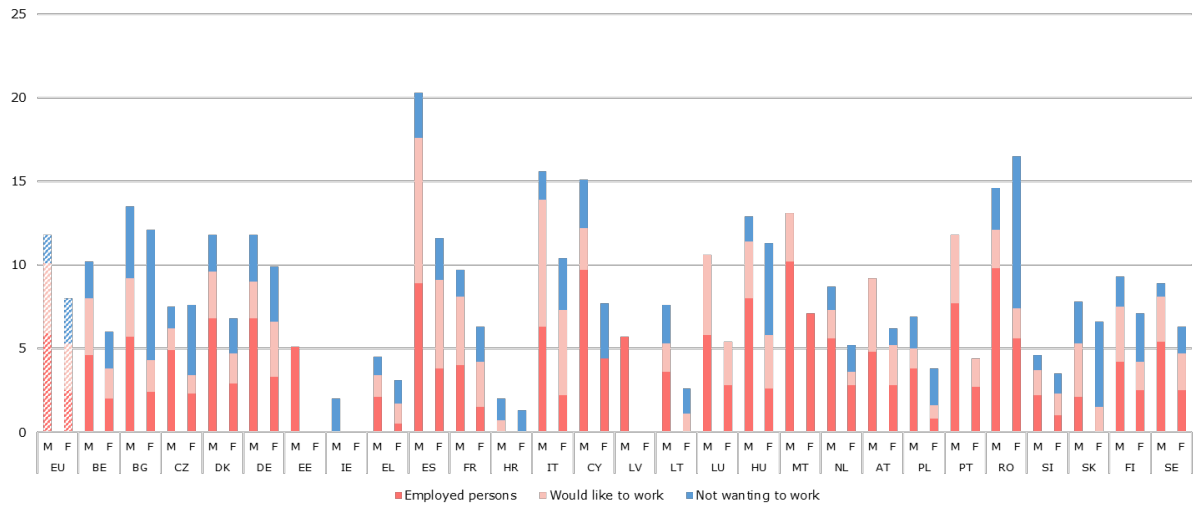
169 Eurostat (2020) Early leavers from education and training across EU regions.

2.4.3 Spotlight on the transition from school to work

Unemployment and inactivity are widespread among young people who have not completed upper secondary education and who are lacking the credentials deemed crucial for the labour market or pursuing further education. In 2020, only 42.4% of the early leavers in the EU were in employment, whereas 35.4% were not employed but wanting to work. The remaining early leavers (22.2%) were not employed and did not want to work (Figure 58).

The share of early leavers who are employed is highest in Malta, Romania, and Cyprus, suggesting that these labour markets offer opportunities for young people, especially young men, who have relatively low education attainment. By contrast, five Member States reported more early leavers not employed but wanting to work than early leavers who were employed (Croatia, Italy, Ireland, Spain, France and Slovakia). The biggest gap – 2.1 percentage point – is reported in Italy, where the share of early leavers who were employed stood at 4.3%, compared with a 6.4% share of early leavers who were not employed but wanted to work.

Figure 58: Early leavers from education and training by sex and employment status, 2020 [%]



Source: Eurostat, EU Labour Force Survey 2020. Online data code: [edat_lfse_14].

The share of young men who are early leavers in employment (5.9%) or not employed but who would like to work (4.2%) is much higher than the respective shares among young women, as among women, 2.5% are employed early leavers and 2.8% are not employed early leavers who would like to work. Young women who are early leavers from education and training are also more likely to not want to work (2.7% of them report they do not want to work) when compared to young men (1.7% of male early leavers report that they do not want to work)[170].

Early leavers from education and training are at greater risk of becoming NEETs (young people not in employment, employment education or training) and socially excluded, often detached from the labour market and further education and learning opportunities. Indeed, the policy focus on

[170] The gender gaps in the share of early leavers from education and training are also related to gender gaps in young peoples' prospects, opportunities and aspirations on the labour market, and not only to education and training systems. Young men are more likely to be early leavers from education and training, and also more likely to be in employment, or wanting to work after leaving education and training prematurely. The relatively higher rates of early leaving among young men do not necessarily translate into worse employment outcomes. Young women are more likely to stay on in education and training. Among young women who are early leavers, it is more frequent to not want to work, or to want to work, but to be unemployed.

prevention and early intervention should not distract from the equally daunting challenge of helping young people who have nevertheless become early leavers find their way back to education or training. Without such compensatory measures, an 18 year-old early leaver may still be recorded as an early leaver six years from now. But the road back to education and training is not always an easy one.

Box 21: The impact of the COVID-19 pandemic

It will take time to assess the impact of the COVID-19 pandemic on the share of early leavers from education and training. A number of studies suggest that physical school closures, which were prolonged in some countries, tended to increase the likelihood for students who were at risk of disconnecting from school to actually drop out[171].

As presented in sections 1.4 and 1.5, teachers help students in their learning of academic as well as social and emotional skills. Despite efforts to maintain learning continuity during the period of physical school closures through online education and various forms of support, students had to rely much more on their own resources to continue learning remotely. Insufficient financial resources, supervision and emotional support at home is a persistent source of structural disadvantage for children and adolescents, predating the pandemic.

There are wide inequalities in the availability of home environments conducive to learning, for example having access to a quiet space or study desk at home, as well as in access to the broadband and computers needed for online education[172]. Socio-economically disadvantaged students may lack the necessary engagement or ability to learn on their own, and the emotional support for developing educational aspirations and perseverance. In households where parents have lost their jobs, teenagers may try to enter the labour market to contribute to the family income.

The period of physical school closures has tended to exacerbate inequalities. Students may have found it more difficult to connect and participate in online lessons, and may have found it hard to go back to schools once it became possible, especially in groups that were already at higher risk of falling behind before the pandemic, who relied on the school to help them maintain a predictable day-to-day routine, those with less access to the broadband and equipment needed, socio-economically disadvantaged students, students with a migrant background, or pupils living in remote areas.

On the other hand, reduced employment prospects may erode the incentives to leave education and training before completing upper secondary attainment, as could be observed in earlier crises. Further evidence is needed to study all these different scenarios.

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171 For more details, cf. reports by the DG JRC of the European Commission: Blaskó, Z. and Schnepf, S.V. (2020). Educational inequalities in Europe and physical school closures during COVID-19. Fairness Policy Brief 04/2020; Di Pietro, G., Biagi, F., Costa P., Karpiński Z., Mazza, J. (2020). The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets. A JRC Technical Report; Carretero Gomez, S., Napierala, J., Bessios, A., Mägi, E., Pugacewicz, A., Ranieri, M., Triquet, K., Lombaerts, K., Robledo Bottcher, N., Montanari, M. and Gonzalez Vazquez, I (2021). How families handled emergency remote schooling during the COVID-19 lockdown in spring 2020; what did we learn from schooling practices during the COVID 19 lockdown?. JRC Science for Policy Report. As a complementary indication, the European Statistical Recovery Dashboard shows that the proportion of young people neither in employment nor in education or training (NEET) increased from 12.5% in Q4 2019 to 14.7% in Q2 2020. During Q3-Q4 2020, the NEET rate decreased to 13.3%, a considerably higher level than one year earlier.

172 In some countries, 10% of 15-year-old students do not have a quiet place to study in their homes. In all countries, the percentage is higher among students from the most disadvantaged backgrounds, cf. Coronavirus policy-responses: learning remotely when schools close – how well are students and schools prepared?

2.4.4 Policy takeaways

Higher levels of education attainment are associated with benefits at the individual, social and economic levels. The expected benefits from completing upper secondary education include better health and well-being, better social networks, improved labour market outcomes, increased participation in democratic institutions and other civil society initiatives, organisations and higher lifetime satisfaction[173].

Young people who did not complete upper secondary education and who are not receiving any further education or training are less likely to fulfil their potential. They were at a higher risk of low achievement when they were in education and are less likely to have reached a baseline level of proficiency in basic skills. They can face difficulties in finding employment that matches their preferences and expectations, especially where labour markets are more high-skilled[174].

Individuals with lower levels of education attainment have been more severely affected by the economic downturn following the pandemic than their more highly educated peers, as was also the case in previous downturns[175]. In this context, prevention and early intervention are especially important.

For those young people who did leave education and training prematurely, compensatory support is needed to help them in their difficult labour market integration, or on their way back to education or training. The Commission's reinforced Youth Guarantee[176] plays an important role here, reaching out to vulnerable groups and activating them with tailored support so that they can take up an offer of employment, continued education, an apprenticeship or a traineeship.

Mastering multiple languages is key to enhancing the life and work of all individuals. In addition to improving people's general ability to move around the EU to work, study, etc., especially lifelong and innovative learning, and removing barriers to social inclusion, language learning was identified by the EU as a key enabler to achieving the EU's vision for a European Education Area by 2025 in which "learning, studying and doing research would not be hampered by borders"[177].

The Council's 2019 Recommendation on a comprehensive approach to the teaching and learning of languages[178] supports this vision and sets the ambitious goal of ensuring that, by the time young people leave upper secondary education, they can speak at least three languages. In addition to this, by introducing the concepts of "literacy" and "language awareness", the Recommendation aims to change the attitudes among policymakers and teachers, inspiring them to adopt comprehensive language education policies, as well as innovative and inclusive language teaching methods.

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173 There is abundant empirical evidence of the association of early school leaving with negative effects to individuals and society. Typically, a higher incidence and duration of unemployment, more precarious work conditions, and lower job satisfaction are found among early school leavers, while higher productivity an earnings are associated with higher educational attainment. See e.g.: Psacharopoulos, G. (2019). Developments in the Rates of Early Leavers from Education and Training (ELET), An EENEE Ad hoc report 3/2019, and Cedefop (2016). Leaving education early: putting vocational education and training centre stage. Volume I: investigating causes and extent. A Cedefop research paper; No 57.

174 Van der Graaf, A., Vroonhof, P., Roullis, G., and Velli, F. (2019). Research for CULT Committee – How to tackle early school leaving in the EU, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels. Forthcoming study from Ecorys looked at the gender gap in attainment and achievements and the potential impact, including "direct" and more "indirect implications" where a causal link with poor education outcomes is difficult to prove conclusively on the basis of existing research, but some evidence was found showing that men with incomplete studies are at higher risk of ill-health and suicide.

175 Christopher Jepsen (2021). The labour market returns to classroom-based vocational education. An EENEE network report for the European Commission.

176 Cf. European Commission's Reinforced Youth Guarantee.

177 European Commission (2017). Strengthening European identity through education and culture, p. 11.

178 Council of the European Union (2019). Council Recommendation of 22 May 2019 on a comprehensive approach to the teaching and learning of languages (2019/C 189/03)

Moreover, drawing on the lessons from implementing policies in the last decade[179], the Commission announced two new initiatives to promote the inclusive dimension of school education: the *Pathways to School Success* initiative and the establishment of an expert group to develop proposals for creating supportive learning environments for groups of students at risk of low achievement and for supporting well-being at school[180].

The "Pathways to School Success" initiative is expected to focus on (1) helping all learners reach a baseline level of proficiency in basic skills; (2) promoting educational success strategies at national level, including language sensitive teaching; and (3) stimulating a safe and supportive school environment. In the context of early leavers from education and training, this will create new momentum for the triple objective of prevention, intervention and compensation.

2.5 Tertiary level attainment

In a nutshell

Member States have agreed on an EU-level target stating that the share of 25-34 year-olds with tertiary educational attainment should be at least 45% by 2030[181]. This supersedes the ET2020 40% benchmark, which was achieved in 2019[182]. In 2020, this share stood at 40.5% in the EU, but with substantial differences between and within countries. Eleven countries have tertiary educational attainment rates above the EU-level target. The average share of 25-34 year-olds with tertiary educational attainment is 10.8 pps higher among women (46.0%) than it is among men (35.2%). Moreover, there are clear discrepancies between urban and rural areas; the average rate in cities (50.9%) being substantially higher than it is in rural areas (28.9%).

2.5.1 Progress towards the EU-level target

On average, the share of 25-34 year-olds with tertiary educational attainment was 40.5% in the EU in 2020 (Figure 59). The share has increased steadily across the EU since 2010, with an overall increase of 8.3 pps. The difference between countries is pronounced, spanning from 24.9% in Romania to 60.6% in Luxembourg. Eleven countries have tertiary educational attainment rates above the EU-level target and a further nine are within five pps of the target value. In contrast, only three countries had attainment rates higher than the present target in 2010, underlining the development over the past decade.

Box 22: Expanding the tertiary vocational system in Italy

The Italian government is taking steps to expand the existing network of Istituti Tecnici Superiori (ITS), tertiary-level vocational institutions that offer graduates excellent employment prospects, but have so far remained limited in scope. A reform is under way with the aim of strengthening the ITS organisational and educational model. It provides for a stronger role for business within the ITS foundations and simplifies the recruitment of trainers from the business world. The

179 Since 2011, the Commission and Member States developed a policy framework to reduce early school leaving, with the adoption and implementation of a Council Recommendation on Policies to Reduce Early School Leaving. The policy framework is based on a combination of prevention measures to reduce the overall risk for young people to leave education and training before they have completed upper secondary education, intervention measures at the level of the educational institutions, and compensation measures to support young early leavers and offer them routes to re-enter education and training and gain qualifications.

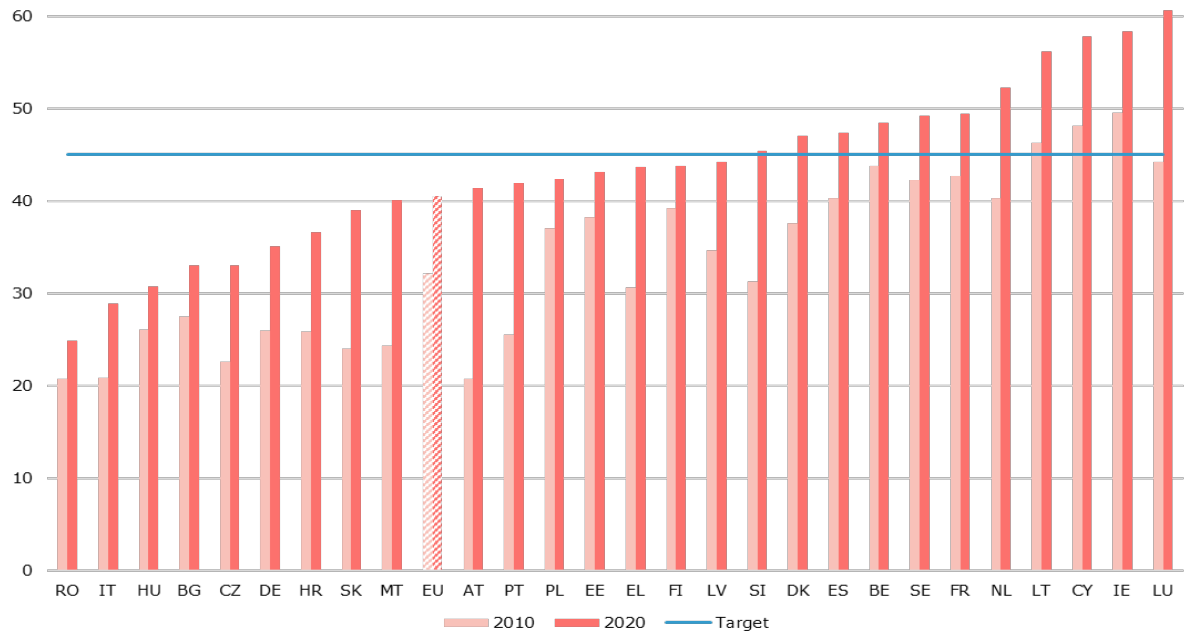
180 Cf. European Commission Communication on achieving a European Education Area by 2025.

181 The share of 25-34 year olds with tertiary educational attainment refers to the share of this age bracket who have successfully completed tertiary education (ISCED levels 5-8).

182 The reference population for the ET2020 benchmark was the age cohort 30-34 years. In comparison, the tertiary educational attainment rate for the 25-34 years cohort stood at 39.5% in 2019.

reform also provides for a better integration of the ITS in the system of vocational tertiary education, and stronger coordination with the recently introduced tertiary professional degrees. Coordination between vocational schools, ITS and businesses will be ensured by involving schools, universities and businesses. The objective is to double the number of ITS students (currently 18 750) and graduates (currently 5 250) by 2026. The reform is backed by funding of €48 m for 2021 and €68 m from 2022, in addition to €1.5 bn from the Recovery and Resilience Facility.

Figure 59: Tertiary educational attainment 25-34 year-olds by country, 2010 and 2020 [%]



Source: Eurostat, EU Labour Force Survey. Online data code: [EDAT_LFSE_03].

Note: Break in time series: 2011 (BG, CZ, MT, NL, PT, SK), 2013 (FR, NL), 2014 (all countries), 2015 (LU), 2016 (DK), 2017 (BG, DK, IE), 2018 (SE), 2019 (NL), 2020 (DE). Provisional data: DE (2020).

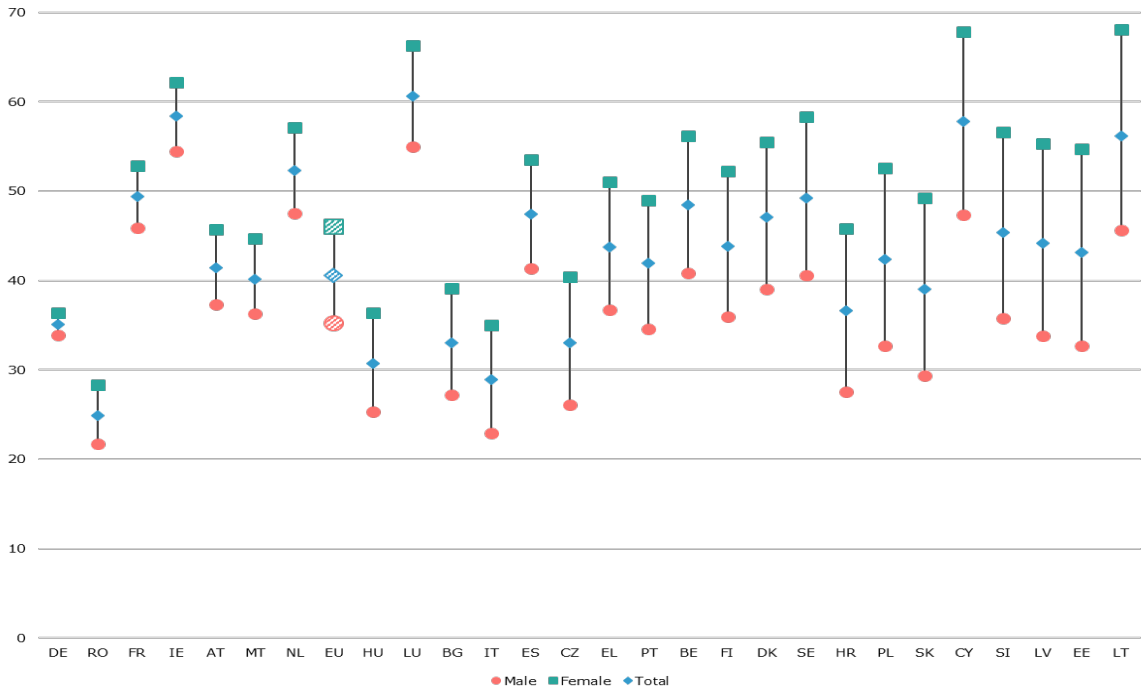
Austria, Luxembourg, Portugal, Malta and Slovakia are amongst the countries having made most progress since 2010, seeing increases in the tertiary educational attainment rate in excess of 15 pps. Looking at the relative increase in the attainment rate, Austria made most progress by doubling the rate[183]. At the other end of the spectrum, we find Estonia, Belgium, Hungary, Finland and Romania, where the increase since 2010 has been less than five pps. This only presents part of the picture, however. Estonia, Belgium and Finland already had high attainment rates in 2010, and by 2020 had attainment rates of 43.1%, 48.5% and 43.8%, respectively. In contrast, Hungary (30.7%) and Romania (24.9%) are amongst the Member States with the lowest attainment rates, having made very little progress since 2010.

[183] The increase in AT is in part due to the reclassification of programmes spanning levels in the transition from ISCED 1997 to ISCED 2011 in 2014.

Figure 60 compares the attainment rates of men and women. The average share of 25-34 year-olds with tertiary educational attainment is 10.8 pps higher among women (46%) than it is among men (35.2%). In all countries, women are more likely to have completed tertiary education than men are. The most striking differences are present in Lithuania, Estonia, Latvia, Slovenia and Cyprus, where the difference in the attainment rate exceeds 20 pps. Germany has the lowest discrepancy between men and women, with 2.5 pps, and is the only country where the difference is less than five pps.

Interestingly, the size of the gap between men and women does not appear to be associated with high or low levels of educational attainment at the country level. The educational attainment rate in the five countries with the widest gaps were all in excess of 40%. Comparably, three out of five countries with the smallest gaps also had attainment rates above 40%, the exceptions being Germany and Romania.

Figure 60: Tertiary educational attainment 25-34 year-olds by sex, 2020 [%]



Source: Eurostat, EU Labour Force Survey. Online data code: [EDAT_LFSE_03].

Note: Sorted in ascending order according to the gap between women and men. Provisional data for DE.

In all but seven countries, the 45% EU-level target has been surpassed in the female population. Looking at the male population, this is only the case in six countries. Moreover, 18 countries have yet to reach a tertiary educational attainment rate above 40% for men. The average gap between men and women in the EU has increased by 1.7 pps between 2010 (9.1 pps) and 2020 (10.8). Only five countries (Bulgaria, Ireland, France, Latvia and Finland[184]) have seen a reduction in the gap in this period. Going forward, reducing the gender gap in tertiary educational attainment will have to be addressed if the 2030 target is to be reached.

[184] The largest reductions are present in IE (-4.9 pp), BG (-4.3) and FR (-2.0) where there has been a reduction of more than 2 percentage points between 2010 and 2020. Only a minor reduction took place in Finland (-0.4 percentage points) and Latvia (-0.2).

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2.5.2 Spotlight on vulnerable groups

In 2020, the average rate of tertiary educational attainment in the EU was highest in cities (50.9%), while the lowest was reported in rural areas (28.9%). This is consistent across all countries[185].

The average gap in the EU between rural areas and cities is more than 20 pps. Moreover, the difference exceeds 30 pps in six countries (Luxembourg, Romania, Bulgaria, Hungary, Denmark and Poland). In only five countries is the gap smaller than 15 pps (Cyprus, Slovenia, Spain, Italy and Belgium).

Considering the urban-rural divide in more detail, there is a marked increase in the gender gap with reduced degrees of urbanisation. In cities, the average gap between the attainment rates of women (55.5%) and men (46.3%) stood at 9.2 pps in the EU in 2020. This gap widens when looking at towns and suburbs, where the average gap between women (40.0%) and men (29.2%) was 10.8 pps. The lowest attainment rates, and the largest gap, is found in rural areas, where the gap between women (35.6%) and men (22.6%) was 13.0 pps.

Figure 61: Tertiary educational attainment of 25-34 year-olds by degree of urbanisation and country of birth, 2020 [%]

	Total	Degree of urbanisation			Country of birth			
		Cities	Towns and suburbs	Rural areas	Native-born	Born in another EU country	Born outside the EU	Total foreign-born
EU	**40.5**	**50.9**	**34.5**	**28.9**	**41.3**	**40.4**	**34.4**	**36**
BE	48.5	51.8	46.4	46.5	51.1	48.2	34.0	39.6
BG	33.0	46.6	25.6	13.0	32.9	:	:	:
CZ	33.0	47.0	27.8	24.1	32.3	50.8	41.3	46.3
DK	47.1	61.7	39.2	30.1	47.1	61.9	40.7	47.3
DE	35.1	43.2	29.5	25.4	35.1	38.9	33.3	35.0
EE	43.1	53.1	32.2	31.9	41.7	84.2	60.5	65.6
IE	58.4	68.4	52.1	49.5	56.0	47.7	73.6	63.2
EL	43.7	50.0	46.1	29.1	46.2	25.1	14.8	16.2
ES	47.4	52.8	40.5	40.8	52.4	35.0	31.1	31.9
FR	49.4	58.2	45.1	36.0	49.5	55.2	48.0	49.1
HR	36.6	51.3	36.9	24.8	36.2	45.2	42.0	42.5
IT	28.9	34.6	26.6	23.3	32.2	12.3	14.0	13.6
CY	57.8	63.1	50.5	49.2	68.7	34.4	39.9	37.9
LV	44.2	54.7	40.9	31.6	44.0	:	49.9	51.6
LT	56.2	68.3	47.0	41.5	56.1	:	62.6	62.0
LU	60.6	87.3	51.3	48.8	48.6	70.5	65.9	69.0
HU	30.7	47.7	27.8	15.2	30.2	46.2	48.6	47.4
MT	40.1	37.7	42.8	38.5	37.7	51.3	46.3	48.1
NL	52.3	57.9	43.2	38.5	52.8	55.6	45.0	47.9
AT	41.4	50.8	35.8	34.9	42.1	49.2	31.6	39.7
PL	42.4	60.3	36.9	29.8	42.2	65.4	62.6	63.1
PT	41.9	49.9	39.0	29.6	42.5	47.9	34.0	36.7
RO	24.9	45.9	19.3	8.0	24.8	:	:	:
SI	45.4	54.9	43.8	41.9	48.2	25.2	22.9	23.0
SK	39.0	58.2	36.8	31.0	39.1	:	:	:
FI	43.8	51.9	38.3	29.1	45.2	31.7	32.2	32.1
SE	49.2	60.9	42.8	33.4	49.9	69.0	42.2	47.2

Source: Eurostat, EU Labour Force Survey. Online data codes: [edat_lfs_9913] and [edat_lfs_9912].

Note: Provisional data: DE. Low reliability: MT (rural areas). Confidential: BG, LT, RO (born outside the EU). Unreliable: EE, EL, HR, LV, PL, SI, SK (born in another EU country); BG, LT, RO, SK (born outside the EU); BG, LT, RO, SK (total foreign born).

[185] In BE, EE and ES there is a negligible difference between "towns and suburbs" and "rural areas". Data on rural areas in Malta have low reliability due to the sample size, and is thus not referenced in the text.

The educational attainment rate is generally lower for people born outside the EU compared to people born in the EU. In 2020, the EU average tertiary educational attainment rate for 25-34 year-olds stood at 41.3% for native-born people and 40.4% for people born in another EU country than the reporting country. The EU average tertiary educational attainment rate for people born outside the EU, in contrast, was 34.4%.

While there is some variability at the country level, the general trend is that the rate of tertiary educational attainment for people born outside the EU is lower than it is for native-born people and people born in another EU country[186]. The widest gaps between native-born people and people born outside the EU are present in Greece (31.4 pps), Cyprus (28.8 pps), Slovenia (25.3 pps), Spain (21.3 pps), Italy (18.2 pps) and Belgium (17.1 pps), where more than 15 pps separate the two groups. Italy (14.0%), Greece (14.8%) and Slovenia (22.9%) have the lowest overall tertiary attainment rates for people born outside the EU, the only countries where the rate for this group is below 30%.

Notable exceptions to the general trend of people born outside the EU having lower attainment rates include Poland, Estonia, Hungary, Ireland and Luxembourg, where the gap is in the opposite direction. In these countries, the tertiary attainment rate is in excess of 15 pps higher for people born outside the EU compared to native-born people.

2.5.3 Spotlight on learning mobility

The opportunity for learners to move abroad to study ('mobility') is a key element of EU cooperation and a tool to enhance quality and inclusion in education and training. It is associated with a greater likelihood to work abroad in the future, higher earnings and lower unemployment. Efforts to remove existing obstacles and barriers to all types of learning mobility will be central in moving towards the establishment of a European Education Area by 2025. Moreover, generating more opportunities for student mobility and young researchers by encouraging closer and deeper cooperation between higher education institutions will be a priority over the next decade under the strategic framework for European cooperation in education and training towards the European Education Area and under the European Research Area.

While the COVID-19 pandemic is likely to have significantly affected the process of internationalising higher education, it will take time before the full effect of the pandemic is reflected in data on learning mobility – especially for graduates[187]. In 2019, the academic year before COVID-19, 14.4% of higher education graduates in the EU were mobile, had completed part or all of their studies abroad (Figure 62)[188]. The highest shares of such graduates were present in

[186] Data for 2020 on the tertiary education attainment rate for people born in another EU country is not available for all countries due to confidential data (BG, LT and RO) or low reliability (LV and SK). Low reliability of the data limits the analysis for a selection of countries (EE, EL, HR, PL and SI). Similarly, data is not available for some countries on people born outside the EU due to low reliability (BG, RO and SK) or limits the analysis (LT).

[187] The explanation for this is twofold: firstly, data is published 1.5 years after the end of the reference period, meaning that data for the academic year 2019/20 is not available before 2022. Second, the nature of graduate mobility, in contrast to student mobility, results in data only being generated when a degree is completed. In other words, longer term effects will take time to manifest themselves in the graduate data.

[188] Statistics on learning mobility have been calculated according to the procedure outlined in the methodological manual on learning mobility in tertiary education. We can distinguish between two types of mobile graduates. Credit-mobile graduates are those who have had a temporary study period and/or work placement abroad and return to their 'home institution' to complete their degree. Degree-mobile graduates are those whose country of origin (i.e. the country where their upper secondary qualification was obtained) is different from the country in which they graduate. While data on credit mobility is collected in the countries to which students returned after their credit mobility stay, data on degree-mobile graduates is collected at the level of the destination country. Consequently, the calculation of outwardly mobile EU graduates relies on figures provided by all EU and non-EU destination countries. For an estimation of the effect of missing data on the calculations, see Flisi, S. and Sanchez-Barrioluengo, M. (2018). Learning Mobility II: An estimation of the benchmark. A JRC Science for Policy Report.

Luxembourg (88.1%), Cyprus (35.9%), the Netherlands (26.4%) and Slovakia (21.1%), with more than 20% of the graduates having spent time abroad.

In a further 17 EU Member States, between 10 and 20% of the graduates participated in cross-border mobility. Only five countries had a total mobility rate below 10% (Poland, Slovenia, Romania, Croatia and Hungary), a common denominator being a low share of graduates with temporary experience abroad at the bachelor's level[189].

Figure 62: Outward degree and credit mobility of graduates by ISCED level, 2019 [%]

	Total mobility (credit+degree)					Credit mobility					Degree mobility				
	5-8	5	6	7	8	5-8	5	6	7	8	5-8	5	6	7	8
EU	14.4	5.1	11.8	18.6	33.9	9.8	2.6	8.3	12.7	18.9	4.6	2.5	3.5	5.9	15.0
BE	10.8	:	10.4	11.8	:	6.6	:	7.7	5.8	:	4.2	6.6	2.7	6.0	11.5
BG	10.7	:	11.0	8.0	16.5	1.5	:	1.5	1.3	3.8	9.2	:	10.0	6.7	12.7
CZ	12.6	55.6	9.5	14.5	20.6	7.4	0.0	5.0	10.1	13.3	5.1	55.6	4.5	4.4	7.3
DK	11.3	3.4	11.3	14.1	27.2	9.5	2.8	10.0	10.9	20.5	1.8	0.7	1.3	3.3	6.7
DE	8.6	:	13.6	22.5	:	11.6	:	10.6	15.2	:	4.7	10.6	2.9	7.3	9.6
EE	16.3	:	14.5	15.3	:	5.4	:	5.6	5.6	:	10.9	:	8.8	9.7	23.7
IE	:	:	:	:	:	:	:	:	:	:	6.0	3.8	3.6	11.0	21.4
EL	12.7	:	5.7	22.9	:	0.0	:	0.0	0.0	:	12.7	:	5.7	22.9	32.9
ES	10.9	1.7	17.3	9.4	40.0	8.6	1.3	15.4	5.2	30.0	2.2	0.4	1.9	4.1	10.1
FR	18.3	5.7	14.5	31.6	20.9	14.8	4.4	10.0	27.8	8.5	3.4	1.2	4.5	3.8	12.4
HR	7.7	72.8	5.1	9.2	26.3	3.6	0.0	2.1	5.2	7.6	4.0	72.8	3.0	4.0	18.8
IT	16.6	:	9.7	18.6	145.2	11.7	:	6.9	12.6	118.0	4.9	28.0	2.8	5.9	27.2
CY	35.9	17.0	56.3	20.8	63.1	2.1	0.5	4.5	0.3	2.9	33.8	16.4	51.9	20.4	60.2
LV	13.6	6.0	15.8	15.3	40.7	5.5	2.2	7.0	5.3	10.7	8.2	3.8	8.8	10.0	29.9
LT	16.9	:	15.3	15.8	35.6	6.6	:	7.3	5.0	10.4	10.3	:	8.1	10.9	25.2
LU	88.1	:	96.5	88.1	84.3	12.2	:	21.5	0.3	3.4	75.9	14.3	75.0	87.8	80.9
HU	8.7	7.9	6.8	12.0	14.9	4.0	0.3	3.1	6.3	1.5	4.7	7.5	3.7	5.7	13.4
MT	14.6	3.5	12.2	19.6	62.1	5.3	0.0	9.6	0.1	0.0	9.3	3.5	2.6	19.6	62.1
NL	26.4	11.7	26.4	26.3	:	23.0	4.7	25.0	19.8	:	3.3	7.0	1.4	6.5	:
AT	15.0	:	20.5	23.7	35.9	8.9	:	13.3	13.5	12.6	6.2	0.3	7.2	10.2	23.3
PL	2.9	89.1	1.9	4.2	13.7	1.5	0.0	1.0	2.5	1.9	1.4	89.1	0.9	1.6	11.8
PT	12.5	12.9	11.7	13.7	20.0	6.6	0.1	7.2	7.0	0.4	6.0	12.8	4.5	6.7	19.6
RO	7.3	:	6.6	6.7	19.2	1.6	:	1.8	1.4	1.3	5.6	:	4.9	5.3	17.9
SI	5.6	2.2	3.6	8.1	23.0	0.0	0.0	0.0	0.0	0.0	5.6	2.2	3.6	8.1	23.0
SK	21.1	:	21.5	20.1	20.2	4.0	:	3.3	4.9	4.2	17.0	34.4	18.2	15.2	16.0
FI	19.1	:	16.6	24.4	8.7	14.7	:	13.2	18.7	2.5	4.4	:	3.3	5.7	6.2
SE	15.6	3.6	15.4	20.9	15.7	10.8	0.3	11.3	14.8	5.6	4.9	3.3	4.1	6.1	10.2

Source: Eurostat, UOE, and OECD. Online data codes: [educ_uoe_grad01], [educ_uoe_mobc01] and [educ_uoe_mobg02]. Special extraction from the OECD of international graduate data for degree-mobile graduates of EU origin who graduated in non-European countries (Australia, Canada, Chile, Colombia, Israel, Japan, Korea, New Zealand, Brazil and Russia).

Note: The total outward mobility rate for country X is calculated as ((outward degree-mobile graduates from country X + outward credit-mobile graduates who were not degree-mobile from country X) / graduates originating in country X). The number of graduates originating in country X is calculated as (total graduates in country X – inward mobile graduates from any other country to country X + outwardly mobile graduates from country X to any other country). Credit and degree mobility are calculated considering only one component as the numerator. Outward mobility rates for the EU are calculated as ((outward degree-mobile graduates from the EU + outward credit-mobile graduates who were not degree mobile from the EU) / graduates originating in the EU). The number of graduates originating in the EU is calculated as (number of graduates in the EU – inward mobile graduates from non-EU countries to the EU + outwardly mobile graduates from the EU to non-EU countries. Inward degree mobility data are not available for SI disaggregated by country of origin, and no inward degree mobility data are available for NL (ISCED 8). This implies a potential underestimation of outward degree-mobile graduates from other Member States. Furthermore, limited availability of information on the number of outwardly mobile graduates of EU origin from destination countries outside of Europe affects the reliability of the estimates. (n.a.) not applicable, (:) not available.

189 Data on credit mobility is not available for IE, so total mobility cannot be reported.

At EU-level, 9.8% of the higher education graduates were credit mobile, having a temporary experience abroad (Figure 62)[190]. In contrast, only 4.6% of graduates were degree mobile, graduating in a country that was not the one where they received their upper secondary qualification. The share of credit mobile graduates tended to be higher than the share of degree mobile graduates in most countries. Notable exceptions include Luxembourg and Cyprus, where the share of degree mobile graduates were respectively 63.7 pps and 31.7 pps higher than the share of credit mobile graduates.

Box 23: COVID-19 and online international student experiences

Due to the COVID-19 pandemic, an increasing number of universities around the world have chosen to deliver online education to international students to avoid travel, visa and health issues. But it remains unclear if this alternative is effective.

On the one hand, studying like this has several advantages. The most relevant is the opportunity to reach more students. Many students willing to study abroad cannot afford travel and other costs associated with living in a foreign country. And some would typically not consider such an option due to personal or employment reasons. In the recent past, international education has counted on a growing demand driven by more and more students entering higher education, increasingly interested in gaining a greater understanding of the world. Additionally, although online learning cannot replace the campus experience, a virtual learning environment still enables students to engage in cross-border collaborations, thus developing and improving intercultural understanding and global mindedness.

On the other hand, however, this mode of study abroad may not confer the same benefits doing so physically. First, there is evidence showing that students often feel less motivated when learning online rather than learning in person[191]. Second, some types of learning (e.g. doing experiments in laboratories for natural science students or visiting patients in hospitals for medical students) cannot take place virtually. Third, international students following online education miss out important social and cultural elements of a study abroad experience including living in a foreign country, enjoying the social life on campus and becoming familiar with other cultures. The results of a study[192] based on survey among EU students studying in the United Kingdom would seem to support this argument. Respondents report that one of the main reasons behind their decision to study abroad was to broaden their horizons or experience other cultures. Fourth, studying abroad online does not enable international students to gain access to foreign job markets.

Credit mobility through EU-funded programmes, such as Erasmus+, was the dominant form of outbound credit mobility amongst credit mobile graduates in the majority of Member States in 2019 (Figure 63)[193]. These programmes accounted for more than half of the graduate credit mobility in 21 countries. In 17 of these, mobility through EU programmes exceeded 75% of the total graduate credit mobility. The highest shares were present in Cyprus (100%), Malta (99.2%), Latvia (99.1%), Slovenia (94.7%), Romania (97.6%) and Bulgaria (96.6%), where more than 95% of the credit mobile graduates participated in EU-funded programmes.

190 Credit mobile graduates refers to graduates with a credit mobility stay abroad who were not degree mobile. For countries where this disaggregation is not available, credit mobile graduates are used in the calculations.

191 Cf., Summers, J.J., Waigandt, A. and Whittaker, T.A. (2005). A comparison of student achievement and satisfaction in an online versus a traditional face-to-face statistics class, Innovative Higher Education 29: 233-250. Additionally, a recent survey among undergraduates in the UK during the lockdown finds that an increasing proportion of students dissatisfied with online compared to in-person learning.

192 West, A, Dimitropoulos, A., Hind, A. and Wilkes, J. (2000). Reasons for Studying Abroad: A Survey of EU Students Studying in the UK, Education-line, Edinburgh.

193 Not excluding credit mobile graduates who were also degree mobile.

Figure 63: Credit mobility by type of programme, 2019 [%]

Source: Eurostat, UOE. Online data code: [EDUC_UOE_MOBC01].

Note: "Other programmes" includes the categories "international/national programmes" and "other programmes", as reported by Eurostat. Values are the sum of the ISCED levels available for each country. The value for the EU is the sum of available data from EU Member States. Data is not available for IE. Data by type of mobility refer to all credit mobile graduates, not only those who were not degree mobile. Therefore they do not correspond to the credit mobility data used to calculate the credit mobility component of the learning mobility indicator as defined under ET 2020.

Only five EU Member States recorded a higher percentage of graduates with periods of foreign study supported by non-EU programmes than through EU programmes (France, Denmark, Sweden, the Netherlands and Germany). Combined, graduates from these five countries constituted 63% of the credit mobile graduates in the EU in 2019. The main contributors to the outward credit mobility through non-EU programmes were France (45.7% of the total credit mobility through non-EU programmes), Germany (17.8%) and the Netherlands (11.7%).

The rate of inward degree-mobile graduates ranged from 1.7% in Greece to 24.1% in Luxembourg in 2019 (Figure 64)[194]. At EU level, the rate stood at 8.3%. In 16 Member States, the inward degree mobility rates were below 10%. Luxembourg (24.1%), the Netherlands (19.6%) and Austria (16.5%) recorded the highest rates, and were the only countries with inward graduate degree mobility rates above 15%. France was the most popular destination country in terms of absolute numbers (89 492 inwardly degree-mobile graduates), followed by Germany (53 835), the Netherlands (26 338) and Spain (22 205).

[194] ISCED levels 5-8.

Figure 64: Inward degree mobility by ISCED level, 2019 [%]

	Inward degree mobility rate					Inward mobile graduates	
	ISCED 5-8 %	ISCED 5 %	ISCED 6 %	ISCED 7 %	ISCED 8 %	ISCED 5-8 N	From EU %
EU	**8.3**	**2.1**	**4.9**	**13.5**	**24.3**	**312 273**	**29.7**
BE	10.7	:	6.6	16.6	46.3	11 472	52.2
BG	3.8	:	2.5	5.2	8.4	2 044	38.0
CZ	13.5	2.3	12.0	15.2	19.3	9 046	63.6
DK	14.7	16.1	7.7	25.5	58.0	10 766	65.5
DE	8.6	0.0	4.2	15.5	22.7	53 835	24.5
EE	13.1	:	7.3	23.4	19.6	1 153	40.4
IE	12.1	3.2	7.5	25.7	30.8	9 778	16.0
EL	1.7	:	2.3	0.7	1.7	1 364	71.8
ES	5.0	1.2	1.5	13.1	16.8	22 205	26.5
FR	11.2	2.5	8.8	18.8	52.8	83 492	13.2
HR	2.5	0.0	2.1	2.6	9.2	881	13.5
IT	4.2	:	3.3	5.2	12.1	17 704	17.1
CY	8.5	18.9	8.8	7.0	6.1	1 185	61.1
LV	6.6	0.5	4.8	15.6	5.6	990	32.1
LT	4.5	:	2.8	9.5	3.9	1 207	20.1
LU	24.1	30.5	7.0	44.4	102.2	864	68.2
HU	8.9	1.1	5.4	16.9	10.9	5 354	30.9
MT	13.3	8.0	5.7	27.5	8.0	622	18.2
NL	19.6	0.0	12.7	38.5	:	26 338	55.9
AT	16.5	0.3	19.9	28.9	46.1	12 663	74.3
PL	2.5	:	2.0	3.6	2.2	11 279	10.8
PT	7.1	1.9	3.2	14.0	35.4	5 673	22.6
RO	4.5	:	2.7	7.3	6.5	5 687	21.8
SI	3.8	1.5	2.9	5.8	6.9	616	49.0
SK	5.5	0.5	5.6	5.5	8.0	2 522	58.1
FI	9.3	:	6.1	13.6	40.1	5 236	17.5
SE	11.4	0.2	2.3	25.0	58.1	8 297	31.3

Source: Eurostat, UOE, and OECD. Online data codes: [educ_uoe_grad01], [educ_uoe_mobg02] and [educ_uoe_mobc01] for graduates, degree-mobile graduates and credit-mobile graduates in the EU, EFTA, EEA and candidate countries. Special extraction from the OECD of international graduate data for degree-mobile graduates of EU origin who graduated in non-European countries (Australia, Canada, Chile, Colombia, Israel, Japan, Korea, New Zealand, Brazil and Russia).

Note: The inward degree mobility rate in country X is calculated as (inward degree-mobile graduates in country X / graduates originating in country X). Graduates originating in country X is calculated as (total graduates in country X – inward mobile graduates from any other country to country X + outward mobile graduates from country X to any other country). The inward mobility rate for the EU is calculated as (inward degree-mobile graduates in the EU / graduates originating in the EU). The number of graduates originating in the EU is calculated as (number of graduates in the EU – inward degree-mobile graduates from non-EU countries to the EU + outward degree-mobile graduates from the EU to non-EU countries). Country of origin is defined as country of prior education or upper secondary diploma. Data on ISCED 8 are not available for NL. Inward-degree mobility data are not available for SI disaggregated by country of origin.

Close to one in three inward degree mobile graduates across the EU originated in the EU in 2019 (29.7%), followed by graduates originating in Asia (22.7%), Africa (16.6%) and European countries outside the EU (13.3%)[195]. There were substantial variations among Member States when it comes to the share of intra-EU inward graduate degree mobility, ranging from 10.8% to Poland to 74.3% to Austria. These differences can be explained by factors such as geographical proximity, common language and historical ties.

[195] Calculations based on Eurostat, UOE data. Online data code: [educ_uoe_mobg02].

2.5.4 Policy takeaways

Higher education has a unique role to play in building successful, inclusive societies. Moreover, higher levels of education attainment are associated with benefits at the individual, social and economic levels. Demand for highly skilled, socially engaged people is both increasing and changing, as labour markets are transforming rapidly, due to technological development, digital and green transitions. The higher education sector must respond to these needs to adequately skill the talents of tomorrow. The COVID-19 pandemic is another factor that has highlighted existing challenges, and presented new ones, while at the same time created opportunities for further synergies between higher education, research and innovation to provide solutions within the planned higher education transformation agenda[196]. One avenue for approaching these challenges is the European Universities Initiative[197], which encourages deeper cooperation between higher education institutions across borders.

The attainment rates in higher education have been increasing steadily over the past decade, but there is still considerable variation between countries and sub-groups within countries (e.g. gender gap, urban-rural divide). Notably, there is a persisting under-representation of students with disadvantaged background in higher education. Moreover, evidence suggests that disadvantaged communities in both inner city and isolated rural regions were among the most severely affected during the pandemic[198]. Those with high-level qualifications face better labour market perspectives, and insights from the European skills forecast suggests that people employed in highly skilled occupations are less likely to be replaced by technology in the future[199].

2.6 Work-based learning

In a nutshell

Work-based learning helps young people and adults make smoother transitions from school or from unemployment to the labour market. Member States agreed on an EU-level target to ensure that, by 2025, at least 60% of recent graduates from vocational education and training (VET) will have been exposed to work-based learning during their formal education. Data underpinning the EU-level target will be available as of 2022. In the field of VET, other important indicator domains concern the employability of recent graduates and number studying abroad during their formal education. 76.1% of recent VET graduates were employed in 2020, outperforming their peers from medium-level general education. Statistics on numbers studying abroad are also awaiting underlying data, to be sourced from a combination of administrative Erasmus+ and the UNESCO, OECD and Eurostat (UOE) data.

The 2020 Council Recommendation on VET for sustainable competitiveness, social fairness and resilience[200] further developed the European policy framework for VET in light of the social, economic, technological and environmental developments, but also the COVID-19 crisis[201].

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196 Commission Communication on achieving the European Education Area by 2025 COM/2020/625 final; Commission Communication on a new ERA for research and innovation COM/2020/628 final; Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030) 2021/C 66/01; Council conclusions on the New European Research Area.

197 Council conclusions on the European Universities initiative – Bridging higher education, research, innovation and society: Paving the way for a new dimension in European higher education. 2021/C 221/03

198 European Commission/EACEA/Eurydice (2020). The European Higher Education Area in 2020: Bologna Process Implementation Report.

199 Cedefop (2021). Digital, greener and more resilient. Insights from Cedefop's European skills forecast.

200 Council Recommendation of 24 November 2020 on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience 2020/C 417/01.

The Recommendation set three targets to be achieved at European level by 2025: 1) 60% of recent graduates from VET have been exposed to work-based learning; 2) the share of employed recent graduates from VET should be at least 82%; 3) 8% of VET learners benefit from a learning mobility abroad. Although only the first was incorporated into the EEA strategic framework, this section briefly looks at all three VET target domains.

2.6.1 New data for the EU-level target

The target for work-based learning is the one VET target included among the seven adopted by Member States as part of the 2021 Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030). Unlike the five EU-level targets discussed in this chapter so far, the target on work-based learning is still awaiting its underlying data to monitor country performance and progress.

This is the very first year that new data on work-based learning is collected in the EU Labour Force Survey (LFS), with results available in the course of 2022. More specifically, a new variable will refer to work experiences at a workplace[202] that were part of the curriculum leading to the highest level of education successfully completed. The EU-level target based on this new data will cover the age group 20 to 34 who graduated from a medium-level (ISCED 3-4) programme with a vocational orientation between 1 and 3 years before the year of the survey.

Box 24: The PRÕM-project in Estonia

The project brings vocational education and training (VET) and higher education closer to the needs of the labour market. One of its main aims is to improve the image of the vocational stream and develop a comprehensive work-based learning system. PRÕM has already helped improve the quality of work-based learning and expand apprenticeship programmes. During its implementation, which runs from 2015 to 2022, the share of graduates in work-based learning in VET has already increased from 2% to 15%. Employers are now more aware of work-based learning. By 2020, 6 700 students had participated in the project and apprenticeships were being offered by 1 300 companies. More than 6 000 apprenticeship supervisors had been trained in schools and companies. This approach was successfully extended to higher education as well: certain learning outcomes, as defined in the curricula, can be fulfilled by carrying out practical work. The universities remain responsible for the study part, but companies are involved in developing and evaluating the curriculum. PRÕM receives close to €27 m from the European Social Fund.

The new variable will allow for regular collection of information on work-based learning, enabling the annual monitoring of progress towards the 60% EU-level target. The new variable avoids terms such as apprenticeships or traineeships, distinguishing instead between five main categories of work-based learning, based on duration and payment criteria[203]. These categories will provide an

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201 The Recommendation outlines reforms needed in VET systems so they can cater for the skills needs of both young and adult population, facilitate swift responses to changing labour market needs and equip people with the skills for the recovery, the green and digital transitions and active participation in society. It also places a strong focus on the need to integrate VET into economic, industrial and innovation strategies and embed social and environmental sustainability into VET programmes. A monitoring framework was also included to support the assessment of progress towards European level targets.

202 In a market or non-market unit (i.e. in a company, government institution or non-profit organisation).

203 As for duration, it will identify work experience(s) at a workplace from 1 to 6 months, 7 months or over and less than 1 month (or no experience). If a respondent had several work experiences, the cumulative duration of all work experiences will be considered. As far as the payment component is concerned, the new variable will distinguish between the above work experiences where at least one work experience was paid and those where all work experiences were unpaid.

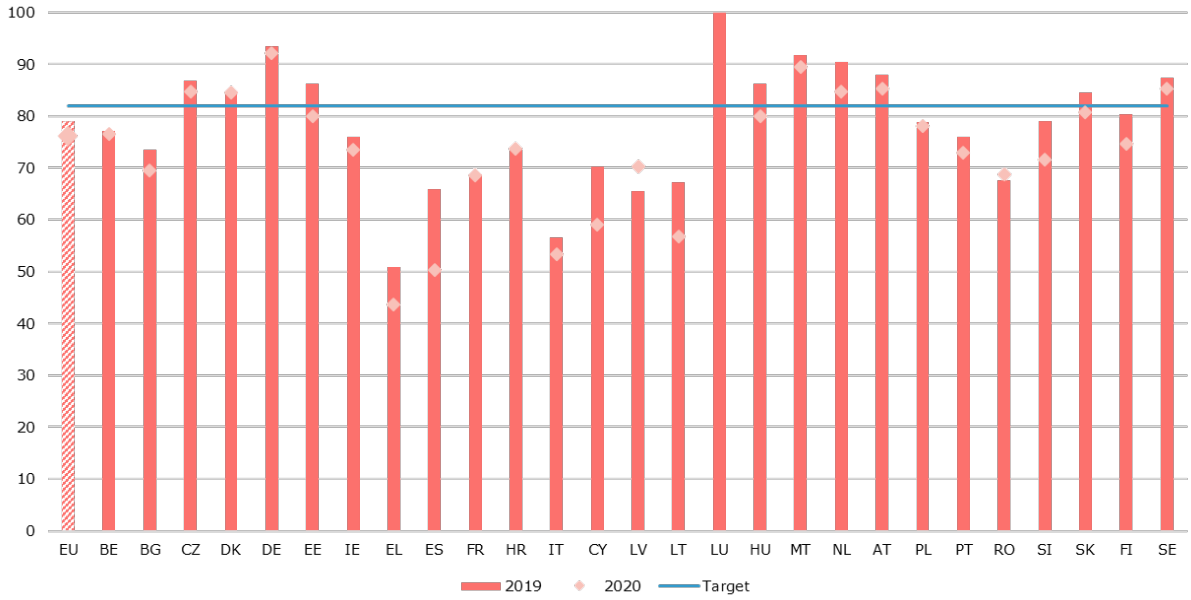
insight into which type of work-based learning is most relevant for transition rates and for staying in employment.

2.6.2 Spotlight on VET employability and learning mobility

The other two targets from the 2020 VET Recommendation are not part of the 2021 Council Resolution, but nevertheless warrant analysis. The indicator on the employment rate of recent graduates from medium-level VET, measured as the share of employed graduates from VET at upper-secondary and post-secondary non-tertiary levels having left education and training no more than three years before the reference year, builds on a well-established indicator from the now superseded ET2020 strategic framework.

In 2020, the disruption of workplaces due to the pandemic led to a drop in employment rates for this group of three pps in all Member States, from 79.1% in 2019 to 76.1% in 2020, except for Latvia and Romania (Figure 65). Nine countries saw a drop of more than five pps, including three countries with over ten pps (Spain, Cyprus and Lithuania)[204].

Figure 65: Employment rate of recent graduates (20-34) with medium-level vocational qualification 2019 and 2020 [%]



Source: EU LFS. Online data code: [EDAT_LFSE_24].

Note: DE (break in time series and provisional data, 2020), CY (low reliability, 2019 and 2020), LU (low reliability, 2019, data not available, 2020) . The ISCED level in question is 3-4 VET.

Finally, the VET learning mobility target also has its roots in the now superseded ET2020 strategic framework[205]. However, underlying data were always missing, and in its 2017 progress report on a

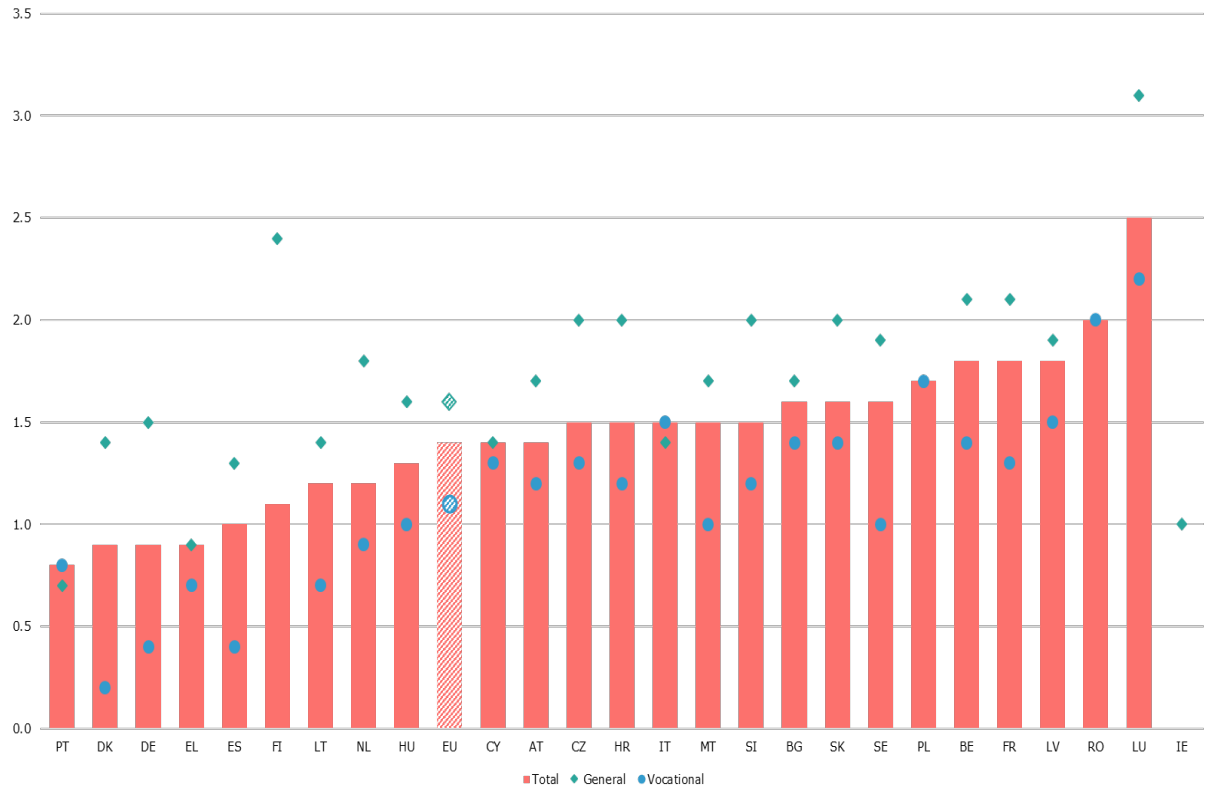
[204] Interestingly, VET graduates were more successful in entering the labour market when compared to general education graduates. They were also more resilient during the COVID-19 pandemic than their peers from medium level programmes with general orientation, whose employment level dropped more steeply from an already low level of 62.8% in 2019 to 58.3% in 2020.

[205] In ET2020 is was stated that "by 2020, an EU average of at least 6% of 18-34-year-olds with an initial vocational education and training (IVET) qualification should have had an initial VET-related study or training period (including work placements) abroad lasting a minimum of 2 weeks (10 working days), or less if documented by Europass."

learning mobility target[206], the Commission proposed to shift the focus from household surveys to administrative data. As for the third target in the Council Resolution on VET, the methodological basis was a 2020 feasibility study[207] that found 8% of VET learners in Europe should benefit from studying abroad by 2025.

One of the obstacles to learning abroad among VET learners is insufficient language skills. In some countries, students in vocational upper secondary education barely reach one additional foreign language (0.2 in Denmark, 0.4 in Germany and Spain). This discrepancy becomes even more alarming when we consider the percentages of learners in these types of upper secondary schools that are left behind linguistically. On average, in the EU, nearly one in five students in vocational upper secondary schools learns no modern foreign language, whatsoever. By contrast, the same is only true for some 2.1% of students enrolled in general upper secondary schools.

Figure 66: Average number of foreign languages studied per pupil in upper secondary education, by track (2019)



Source: Eurostat. UOE data base. Online data code: [educ_uoe_lang03].

As Figure 66 shows, while this school level is supposed to prepare learners for the labour market, the linguistic necessities of an interconnected Europe are seemingly falling by the wayside. Therefore, when designing policy solutions to promote language learning and increased proficiency, particular attention should be paid to vocational upper secondary education. To be able to draw

206 European Commission (2017). Progress report on a Learning Mobility Benchmark. A Report from the Commission to the Council. COM/2017/ 148 final.

207 Hefler G., Steinheimer, E. (2020). Measuring Learning Mobility in Vocational Education and Training – A review of data sources and approaches to measurement across European Union Member States. A report for DG Employment, Social Affairs and Inclusion.

more concrete conclusions, more holistic strategies on testing language skills across the EU are needed.

The VET target for learning abroad will be measured as the share of all learners studying abroad in a calendar year, as a proportion of a cohort of VET graduates in the same year. The indicator will be based on the mobility data sourced from Erasmus+ data[208] alongside VET graduate data sourced from the joint UNESCO, OECD and Eurostat (UOE) data collection[209]. Section 2.4.3 above sheds further light on learning abroad data and the disrupting effects of the pandemic.

2.6.3 Policy takeaways

Work-based learning helps young people and adults make smoother transitions from school or from unemployment to the labour market. It is a policy priority for the EU and an important part of the reinforced Youth Guarantee, where apprenticeships and traineeships make up two out of four possible offers to young people across the EU[210].

Apprenticeships bring benefits both for the apprentices as well as their employers. Apprentices have the opportunity to gain valuable skills in a real working environment and further develop their talents and knowledge. Employers can benefit from fresh perspectives, as well have the opportunity to prepare specific profiles meeting the changing skills needs, enhancing the competitiveness and productivity of companies and workplaces, while also increasing employability and social participation. Most Member States have been pursuing significant apprenticeship reforms, and there is a strong push to boost apprenticeship supply. The EU has been supporting work-based learning, notably the provision of more and better apprenticeships, as well as the mobility of apprentices through the European Alliance for Apprenticeships and the Apprenticeship Support Services[211], and through the European Apprentices Network[212] and the Council Recommendation on a European Framework for Quality and Effective Apprenticeships[213].

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208 Since 1987, Erasmus has supported more than 1.3 million VET learners. Around 170 000 VET learners and staff go abroad every year. The new Erasmus+ 2021-2027 provides a strengthened support to mobility of learners and teachers, trainers and staff, and provides for several novelties in the area of VET mobility: (1) a new accreditation process to provide an easy access to mobility activities; (2) a financial incentive to VET providers willing to implement long-term mobility (i.e. 3-12 months duration) as well as an additional specific linguistic support for learners; (3) the extension of the Digital Opportunity Traineeship initiative (DOT) to traineeships for learners and apprentices from the VET sector; (4) the support to the participation of VET learners in skills competitions abroad; and (5) the support to international mobility activities outside Erasmus+ Programme countries for VET staff and learners.

209 Where available and only if the data provided is comparable to Erasmus+ data, including the duration of mobility, data from national authorities mobility programmes could also be used to complement the data from Erasmus+. In case data from national authorities are included, this should be displayed in a transparent manner. Due to the fact that close to one third of the mobility activities was disrupted as a result of the COVID-19 pandemic, data cannot be published for the school year 2019-2020.

210 Cf. European Commission's Reinforced Youth Guarantee.

211 The European Alliance for Apprenticeships (EAfA) aims to strengthen the supply, quality, image and mobility of apprenticeships. Since its launch in 2013, 36 countries have made national commitments under the alliance, and more than 350 companies, employers and intermediaries have pledged to provide over one million apprenticeship and other training opportunities to young people. EAfA members can benefit from the Apprenticeship Support Services. The Services contribute to strengthening the European apprenticeship community and support EU Member States in improving their apprenticeship schemes by providing support through three pillars: Knowledge-sharing, Networking and Benchlearning. In order to give a renewed boost to apprenticeships across the EU, the Commission's Youth Employment Support package of 1 July 2020 announced a renewed EAfA. The renewed EAfA will in particular (i) promote national coalitions, (ii) support SMEs, (iii) reinforce the involvement of social partners including at sectoral level, (iv) mobilise local and regional authorities and (v) support the representation of apprentices in the Member States.

212 The European Apprentices Network (EAN) established in 2017 is a network of apprentices, youth organisations and other bodies related to apprenticeships at the European level. Its objective is to ensure that young apprentices both in secondary and third-level education are shaping the discussion and policymaking related to VET, in particular for apprenticeships. EAN calls for apprenticeships to be considered more than a quick fix to youth unemployment, but rather learning opportunities to be tailored to the needs and rights of apprentices themselves. In 2020 EAN sat up a new structure expanding its membership as to be a representative voice at all levels on issues concerning apprenticeships.

213 On 15 March 2018, EU Member States agreed on a Council Recommendation on a European Framework for Quality and Effective Apprenticeships (EFQEA) with the aim to ensure that apprenticeships respond to the needs of both apprentices

Apprenticeships also played a central role in the Commission's 2020 Communication on Youth Employment Support[214] which announced a renewed European Alliance for Apprenticeships. The vital role of apprenticeships was also highlighted in the tripartite Osnabrück Declaration (2020) on vocational education and training as an enabler of recovery and just transitions to digital and green economies. Through the renewed Alliance, a wider range of actors will be mobilised, which will help increase work-based learning offers in the medium term.

2.7 Adult learning

In a nutshell

The COVID-19 pandemic interrupted the already slow progress on adult learning across the EU. Increasing remote adult learning in 2020 may have prevented an even steeper decline in participation rates, but does not change the low average participation rates or the uneven picture across Member States. The pandemic did, however, add momentum to adult learning as a policy objective. Member States agreed on a target of at least 47% adult learning by 2025. A further target of 60% by 2030 was set at the 2021 Porto Summit when the action plan on the European Pillar of Social Rights was endorsed.

There have been adult learning targets in previous EU strategic frameworks for cooperation in education and training, but always focused on the narrow window of 4 weeks preceding the survey[215]. Both new targets are based on the participation in learning activities during 12 months preceding the survey that will first be applied in 2022.

The 12-month reference period makes it possible to cover all learning experiences, providing an overview of adult participation in learning closer to today's reality. It has become increasingly common for adults to attend (very) short courses, seminars and other learning experiences, provided in-company, on the market or by authorities at several levels and a wide range of providers, from specialised centres to social partners and civil society organisations. Attendance of such courses may not be accounted for when applying the 4-week window, but the shift to a 12-month window allows for a comprehensive measurement and is likely to capture this type of learning.

As with the EU-level target for work-based learning, the preferred underlying data for the EU-level target on adult learning are not yet available. The EU Labour Force Survey (LFS) will collect adult learning data based on the 12-month window from 2022 onwards, with data available as of 2023[216]. Until then, the EU Adult Education Survey (AES), which uses the 12-month window, can be used – with some caveats[217] – for provisional indications of country performance and trends.

AES results show a substantial increase in the EU adult learning figure from 2007 (32.8%) to 2011 (40.2%) and more modest progress in 2016 (43.7%). But they also show huge variations between Member States and some major changes over time. For instance, in 2016, nine countries were

and employers throughout the European Union. It recommends that a substantial part of an apprenticeship, meaning at least half of it, should be carried out in the workplace. As the Commission monitoring report of August 2021 (tbc) shows, the seven criteria for learning and working conditions are in place in the majority of Member States. However, as for the seven criteria on framework conditions, further progress in implementation is needed.

214 European Commission's youth employment strategy.

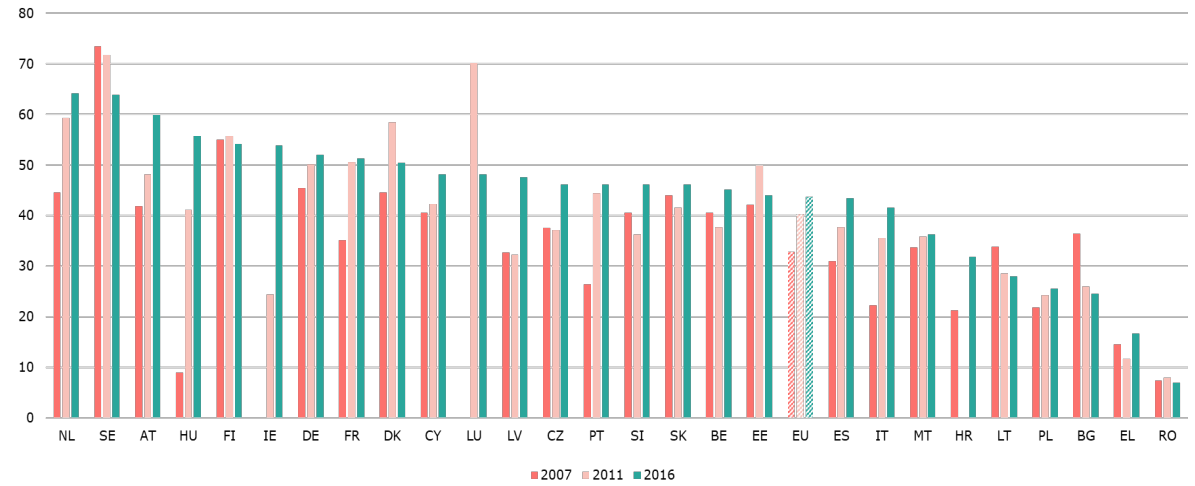
215 The EU average in 2019, at 10.8%, remained far below the now superseded 2020 target of 15%. Only seven countries had reached the 15% target in 2019 (SE, FI, DK, NL, EE, LU and FR), with AT coming very close at 14.7%. The overall picture is one of big differences between the 27 national situations, in participation rates in any given year and in trends.

216 This also means that the LFS methodology, or the EEA target itself, is still up for discussion on the basis of first results in 2023.

217 The AES uses a wider definition of adult learning (including guided on-the-job training) than the LFS. Moreover, trend analysis is complicated by numerous statistical breaks in the data series.

above 50% and two were below 20%. Among the countries without statistical breaks in the data series between 2007 and 2016, the greatest increases were observed in Portugal (from 26% to 46%), the Netherlands (from 45% to 64%) and Italy (from 22% to 42%), whereas participation rates decreased significantly in Bulgaria (from 36% to 25%) and Lithuania (from 34% to 28%).

Figure 67: Adults (aged 25-64) participation in learning, 12-month reference period, 2007, 2011, 2016.



Source: Eurostat, Adult Education Survey 2007, 2011, 2016.

Note: Changes over time may be driven by changes to the survey mode, questionnaire, and methodology, in which case Eurostat reports a break in the series (France and Hungary in 2011; Ireland, Luxembourg and Sweden in 2016). See the Eurostat table trng_aes_100 for details.

Adjusting the definition of adult learning to that used in the LFS has only a minor effect on the uneven picture across Member States. For the EU average, the adjustment reduces 2016 adult-learning participation from 43.7% to 37.4%. Relatively low participation during the previous 12 months is also confirmed by findings from the OECD Survey of Adult Skills (PIAAC)[218].

2.7.1 Spotlight on remote learning

Evidence shows that COVID-19 and the lockdown measures resulted in lower adult learning rates in 24 of 27 Member States. For EU27, participation during the previous 4 weeks dropped from 10.8% in 2019 to 9.2% in 2020. Many workers in the hardest hit sectors may have had to switch jobs and would benefit from upskilling and reskilling, but the widespread lockdowns have had a disruptive impact on the organisation of formal and non-formal learning.

As education and training largely moved online, it is worth exploring what this meant for adult learning. The limited evidence available does indeed point to a certain increase in online adult learning[219].

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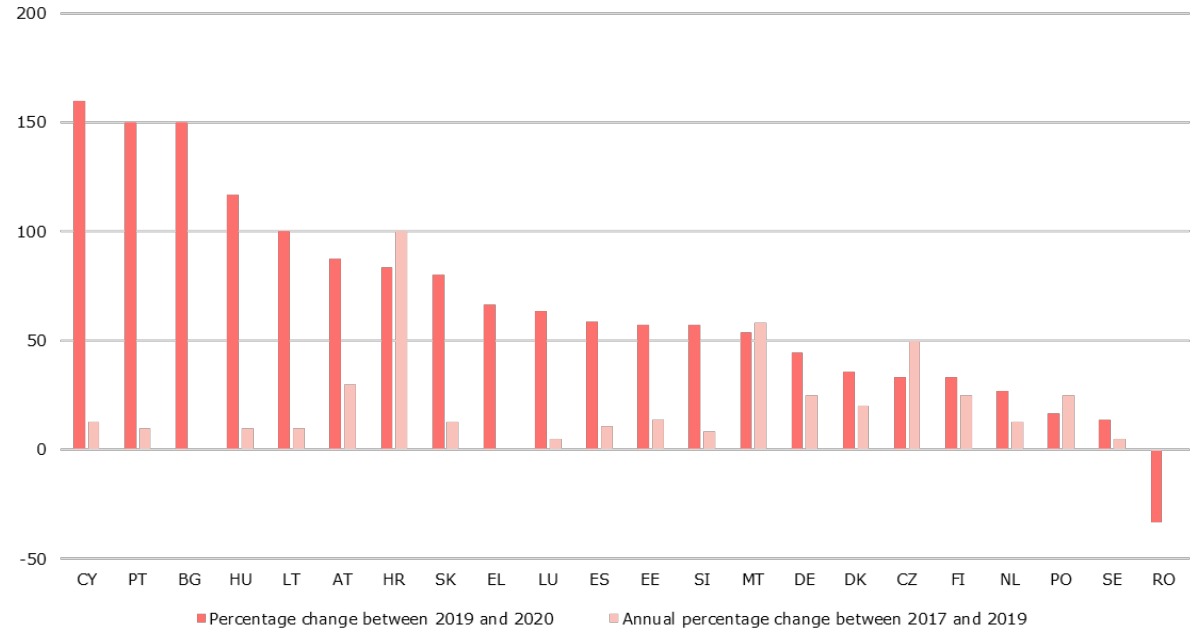
218 These results suggest that on average 2 in 5 adults participate in adult learning, with huge disparities between the countries surveyed, from below 25% in EL and IT to above 55% in DK, FI and SE. See OECD (2019), Survey of Adult Skills (PIAAC).

219 Public employment services have made specific online training programmes available to jobseekers, for instance the French platform *Emploi Store*. In the Flemish Region of Belgium, the number of participants in online training provided by the public employment service (VDAB) after the start of lockdown measures in 2020 was four times as high as in the same period in the previous year. Many countries have focused on helping teaching staff develop online teaching skills, but not all learning translated easily to an online environment. Work-based learning often had to be postponed, although innovative solutions such as virtual internships emerged.

The latest three rounds (2017, 2019 and 2020) of the Eurostat survey on ICT use in households and by individuals provide some insight into online adult learning, as respondents were asked about their participation in online courses (regardless of subject or purpose). For 22 Member States, the comparison between the 2020 data[220] and the previous data highlights the effect of the pandemic (Figure 68). In most countries, the increase in 2020 compared with 2019 was much higher than the year-on-year changes of previous years[221].

While this may have prevented a further drop in participation rates, it raises questions about the inclusiveness of adult learning since a sizeable share of adults – those with lower qualifications, lower paying jobs or unemployed – may have poor access to and acquaintance with digital technologies and services.

Figure 68: Percentage change in the proportion of adults engaged in online learning activities in selected EU countries



Source: Eurostat, Survey on ICT usage in households and by individuals, 2017, 2019, 2020.

Note: Data not available for BE, FR, IE, IT and LV. Data partially available for EL and RO.

2.7.2 Policy takeaways

There is scope for further outreach and activation. Policy measures to increase participation need to confront the following status quo: almost all respondents (96%) to a recent Cedefop survey agreed that adult learning and continuing vocational training are important for personal development, and almost as many think such learning is beneficial for career progression and for reducing unemployment[222]. 32% of EU adults who wanted to participate in learning but did not mentioned cost as a reason and a further 40.7% mentioned scheduling conflicts, such as difficulties

220 The participation rate in 2020 varies across countries as much as participation in adult learning in general, ranging from 28% in FI to 2% in RO.

221 The survey on ICT usage suggests faster uptake growth for women, older working–age adults (55 to 65) and low–qualified adults.

222 Cedefop (2020). Perceptions on adult learning and continuing vocational education and training in Europe, p. 13, Section 3.1.

in receiving time off work. Yet, about 80% of respondents to the 2016 AES[223] and the 2019 OECD PIAAC[224] who did not avail themselves of in adult learning opportunities in the preceding 12 months declared they were not interested in doing so[225]. This points to the importance of integrating financial support to learners with measures that simultaneously tackle non-financial barriers to participation, including a lack of incentives or motivation by individuals to take up training opportunities. Financial support can for instance be provided in the form of training entitlements (including via individual learning accounts) and through paid training leave. To increase incentives, policy measures can increase adults' awareness of own skills needs (e.g. through career guidance) increasing the transparency about available training offers and their quality and recognition on the labour market, and increasing the tailoring of training offers to the heterogeneous needs of adult learners[226].

Upskilling and reskilling the EU's adult population is key for fuelling the digital and green transitions and making sure everyone thrives in the new world of work. These developments, alongside the COVID-19 pandemic, have added momentum to adult learning as a policy objective and have led to new adult learning targets in recent years. The Council has first endorsed a target of 47% adults participating in learning every year by 2025[227] and then a target of 60% by 2030. This was one of the three headline targets presented in the European Pillar of Social Rights Action Plan, adopted by the Commission in March 2021[228], which were welcomed by EU Heads of State and Governments during the Porto Social Summit in May 2021[229] and then by the European Council in its conclusions of 24-25 June 2021.

223 Eurostat, Adult Education Survey, Eurostat online data code: [TRNG_AES_195].

224 OECD (2021). Skills Outlook 2021: Learning for life, in particular pp. 134-135.

225 Educational attainment plays a major role in shaping adult-learning choices: the 2016 AES found that 1 in 5 low-qualified people and 2 in 3 people with a tertiary qualification had participated in learning. Three times as many people in the highly qualified group looked for information on learning opportunities than people in the low-qualified group. Low-qualified adults are also less likely to be aware of and find information on skills development opportunities and may have a negative attitude towards organised learning owing to negative experiences of initial schooling. The OECD PIAAC suggests that adults more familiar with digital technologies are more likely to remain interested in learning throughout their career. The cost of learning is another important factor limiting participation – it was the reason specified by one third (32.2%) of the 2016 AES respondents that did not participate in learning. About as many (31.6%) mentioned family commitments and other personal reasons. For employees, the type and size of employers is a crucial factor, as around 90% of job-related training in the EU is promoted and paid for by employers. Data from EU surveys on continuing vocational training show that the provision of continuing vocational training to workers increases with the size of the organisation: over 90% of large companies (with over 250 employees) provide training opportunities for their employees, compared with 76% of medium-sized firms (with between 51 and 250 employees) and only 57% of small firms (with 11 to 50 employees). More and more workers have atypical employment where this traditional cost-sharing arrangement does not apply.

226 Cedefop (2020). Perceptions on adult learning and continuing vocational education and training in Europe, Section 4.3.

227 The 2020 European Skills Agenda proposed several objectives to be achieved by 2025, including that 50% of adults participate in learning every year. This target was calculated using the 2016 AES, removing the share of guided-on-the-job-training, which is included in the definition of adult learning adopted by the AES but not in the LFS. Subsequent methodological considerations meant that the target was revised to 47% by the time the Council adopted the Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030) in 2021.

228 COM(2021) 102 final.

229 Portuguese presidency of the EU (2021). The Porto Social Commitment.

Box 25: The EU commitment to pursuing the United Nations 2030 Sustainable Development Agenda

The global community has been pursuing a sustainable development agenda in education established in the Incheon Declaration of May 2015[230] as part of the broader UN 2030 agenda "Transforming our world: the 2030 agenda for sustainable development"[231] that was agreed for all 17 policy areas later that year. The sustainable development goal in education, known as SDG-4, is to: 'Ensure inclusive and quality education for all and promote lifelong learning', and in the UN agenda it comprises seven 'targets' and three 'means of implementation'.

In their simplified form, these targets are:

1. free primary and secondary education with effective learning outcomes for all
2. quality early childhood education and care for all
3. access to VET, technical and tertiary education
4. increase in skills
5. elimination of gender disparities in education
6. literacy and numeracy for adults
7. knowledge of sustainable development.

Means of implementation:

1. upgrade education facilities
2. expand scholarships
3. increase the supply of qualified teachers.

The language used by the UN has been different from that of EU policy making. The UN "targets" that required further definition correspond to EU "policy objectives", while EU "targets" have: (i) a detailed indicator that defines them, and (ii) an agreed numerical value to be pursued by policy.

Over time, UNESCO, the UN agency charged with implementing the SDG-4, has been further developing the above 10 items ('targets' and 'means of implementation') into global and regional indicators. The UN reports every year on progress towards SDG-4 through the Global Education Monitoring Report[232]. While UNESCO has been coordinating the monitoring of SDG-4 on the global level, countries are free to choose their own monitoring methods, which has resulted in many different indicator sets. The EU is using a monitoring system that is inspired by and closely related to the overarching cooperation framework of the European Education Area[233].

230 World Education Forum (2015). Education 2030: Incheon declaration and framework for action towards inclusive and equitable quality education and lifelong learning for all.

231 United Nations General Assembly (2015). Transforming our world: the 2030 Agenda for Sustainable Development. Resolution A/70/L.1 of 25 September 2015.

232 See the complete series of Global Education Monitoring Reports.

233 For details about EU SDG-4 reporting, consult Eurostat's SDG Monitoring Reports.

Part 3

Investment and quality of expenditure in education and training

3 Investment and quality of expenditure in education and training

In a nutshell

Financial resources are essential for education and training systems to perform. Evidence of the effectiveness of education measures in different contexts continues to grow, but knowledge of the cost of such measures remains limited.

In recent years public expenditure on education in EU Member States was fairly steady, but with considerable variations between countries. In 2019, on average, the EU dedicated 4.7% of its GDP to education, accounting for around 10% of total public expenditure. Education spending varied from 3.1% of GDP in Ireland to over 6% in Estonia, Belgium, Denmark and Sweden. The largest share of public investment goes to secondary and post-secondary non-tertiary education (38.7%), followed by the combination of pre-primary and primary education (33.4%) and then tertiary education (16.2%).

The largest component of public expenditure on education is the total remuneration paid to teaching staff (64.4%), followed by intermediate consumption (13.6%), which consists of the purchase of goods and services needed to provide education services. The third-highest item was gross capital formation (7%), which comprises capital investments in e.g. buildings, followed by social benefits (6%) and other current transfers (6%).

With the COVID-19 pandemic, teachers and students had to move abruptly to online learning, though many were unprepared for this sudden change: not all had the technical and pedagogical skills needed to integrate digital devices; ICT equipment was not always available; there was little online learning support; and not all students had access to a quiet place to study.

A partial overview of the initial policy response in a selection of Member States shows that investment to accelerate digitalisation increased, additional teachers were hired or additional teacher training was provided, funding was made available for student counselling and assistance, and bonuses were paid to teachers. Some countries also compensated schools for additional prevention costs, e.g. of protective equipment or additional disinfection products. Investment in better infrastructure or summer "bridging" programmes were mentioned in fewer countries. In this new context, the EU set up a Recovery and Resilience Facility (RRF). With the European Structural and Investment Funds, the increase in EU funds going into education and training is much higher than in the period 2014-2020.

The benefits that educational attainment can bring to individuals and society are very well established[234]. They are significant and typically materialise over a long period of time[235]. However, there is a wide consensus that levels of educational attainment do not give the full picture. Being in school does not always necessarily translate into learning. It is important to assess the quality of education by looking both at students' academic achievements and at their learning outcomes, as well as at their social, emotional and ethical competences.

[234] The economic benefits of education to individuals include employability, higher lifetime earnings, or higher job satisfaction and at the macroeconomic level, education can spur long-run economic growth through accumulated human capital, see EENEE (2014). The Economic Case for Education. Greater educational attainment is also positively associated with a variety of social outcomes; for example data collected before the Covid-19 outbreak show that people with a tertiary degree are less likely to report suffering from depression and they are more likely to be in contact with their friends and family physically and through the Internet, see and OECD (2020). What role might the social outcomes of education play during the COVID-19 lockdown? In: Education Indicators in Focus, No. 75.

[235] European Commission (2017). Investment in human capital – Assessing the Efficiency of Public Spending on Education. Technical note prepared by European Commission staff for the Eurogroup of 6 November 2017.

Financial resources are essential for education and training systems to perform and to ensure equity in learning opportunities and outcomes. Additional school resources improve educational achievement, when used effectively. However, there is no certainty that increasing the amount of funding invested in education automatically improves the performance of education and training systems or leads to significantly better learning outcomes. Students living in countries that channel different levels of public resources to education achieve comparable learning outcomes, as measured by PISA.

As an illustration, we can focus on the six countries where students' academic achievement, as measured by PISA, is above average[236]. Four of the countries where the proportion of low achievers are below average, namely Denmark, Estonia, Slovenia and Poland, dedicate more than the EU average (1.5% of GDP in 2018) to public investment in pre-primary and primary education[237], while in the other two, Ireland and Finland, the amount of public investment is well below the EU average. Among the countries where the proportion of top performers in reading is above 10%, three countries, namely Estonia, Sweden and Poland, dedicate more than the EU average to public investment in education. In the other three (Germany, Finland and Ireland), the share of public investment in pre-primary and primary is below the EU average.

There has long been a focus on resource-based education policies and the impact that additional funding invested in education has on students' outcomes. A review of studies [238] highlights that, while a meta-analysis carried out in 1996 concluded that "school resources are systematically related to student achievement and that these relations are large enough to be educationally important," subsequent studies had found little or no effect. However, some recent studies attest to the positive impact of increasing investment in low-income school districts on students' achievements, as well as the positive effect of school funding on students' college enrolment and the likelihood of earning a postsecondary degree.

Box 26: Directing investment towards disadvantaged youth

An important factor behind the cycles of disadvantage affecting young people in the EU is the intergenerational transmission of educational success. A child's household environment plays a substantial role in the development of their potential and research has shown that family income or socio-economic background is a key determinant of student performance. In particular, households with more limited financial resources do not have the means to invest substantially in their children's curricular and extracurricular activities. Disadvantaged young people may also face systemic underinvestment in schooling, compared to young people from more privileged backgrounds, thus perpetuating inequality.

Education policies may partially compensate for disadvantage in schools. Such policies can, for example, provide for more educational resources and staff for schools in disadvantaged areas.

236 These countries have a share of low achievers in at least one of the three domains below 15%.

237 A more precise measure of the resources invested in this context could be the cumulated expenditure per student.

238 Belmonte, A., Bove, V., D'Inverno, G. and Modica, M. (2020). School infrastructure spending and educational outcomes: Evidence from the 2012 earthquake in Northern Italy. In: Economics of Education Review, Volume 75, April 2020. The study provides evidence of a positive impact of capital spending in improving the learning environment and performances of high school students, by analysing the impact of extra funding on school infrastructure after the 2012 Northern Italy earthquake. A stronger positive effect is found for lower-achieving students. The study reviews studies using US evidence, including the meta-analysis by Greenwald, R., Hedges, L.V., Laine, R.D. (1996). The effect of school resources on student achievement. in: Review of Educational Research, 66 (3), pp. 361-396 and the studies by Lafortune, Rothstein, and Schanzenbach (2018), School finance reform and the distribution of student achievement in: American Economic Journal: Applied Economics, 10 (2) (2018), pp. 1-26 showing that school finance reforms, by increasing investment in low-income school districts, caused an important increase in students' achievements and Hyman, J. (2017). Does money matter in the long run? Effects of school spending on educational attainment. in: American Economic Journal: Economic Policy, 9 (4) and (2017) showing that school funding can boost students' college enrolment and the likelihood to earn a postsecondary degree.

Behind the idea of increasing resources is the assumption that if more resources are given to low-performing schools and directed at disadvantaged young people, then educational attainment and performance among this group of students will improve.

Evidence shows the positive impact of resources on the achievement of disadvantaged children, even if not all investments will produce positive returns as the effectiveness of measures also depends on the specific nature of the settings. In particular, a US study has shown that increases in per-student spending increased educational attainment and improved labour market outcomes for socio-economically disadvantaged children. Another US study has shown that increasing funding for textbooks had a positive effect on elementary-school student performance, but no detectable impact on middle and high-school students. These results suggest that channelling resources to the earlier levels of schooling may be most beneficial. A review of a programme in the Netherlands that provided an unconditional transfer of funds to primary schools with a high proportion of disadvantaged children for the purpose of either hiring extra staff or purchasing computers and software found that the programme had a negative effect on student learning. This might be explained by the fact that schools had a low student-teacher ratio even before the funds were granted, so they struggled to spend the staff subsidy effectively.

Source: Behaghel, L., Gurgand, M., Kuzmova, V. and Marshalian, M. (2018). European Social Inclusion Initiative, A Review Paper.

The evidence base for the effectiveness of education-related measures in different contexts continues growing, but knowledge about the cost of such measures remains limited. This makes it more difficult to assess which measures are effective for achieving good outcomes, and efficient. More can be done on building and sharing evidence of how public investment can improve the quality of education and training.

As an example of focused assessments of investments in specific measures, a review[239] of evidence highlights the experimental research findings that tutoring measures evaluated in rigorous experiments are highly effective in supporting students who are struggling with reading or mathematics. The impact was found to be greater when the measures are carried out during school hours by teachers or teaching assistants and in the lower grades. The effects are greater compared with other measures to support struggling students, such as after-school programmes, extended day instruction or use of computer-assisted instruction and other digital approaches. The costs of tutoring measures ranges between medium and high: overall, the authors of the review assess the cost of tutoring to be relatively high, but simple forms of tutoring are found to be less costly and still effective. In comparison, high costs are associated to the other measures assessed which are found to be significantly less effective.

At EU level, policy attention to the effectiveness and efficiency of public expenditure on education has increased in recent years, with more focus on how to improve the impact of resources invested than necessarily on changes in funding levels or different distribution of funding. The Council Resolution on a strategic framework for European cooperation in education and training[240] confirmed the commitment to intensifying work on investment in education and training, as part of the new European cooperation framework towards the European Education Area and beyond, stating: 'Effective and efficient investment in education and training is a prerequisite for enhancing quality and inclusiveness of the education and training systems and improving the education

239 De Witte et al (2021). Presentation to the Flemish Parliament: How can we reverse the learning deficit? and Highlight Tutoring Among Post-Covid Solutions.

240 Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030), OJ 2021/C 66/01.

outcomes, as well as for driving sustainable growth, improving well-being and building a more inclusive society. While respecting the principle of subsidiarity, intensified work on investment has a potential to aid the recovery from the current crisis and contribute to the green and digital transitions of the education and training sector'.

The following sections provide a broad context for the theme of investment in education using the available indicators for education expenditure in recent years. A preliminary review is then given of early national responses to the sudden needs emerging from the physical school closures at various levels of education. Finally, there is an overview of the Recovery and Resilience Plans and the increased EU resources being channelled into education and training.

3.1 Total expenditure on education and training

Expenditure on education largely comes from public budgets, and also includes funding from students, their families and other private sources[241]. Figure 69 shows the estimated proportion of expenditure on education from the three main sources - government, non-educational private sources and international organisations - in 2018 the most recent year for which comparable data are available.

The share of total education-related expenditure from public budgets ranged from 73.0% in Cyprus to 97.7% in Romania, in the countries for which data is available for 2018[242]. The share of expenditure coming from private sources was above 9% in all countries for which data are available, except Romania, Luxembourg and Finland, and within the range of 18-26% in Netherlands, Slovenia, Slovakia, Portugal, Spain and Cyprus. The contribution of international organisations is generally below 3% of total expenditure in all but five of the Member States for which data are available: Slovakia, Portugal, Poland, Lithuania and Latvia.

Box 27: Infrastructure investments in Croatia's Recovery and Resilience Plan to speed up improvements in education

Croatia will make use of the funds available under the Recovery and Resilience Facility to invest in ECEC and school infrastructure. It will provide funding for building and upgrading ECEC facilities to create 22 500 additional places with the goal of increasing ECEC participation of children from the age of 3 from 76.3% to 90% by 2026. In primary schools, funding will be provided for the building and upgrading of primary schools. Currently, 60% of Croatian students go to schools in two or even three shifts due to insufficient infrastructure, which limits the possibility of reforms based on more instruction hours. Investments aim to increase the percentage of students attending primary one-shift schools from 40% to 70%, bringing closer a set of reforms to improve the quality of education.

The tertiary-education level has the largest proportion of funds coming from private sources, with household expenditure (through tuition fees) being the biggest source. Private sources account for at least 30% of total expenditure in tertiary education in Portugal, Slovakia, Latvia, Spain, Cyprus and Bulgaria. They account for 10% or below in Romania, Luxembourg and Denmark.

241 Private sources other than households include enterprises, non-profit organisations and religious institutions, with a relatively small role of international organisations such as the United Nations or the World Bank. For more details, cf. Eurostat (2021). Educational expenditure statistics – Statistics Explained.

242 Some government expenditure relates to payments and transfers for education to the non-educational private sector — this includes subsidies to households and students as well as payments to other non-educational private entities.

Figure 69: Distribution of expenditure on education by source (all levels of education excluding early childhood educational development, and tertiary education), 2018

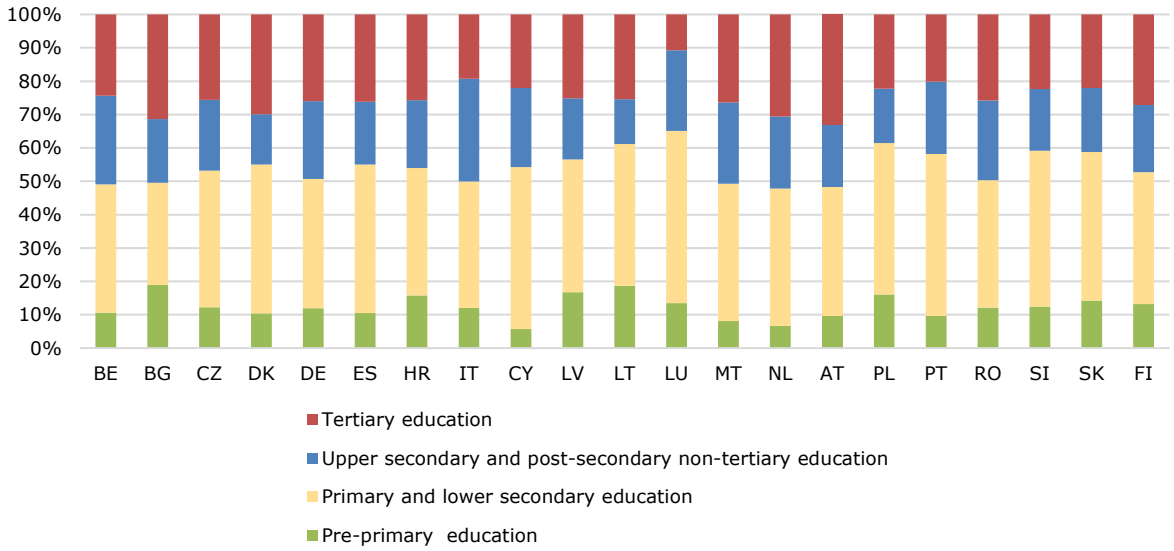
	All ISCED2011 levels excluding early childhood educational development			Tertiary education (levels 5-8)		
	Government	Non-educational private sector and other private entities	International organisations	Government	Non-educational private sector and other private entities	International organisations
EU	:	:	:			
BE	88.3	10.5	1.2	77.1	20.2	2.7
BG	80.3	17.1	2.1	52.6	44.5	2.9
CZ	83.4	15	1.5	68.1	26.4	5.6
DK	88.4	10.2	1.4	80.9	15.4	3.8
DE	:	:	:	:	:	:
EE	:	:	:	:	:	:
IE	:	:	:	:	:	:
EL	:	:	:	70.1	19.2	10.7
ES	74.9	24.7	0.4	62.2	36.4	1.4
FR	:	:	:	:	:	:
HR	:	:	:	58.4	36	5.6
IT	83	16.1	0.8	65.6	32.7	1.7
CY	71.1	26.3	1.4	48.3	46.1	5.6
LV	74.8	17.7	6.6	45.6	36.5	17.9
LT	77.8	15.5	6.1	56.8	31.3	11.9
LU	92.7	4.4	2.7	86.1	10.1	3.9
HU	:	:	:	:	:	:
MT	82.1	15.1	1.1	81.1	16.7	2.1
NL	74.7	24.3	0.9	66.8	30.9	2.2
AT	:	:	:	:	:	:
PL	78.9	16.9	4.2	75.5	23.6	1
PT	74.9	21.5	3.5	58.4	32.6	8.9
RO	:	:	:	:	:	:
SI	78	19.2	2.3	70.2	24	5.8
SK	74.6	22.1	3	57.6	38.7	3.8
FI	88	10.7	1.2	72.9	23.3	3.8
SE	:	:	:	:	:	:

Source: Eurostat [educ_uoe_fine01]

Figure 70 shows the distribution of total expenditure on education by level of education, excluding early childhood educational development, in 2018. The largest proportion of expenditure on education goes to primary and lower secondary education, except in Bulgaria where that category is the second highest. Primary and lower secondary education account for between 30.6% of total expenditure in Bulgaria and half of the total in Luxembourg (51.6%). Tertiary education often accounts for the second highest share of total expenditure, except in Bulgaria where it is the highest, in Luxembourg where it is the lowest, and in Italy where it is the second lowest. Tertiary education accounts for between 20% and 30% of total educational expenditure in all countries, except Luxembourg (10.8%), Italy (19.3%) and Netherlands (30.6%).

Upper secondary and post-secondary non-tertiary education typically accounted for between 15% and 25 % of total educational expenditure, with lower shares recorded in Lithuania (13.4%), and higher shares registered in Malta (26.4%), Belgium (26.5%) and Italy (30.7%). Generally, pre-primary education has the smallest share of educational expenditure, ranging from 5.7 % in Cyprus and 10.0 % or below in Netherlands, Malta and Portugal, and up to 15% to 20% of total education expenditure in Latvia (16.7%), Lithuania (18.7%) and Bulgaria (18.9%). In Lithuania and Denmark, the proportion of expenditure on upper secondary and post-secondary non-tertiary education was the lowest, and in Luxembourg the share of expenditure on tertiary education was lower than the share on pre-primary education.

Figure 70: Distribution of total expenditure on education (excluding early childhood educational development), by level of education, 2018



Source: Eurostat [educ_uoe_fine01].

3.2 Public expenditure on education and training

The most recent comparable data on general government expenditure available are for 2019, when general government expenditure on education amounted to €654 bn or 4.7% of GDP in the EU. Of this, "pre-primary and primary education" accounted for 1.6% of GDP and secondary education accounted for 1.8% of GDP. For tertiary education, expenditure amounting to 0.8% of GDP was reported in the EU[243].

[243] Eurostat collects data on general government expenditure by economic function according to the international Classification of the Functions of Government (COFOG). In this classification in use in national accounts, expenditure on "education" is divided into groups based on the ISCED 1997 classification, which means that expenditure in pre-primary and primary education cannot be distinguished. The following COFOG groups form the education division: "pre-primary and primary education", "secondary education", "post-secondary non-tertiary education", "tertiary education", "education not definable by level", "subsidiary services to education", e.g. expenditure on providing school busses, "R&D education", i.e. R&D related to education not all R&D undertaken for example in universities and "education not elsewhere classified".

Figure 71: Public expenditure on education, 2016-2019

	Year-on-year real change (%)				Share of total public expenditure (%)				Share of GDP (%)			
	2016	2017	2018	2019	2016	2017	2018	2019	2016	2017	2018	2019
EU	**0.5**	**-0.6**	**3.6**	**1.9**	**9.9**	**10.0**	**10.0**	**10.0**	**4.7**	**4.7**	**4.7**	**4.7**
BE	0.5	1.5	0.8	0.8	11.7	12.0	11.9	11.8	6.2	6.2	6.2	6.2
BG	-8.5	8.4	-0.2	9.9	9.7	10.1	9.6	10.7	3.4	3.5	3.5	3.9
CZ	-8.3	6.1	12.9	7.5	9.9	10.4	11.3	11.8	3.9	4.1	4.6	4.9
DK	-0.6	-2.6	0.2	1.1	12.9	12.7	12.6	12.7	6.8	6.4	6.4	6.3
DE	1.7	1.9	1.3	2.8	9.5	9.5	9.5	9.6	4.2	4.2	4.2	4.3
EE	-3.1	4.1	10.7	-0.7	14.4	14.5	15.8	15.5	5.6	5.7	6.2	6.0
IE	4.3	3.3	4.7	4.1	12.3	12.6	12.6	12.8	3.5	3.3	3.2	3.1
EL	-3.1	-3.6	5.4	-3.2	8.1	8.0	8.5	8.3	4.0	3.9	4.1	4.0
ES	2.0	1.6	1.6	2.1	9.6	9.7	9.5	9.5	4.1	4.0	4.0	4.0
FR	1.0	1.5	1.2	1.6	9.5	9.5	9.6	9.5	5.4	5.4	5.3	5.3
HR	-1.3	3.6	3.2	-3.0	9.9	10.5	10.2	10.2	4.7	4.8	4.7	4.8
IT	-2.4	1.0	1.3	-0.1	7.9	7.9	8.1	8.0	3.9	3.9	3.9	3.9
CY	3.5	0.9	0.8	6.7	14.6	14.4	11.8	13.4	5.5	5.3	5.1	5.4
LV	-2.2	6.5	3.3	-3.5	14.8	14.9	14.8	15.0	5.5	5.8	5.8	5.8
LT	-4.5	-1.2	-0.5	-0.6	14.0	13.7	13.4	13.3	4.8	4.5	4.5	4.6
LU	0.5	3.5	3.8	3.4	10.9	10.8	10.9	11.0	4.5	4.5	4.6	4.7
HU	-5.1	3.6	3.2	-3.0	10.6	10.9	10.9	10.3	5.0	5.1	5.0	4.7
MT	4.0	0.5	12.7	7.4	14.2	13.6	14.0	14.2	5.1	4.8	5.1	5.3
NL	2.2	0.6	0.1	-0.9	12.0	12.1	11.9	11.8	5.2	5.1	5.1	5.0
AT	1.7	0.6	0.7	0.8	9.8	9.8	9.8	9.9	4.9	4.8	4.8	4.8
PL	-3.3	2.7	5.3	5.1	12.1	11.9	12.0	12.0	5.0	4.9	5.0	5.0
PT	-4.0	-1.5	-1.4	0.7	10.6	10.1	10.3	10.3	4.8	4.6	4.4	4.4
RO	0.3	-13.9	7.4	17.6	9.6	8.5	9.1	10.1	3.3	2.8	3.2	3.6
SI	0.5	1.7	3.4	1.8	12.0	12.3	12.4	12.6	5.5	5.4	5.4	5.5
SK	-7.3	2.0	3.6	5.2	9.1	9.4	9.5	9.8	3.9	3.9	4.0	4.2
FI	1.5	-2.8	-0.5	2.1	10.9	10.5	10.4	10.6	6.0	5.6	5.5	5.6
SE	4.5	1.7	3.4	1.8	13.3	13.6	13.8	14.1	6.6	6.7	6.9	6.9

Source: Eurostat General government expenditure by function (COFOG) [gov_10a_exp]

Note: The "real change" is adjusted by inflation. Provisional data for 2019 for ES and PT; for 2018 and 2019 for FR; and for the period from 2016 to 2019 for SK. Pending revision of data for HU.

There are considerable differences between countries in the amount of public expenditure on education as a percentage of GDP, ranging from below 4% in Ireland (3.1%), Italy (3.9%), Romania (3.6%) and Bulgaria (3.9%) to 6.0% and above in Estonia (6.0%), Belgium (6.2%), Denmark (6.3%) and Sweden (6.9%).

Public expenditure on education in the EU accounts for on average 10% of total public expenditure. In Estonia (15.5%) and Latvia (15.0%), public expenditure on education accounted for over 15% of general government total expenditure while the ratio is below 10% in Italy (8.0% of total expenditure), Greece (8.3%), Spain and France (both 9.5%), Germany (9.6%), Slovakia (9.8%) and Austria (9.9%).

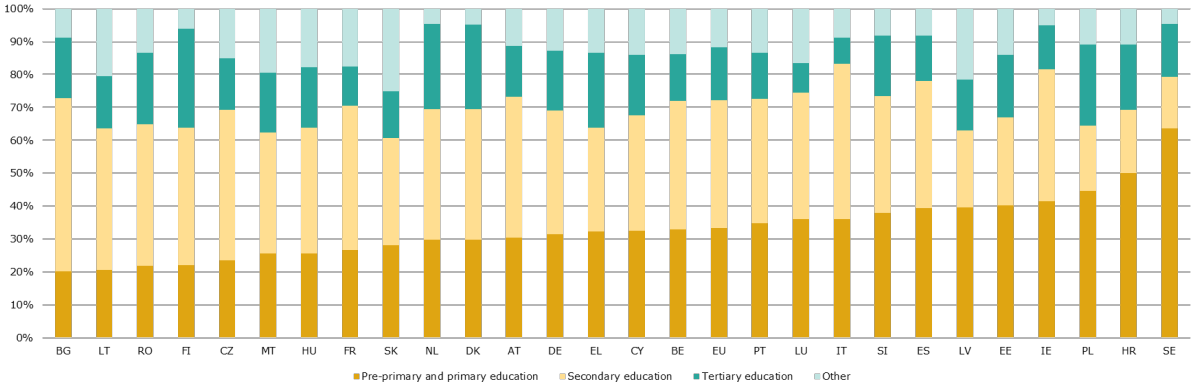
There were limited changes in recent years in most countries. The most significant changes occurred in Bulgaria, Czechia and Estonia, where education accounts for an increasing share of total public expenditure (with an increase of over 1 percentage point between 2016 and 2019), and Cyprus where the share has decreased (above 1 percentage point over the same period). Recently, there has also been a year-on-year real change of over 7% in Romania, Bulgaria, Czechia, Cyprus and Malta.

3.3 Public expenditure by education sector and category

The size of public expenditure on education in total public expenditure indicates the priority given by governments to education relative to other areas of investment, such as health care, social security, housing, defence or security. On average, in 2019, EU Member States directed 33.4% of public education expenditure to pre-primary and primary education. Secondary education

accounted for an average of 38.7% of public education expenditure, while tertiary education totalled 16.2%. 11.7% was not attributable to one of the three main levels[244]. The biggest difference across countries concern the resources devoted to pre-primary and primary education, which range from 20% of total education expenditure in Bulgaria and Lithuania to 63.7% in Sweden.

Figure 72: Public expenditure per education level, 2019



Source: Eurostat - General government expenditure by function (COFOG) [gov_10a_exp]

Note: The Government expenditure on education covers all public expenses for education – including public subsidies for private education – but not private funding for private education institutions, for example payment from parents, grants from private funds and other sources of income. The data are sorted in ascending order of expenditure on pre-primary and primary education. The category "other" includes expenses not covered by the other categories, it contains, in particular, post-secondary non-tertiary education, R&D or subsidiary expenditure.

The sizeable differences between countries can be explained by many factors that have an impact on government education expenditure: involvement of the general government in the education system, including in supporting educational services[245], enrolment, the duration of compulsory education, relative wages in the education sector, class size and student teacher ratios, instruction time, and the cost of teaching materials and facilities. At the tertiary level, tuition fees and support for students are also determining factors.

Enrolments in compulsory levels of education mostly depend on demographic developments. In other levels of education, enrolment rates are partly influenced by policy priorities, for example some countries invest public resources in near-universal education for children from 3 years of age and others emphasise broad access to tertiary education, or both. Some countries favour smaller classes for younger children at the pre-primary and primary level of education, which tend to increase the number of staff and associated expenditure. Enrolment rates in non-compulsory education may also depend on factors such as the economic cycle, with economic booms reducing incentives for students to remain in education and training.

Changes in the numbers of children born and the resulting shifts in the age structure of the population affect the number of school-age children and young populations in many countries, with implications for the organisation of schooling, e.g. when there are changes in the number of school-age children concentrated in certain areas, especially decreases in the number of children in

244 It included "education not definable by level", "subsidiary services to education", e.g. expenditure on providing school busses, "R&D education", i.e. R&D related to education not all R&D undertaken for example in universities and "education not elsewhere classified".

245 These are peripheral to the main education services, including for example meals, school health services, and transport to and from school.

rural areas. At the same time, intra-EU mobility, when families move across the EU, affects the number of children at various levels in the education system. Newly arrived refugee children and other immigrant children also push up the number of school-age children in specific communities, regions and countries.

Education systems typically adapt slowly to long-term demographic change and enrolment trends. Moreover, there is no simple relation between a decreasing student population and expenditure on education[246], which may also be affected by measures to improve learning support for students, or innovative ways of teaching.

Differences in the types of services provided at each education level can vary significantly from country to country. At the primary level, for example, some countries provide transport to and from school or student meals (Sweden, Finland, Estonia).

Box 28: The impact of demographic change on public expenditure on education

Demographic change influences the ratio of education expenditure to total public expenditure via the number of students and, indirectly, changes in entitlements to pensions and healthcare. The 2021 Ageing report presents projections carried out to assess the impact of long-run demographic changes on general government education expenditure until 2070. Projections over a very long time-horizon illustrate the impacts that demographic change – which takes a long time to materialise – can be expected to have on government expenditure on education, assuming no change in policy.

Projections are made using a stylised methodology that considers major aspects of education systems (such as enrolment rates by age and education level) and expenditure categories by education level and type, but does not take into account the full complexities of Member States' education systems.

The baseline scenario focuses on the impact of demographic factors on government education expenditure and assumes a "no-policy-change" in education: the key assumption is a constant student-to-staff ratio, which implies an instantaneous adjustment in the number of teaching staff-to-student levels.

According to the projection, government expenditure on education is set to remain broadly stable at the EU aggregate level. Government expenditure on education will increase in 5 countries (Bulgaria, Czechia, Germany, Slovakia and Slovenia) and fall in 21 countries. The projected impact varies across individual countries ranging from a decline of 0.9 percentage point in Finland to a 0.6 percentage point increase in Czechia. In the countries for which a reduction in total expenditure is projected, usually primary and secondary education (ISCED levels 1 to 3) bear most of the projected fall in total expenditure. At the same time, in Member States where total education expenditure is projected to rise, tertiary education tends to contribute positively to the overall increase in expenditure.

In countries projected to have the biggest decrease in education spending, the projected decrease of the number of students is often an important driver. The countries with the largest projected reduction are Finland, Denmark and Luxembourg respectively.

Source: European Commission (2021). The 2021 Ageing Report – Economic and Budgetary Projections for the EU Member States (2019-2070), An Institutional Paper 148, May 2021.

[246] For example, in BG and CZ where the increases in the share of education in total public expenditure were the largest, the number of students in all education levels (excluding early childhood education development) actually decreased over the period between 2013 and 2019 (–8.3% in BG and –2.1% in CZ). Conversely, the share of education in total public expenditure decreased in CY, while the number of students increased by 11.1%. Source: educ_uoe_enra01.

For the EU as a whole, the main category of expenditure is "compensation of employees", which is the total remuneration of employees: wages, salaries and employers' social contributions, for professors, teachers, assistants and other non-teaching staff such as school leaders or special educational support staff. Around 64% of public expenditure on education is in the form of "compensation of employees". The second-largest category of public expenditure (14.8%) is in the form of "intermediate consumption", meaning purchases of non-durable goods (e.g. teaching materials such as teaching manuals) and services needed to provide education (e.g. heating, electricity, cleaning and maintenance services). Gross capital formation (investment in acquiring fixed assets and durable goods, such as computers and buildings, and also including the depreciation of fixed assets) accounts for around 7.1% of education expenditure. The main remaining categories are social benefits, for example school transport (5.5% of public expenditure) and other current transfers, which includes for example payments to private schools (5.6% of public expenditure).

Figure 73: Public expenditure by category of expenditure, 2019

	Compensation of employees	Intermediate consumption	Social benefits	Other current transfers	Gross capital formation
EU	**64.4**	**13.6**	**5.5**	**5.6**	**7.1**
BE	82.3	10.6	1.0	0.7	5.2
BG	74.9	16.1	0.0	0.7	7.8
CZ	62.7	16.4	0.0	3.7	15.0
DK	50.9	18.2	14.8	9.1	6.8
DE	57.0	16.5	2.9	11.5	7.6
EE	59.2	19.1	4.7	2.5	14.1
IE	69.7	11.2	4.1	4.5	7.9
EL	79.4	6.9	3.3	1.0	9.2
ES	68.9	7.3	16.1	3.9	3.3
FR	69.7	9.7	5.6	3.5	7.5
HR	70.4	18.4	3.9	0.7	5.1
IT	75.6	10.4	0.0	4.8	3.3
CY	76.7	8.9	7.0	2.9	4.4
LV	59.1	20.3	4.2	1.0	15.3
LT	69.7	15.1	1.7	4.6	8.8
LU	69.4	7.8	2.9	9.8	8.4
HU	52.2	19.1	3.2	13.4	9.0
MT	58.3	8.9	7.8	14.5	10.4
NL	57.6	22.0	4.3	0.4	8.3
AT	64.5	16.2	3.0	6.9	6.1
PL	65.3	15.0	6.9	3.4	8.3
PT	72.7	10.8	8.8	1.0	3.1
RO	67.5	10.5	6.1	3.4	7.3
SI	65.6	18.3	6.8	0.9	6.9
SK	68.8	16.9	2.4	4.4	6.2
FI	48.0	22.3	5.5	8.5	15.0
SE	44.4	15.8	17.1	2.9	9.9

Source: Eurostat. Online data code: [gov_10a_exp].

Note: The category "compensation of employees" includes wages and non-wage costs such as employers' social contributions for e.g. teachers; "intermediate consumption" includes purchases of goods and services; "other current transfers" includes for example payments to private schools. The category "intermediate consumption" encompasses intermediate consumption; other taxes on production; current taxes on income, wealth, etc.; and adjustment for the change in pension entitlements.

The quality of teachers and trainers is key to achieving quality outcomes and high inclusion. Teachers and trainers support students in their development and play an important role in stimulating or hampering student motivation and inspiration[247]. Appropriate salaries can help

[247] European Commission/EACEA/Eurydice (2021). Teachers in Europe: Careers, Development and Well-being. A Eurydice report.

school systems attract the best candidates to the teaching profession and underpin its social status[248]. Other conditions matter too, in particular high-quality initial teacher education and measures to maintain teachers' motivation throughout their careers[249]. The physical environment in schools also has an influence on teaching methods and learning processes. Investing in effective learning environments and ensuring that the potential of learning spaces is used effectively are also determinants of quality education and training.

Another aspect worth highlighting is financial assistance to households or students, which may take a variety of different forms, including scholarships, public loans and allowances dependent on a student's status. The share of public education expenditure that was used for financial aid to households and students ranged in 2018 from 0.2% in Greece and 1.5% in Luxembourg to 16.9% in Denmark; the highest share was recorded in Bulgaria (18.4%) – see Figure 74. The relative importance of financial support may also depend on the education level: compulsory education is generally free to students, even though there are a number of hidden costs[250], while tertiary education may or may not be free.

Figure 74: Financial aid to students by education level – as % of total public expenditure, 2018

	All ISCED 2011 levels except early childhood educational development	Primary and lower secondary education (levels 1 and 2)	Upper secondary and post-secondary non-tertiary education (levels 3 and 4)	Tertiary education (levels 5-8)
EU	:	:	:	:
BE	5.4	1.3	5.0	14.6
BG	18.4	22.6	15.2	11.2
CZ	2.8	2.1	3.2	1.5
DK	16.9	2.2	19.8	35.9
DE	8.6	0.4	16.7	17.5
EE	:	0.1	3.3	4.4
IE	:	2.2	17.1	34.7
EL	0.2	0.0	0.0	0.9
ES	4.2	1.2	4.4	11.5
FR	4.3	3.4	4.3	8.5
HR	:	:	:	1.2
IT	7.1	2.0	3.1	27.9
CY	3.9	0.4	0.8	20.6
LV	2.7	0.2	8.2	5.4
LT	2.8	1.0	2.5	9.5
LU	1.5	0.9	1.3	6.2
HU	3.2	1.5	1.9	10.7
MT	6.0	0.1	9.6	12.7
NL	15.2	0.7	20.5	33.3
AT	4.1	0.5	5.1	8.6
PL	3.6	2.2	0.7	10.9
PT	5.1	3.4	5.3	12.8
RO	4.3	1.3	4.4	10.3
SI	8.2	3.7	18.1	13.3
SK	4.0	0.4	7.8	11.7
FI	3.6	0.0	5.9	9.0
SE	9.5	0.5	14.1	26.7

Source: Eurostat. Online data code: [educ_uoe_fina01]

[248] Thum-Thysen, A., Cravetto, R., Varchola, J. (2021). Investing in People's Competences: A Cornerstone for Growth and Wellbeing in the EU. A European Commission discussion paper.

[249] European Commission/EACEA/Eurydice (2021). Teachers in Europe: Careers, Development and Well-being. A Eurydice report.

[250] There is a distinction between core educational expenditure, such as expenditure on teachers, maintenance of school buildings etc. and related expenditure, such as school meals and health services, transportation to and from school or school trips. The latter is relevant when assessing the affordability of compulsory education for families.

Box 29: Affordability of formal education: the perspective of households

There is limited comparable information on the affordability of education from the perspective of households. Focusing on formal education, the costs for households include tuition fees, registration, exam fees, books, school trips, canteen costs and other expected costs. In the case of adult learners, the cost can include the loss of income resulting from the individual giving up employment or reducing their working hours in order to participate in education. In 2016, the majority (59%) of households living in the EU were able to pay the costs of formal education fairly easily (26%), easily (20%) or very easily (13%), while 41% of households reported some difficulty (22%), moderate difficulty (12%) or great difficulty (7%) in paying for these costs. The affordability of formal education in the EU was similar across cities, towns and suburbs, and rural areas. Difficulty covering the related costs was reported by 44% of households in rural areas, 41% in cities and 39% in towns and suburbs. At least 1 in 2 households reported difficulty in paying the costs of formal education in 15 EU Member States, in particular in Greece (89%), Cyprus (82%), Romania (78%) and Croatia (77%). In contrast, in the remaining 13 EU Member States, at least half of households were able to pay for formal education with ease. In particular, in Finland, 87% of households reported that they were able to cover the financial costs related to formal education fairly easily, easily or very easily, followed by Germany and Sweden (both 85%).

Source: 2016 EU-SILC ad-hoc module on access to services.

Note: The category 'with ease' includes those households which were able to cover the costs of formal education fairly easily, easily, or very easily, whilst the category 'with difficulty' includes those households which covered these costs with some difficulty, difficulty, or great difficulty.

3.4 Financing education and training in the context of COVID-19

With the COVID-19 pandemic and the physical closures of institutions at various levels of education, most EU countries suddenly needed online learning solutions, including online platforms, take-home packages, and other solutions such as television/radio or mobile phones. The situation differed over time, depending on the phase of the pandemic and across countries, ranging from school closures without any online learning, in some cases, or intense online learning, hybrid formulas (e.g. part-time on site education combined with online learning) and physically open schools (with some temporary closures). The disruption for higher education institutions was considerable with the closure of physical campuses, whereas the access of younger children to school tended to be prioritised.

This section draws entirely on the ad-hoc report on financing education in the context of COVID-19 prepared by the European Expert Network of Economics in Education[251]. Teachers and students had to move abruptly to distance learning, though many were unprepared for this sudden change. For example, the 2018 PISA data suggest that the percentage of students in schools whose principal agreed or strongly agreed that teachers have the necessary technical and pedagogical skills to integrate digital devices in instruction ranged from 83% in Lithuania to lower than 50% in Ireland. Taking a global perspective, several non-EU countries are performing better than the best performers in the EU.

[251] De Witte, K et al (2021). Financing education in the context of COVID-19, EENEE Ad hoc Report 3, 2021.

Box 30: Emergency funding under COVID-19 in Ireland

In response to COVID-19, Ireland allocated large-scale emergency funding to all levels of education. The funds were intended to address public health compliance measures, enhance teacher supply, increase higher education places and mitigate revenue losses. The funds also aimed at the safe reopening of schools, ECEC facilities and further and higher education institutes as fully as possible. In 2021 an additional €8.9 bn has been allocated to education as emergency funding, which will finance 1 065 additional teachers. In total 23 000 new school places and additional student accommodation will be provided by more than 200 large-scale projects currently at construction stage. Funding provided specifically to support schools in their response to COVID-19 from January to July-August 2021 amounted to €26 m, providing additional capacity for the school system to manage in the COVID-19 environment and to cater for increased demographics. In March, the government announced further support for schools catering for students experiencing the highest levels of educational disadvantage[252]: this included reducing class-size in all primary schools in Ireland under the Urban band 1 of the "Delivering Equality of Opportunity in Schools action plan for educational inclusion" (DEIS)[253], a 5% increase in funding and extending the school completion programme to include more schools. It also included reducing the enrolment threshold for the allocation of an additional deputy principal in DEIS post-primary schools, from 700 to 600 students. €105 m was allocated to the tertiary sector to reopen on-site education in September 2021.

There was also a lack of ICT equipment and online learning support. According to the 2018 PISA data, in Luxembourg an effective online learning support platform was available for only 22% of students. Also in Romania (31%) and Germany (32%) availability was low before the COVID-19 pandemic. This contrasts with Denmark (91%), Sweden (80%) and Finland (80%) where effective online learning support platforms were more generally available.

Being suddenly required to learn from home, students need to have access to a quiet place to study. The 2018 PISA data show that in some EU education systems, e.g. the Netherlands or Austria, most students have access to a quiet place, while in other education systems, e.g. Bulgaria (20%) and Malta (15), a large group of students does not have access to a quiet place to study.

Finally, online instruction requires that students have a device, internet connection, technical equipment, the digital skills and the necessary technical experience to receive the course materials. The 2018 PISA data suggest that in many European countries students frequently did not use ICT outside school for homework. Particularly in Ireland, Belgium and Luxembourg, prior to the COVID-19 crisis ICT was rarely used for schoolwork outside school.

Countries took many measures to mitigate the pandemic's negative impact on children and schools: providing subsidised devices (computers, tablets), improving access in remote areas, removing obstacles to internet access, providing support for students with disabilities and providing support for low-income households.

252 Irish Department of Education (2021). Minister Foley announces new measures to tackle educational disadvantage, DES, 1 March 2021.

253 Cf. the website of the DEIS action plan.

Box 31: An extraordinary investment in education to compensate for the learning losses linked to the pandemic in the Netherlands

In February 2021, the government announced the national education programme, which encompasses all levels from primary to tertiary education and has a budget of €8.5 bn. Primary schools will receive an average of €180 000 each in the next school year and secondary schools more than €1.3 m. Schools with a larger share of disadvantaged students will receive proportionally more money. Schools are responsible for the design, implementation and monitoring how the funds are used. Of the total amount, approximately €5.8 bn is for school education, and €2.7 bn is for vocational training and higher education. In higher education, the money will be used to reimburse student tuition fees to compensate for the lack of in-class education and the study delays linked to the pandemic. In addition, €645 m will be invested to compensate for the costs of higher student numbers. The programme will run until 2023.

A partial overview of the initial policy response on additional education funding in a selection of Member States, up to 12 May 2021[254] suggests an increase in investment to accelerate digitisation projects, e.g. access to laptops or tablets for children, better or more efficient internet access, increased capacity for digital learning platforms or upgrading ICT infrastructure in general. It also shows evidence of hiring additional teachers or providing for additional training of teachers, as well as additional funding for counselling and assistance for students, and bonuses for teachers. Some countries also compensate schools for additional prevention costs, e.g. for protective equipment, additional cleaning, or disinfection products.

Since regular public spending on education (i.e. not-COVID-19 related expenses) substantially differs between countries, additional spending per child is compared with the regular average spending per child in primary and secondary education. In this way, the percentage increase in public educational spending that can be attributed to COVID-19 can be calculated. The median increase in spending per child was approximately 3%, with a broad range from below 1% to 32%.

Overall, the results of the partial overview suggest that the funding concentrates on ICT provision and general, non-earmarked funding. Several countries realised that their ICT availability and competences were not suitable for organising distance learning effectively and decided to invest in upgrading ICT equipment and tools. For several countries, this may be an opportunity to embrace the potential advantages of digital learning tools and to use them to enhance learning.

For a number of countries, the increase in funding is either not earmarked or it is not clear whether the money should be dedicated to serve specific targets or not. Further, some countries specifically mention "hiring additional teachers" or "additional teacher training". The spending categories of investment on better infrastructure or summer "bridging" programmes are mentioned in fewer countries.

[254] Cf. footnote 252 for the reference. Given the ad-hoc national responses, it is challenging to find comparable information on the impact of COVID-19 on educational spending. The amounts of additional spending reported are compiled from a variety of sources, including official governmental communication and newspaper articles, and are probably not exhaustive. Some measures and amounts may be missing in various countries and, in other countries the same measures may be included in several announcements or measures already decided but implemented after the start of the COVID-19 pandemic. It is often unclear whether amounts mentioned in successive government announcements overlap or can be considered as cumulative or what is the time horizon (e.g. are expenses one-shot or recurring, are expenses spread over multiple years or not). A distinction between calendar years versus school years is sometimes missing which makes it difficult to correctly allocate the additional budget. Lastly, a clear distinction between national and regional levels is not always available.

Future availability of harmonised data on public spending on education in 2020 and 2021 would enable the new situation to be assessed, with the response to set up a Recovery and Resilience Facility. Together with the European Structural and Investment Funds, the increase in EU funds directed to education and training is much higher than in 2014-2020. It would open scope for comparison of the change in public expenditure with for example changes in learning outcomes, the number of days of school closure, availability of ICT at school or at home, or digital competences of teachers and children.

3.5 The Recovery and Resilience Facility

The Recovery and Resilience Facility (RRF) is the centrepiece of NextGenerationEU, the European Union's Recovery Instrument, under which up to €675 bn[255] have been made available to Member States in grants (€312.5 bn) and in loans (€360 bn). The RRF supports sustainable and growth-enhancing reforms and investments to help recovery and build institutional capacity, essential to reduce inequalities and divergences in the EU. To benefit from the support under the Facility, Member States had to submit their Recovery and Resilience Plans (RRPs), including a comprehensive set of reforms and investments to be implemented by 2026. Reforms and investments fall under six pillars:

1. Green transition
2. Digital transformation
3. Smart, sustainable and inclusive growth
4. Social and territorial cohesion
5. Health and economic, social and institutional resilience; and
6. Policies for the next generation, children and youth.

Furthermore, at least 37% of total expenditure will be devoted to climate related investments and at least 20% to promoting the digital transition.

As of 15 October 2021, 26 Member States had submitted their RRP and the Commission adopted its final assessment and a proposal for a legally binding act for 22 plans, of which 19 were also adopted by the Council.

Investment in education and skills figure prominently in National RRPs. According to provisional calculations based on the 18 of the adopted plans education and skills related reforms and investments make up about 13% of the total RRF expenditure. In addition, Member States have also mobilised funding under the COVID-19 response investment initiative (CRII, CRII+) and are planning further investments under REACT-EU (also part of the NextGenerationEU package) and the Structural Funds (2021-2027). Negotiations on these programmes are still ongoing, and therefore an overview cannot be provided at this stage. However, education and skills will benefit in the next years from an unprecedented level of EU funding. This will facilitate large-scale investments with the potential to improve access to and quality of education and training in the medium to long-term in many countries. In particular, the RRF is expected to give a major boost to the transformation of education and training systems in light of the green and digital transitions. Investments will largely support the implementation of the Digital Education Action Plan (2021-27), which put forward a strategic vision to create a high-performing digital education ecosystem and enhance the digital skills and competences of the population.

[255] in 2018 prices

Most countries[256] will invest in the digital infrastructure and connectivity of schools often with a focus on reducing the digital divide. For instance, Slovakia aims to increase the share of schools with highly equipped and connected classrooms from 30% to at least 90%. Some Member States[257] will equip learners and teachers with digital devices to reduce the digital divide. For instance, in Austria 80 000 students per year will receive digital equipment funded under the RRF.

Investments in digital infrastructure go hand in hand with measures to develop the digital competences of students and teachers. Such measures include the adaptation of the school curricula and the development of digital resources and content[258], teacher training on digital education[259], as well as modernising the training offer in VET institutions[260]. For instance, in Belgium, the Flemish Community has included in its plan an ambitious reform of digital school education, which provides for setting up a knowledge and support centre for digital school education.

Box 32: The Cyprus Recovery and Resilience Plan will serve the modernisation and digitalisation of the education.

The shift to distance learning during the pandemic highlighted key challenges for students and teachers in Cyprus, such as the lack of electronic equipment and the necessary digital skills. With a budget of €13.8 m, a variety of projects will be financed to digitally transform the Cypriot schools and enhance digital as well as STEM skills:

- the purchase of digital equipment (tablets/laptops) for students from less socio-economically advantaged backgrounds;
- the provision of digital equipment for schools;
- training in digital skills and STEM methodology for 3 375 teachers representing around one third of all primary and secondary teachers of t; and
- changes to curricula and the development of educational material for enhancing digital and STEM skills.

The digital transition of higher education will improve quality and excellence and enhance the availability of digital skills in the labour market. Member States have planned a broad range of measures covering areas such as the development of digital infrastructure[261]; digital teaching resources, adaptation of study courses and training[262]; digital training for academic staff[263] and the development of online courses and strengthening of blended teaching[264]. For example, Italy is planning the creation of three Digital Education Hubs (DEH) targeting the digital transformation of higher education. Several countries will also further digitalise the education governance and administration[265].

256 e.g. BE, CY,CZ, EL, ES, FR, IE, IT, RO, PO, SI, SK.

257 e.g. AT, BE, CY, CZ, DE, EL, ES, FR, IE, IT, LV, PT.

258 e.g. AT, BE , CZ, EL, CY , LT, PT, RO, SI, SK.

259 e.g. AT, BE, , CY,CZ, DE, EL, ES, FR, IT, LT, , RO, SI, SK.

260 e.g. IE, IT, PT.

261 e.g. CZ, FI, HR, RO, SI.

262 e.g. BE, CZ, ES, FI, HR, IE, RO, SI.

263 e.g. BE, CZ, ES, FR.

264 e.g. FR, LT.

265 e.g. FR, EL, HR, IT, PT, RO, SI, SK.

To help everybody to adapt to the digitalisation transformation process accelerated by COVID-19, the majority of Member States[266] plan measures to develop the adult population's digital skills. For example, all employees in Latvia placed on short-time work scheme between January and March 2021 may have access to e-learning courses to improve digital skills, using vouchers worth up to €500. The RRF will support also some innovative measures, such as data literacy courses in Germany.

Investments in ECEC are expected to increase participation rates, in particular among disadvantaged groups, hence reducing inequalities. About half of the countries[267] proposed investments to improve access to ECEC by expanding capacities-, while some countries[268] will further develop the quality of provision. Some Member States have set ambitious targets. For example, Croatia plans to create 22 500 new places in ECEC and raise the participation for children between 3 years and the school age from 76.3% to 90% by 2026. Czechia aims to increase the number of childcare facilities by 40% until the end of 2025 with the support of RRF. Romania plans to use the RRF to build 110 crèches and to develop more than 400 complementary early childhood education and care services in disadvantaged areas. Germany will create 90 000 new places in early childhood education and care, while Spain intends to create 60 000 such places (for children aged 0-2) by building or upgrading publicly owned facilities. Slovakia will train at least 10 000 ECEC staff on inclusive approaches and will pilot early care for children from marginalised Roma communities.

Some of the investments in ECEC capacities are also supported by reforms aiming to improve access, inclusiveness and quality. For example, Cyprus plans to lower the age of compulsory pre-school education; Croatia and Slovakia will review the financing model; Portugal will reduce ECEC fees; Greece will improve early diagnosis and support for children with disability and special needs; Italy, Slovakia will review the recruitment system and support the professionalisation of ECEC staff. A legal entitlement to ECEC will be introduced in Croatia and Slovakia. Romania further envisages the development of an integrated ECEC framework and a large-scale teacher-training programme.

The majority of the countries[269] will support reforms and investments to improve quality of school education. In some countries, the RRF will contribute to the implementation of comprehensive reform efforts. Planned measures include for example reforming teachers' recruitment mechanisms in Italy; implementing curricular reforms in Slovakia; and improving external evaluation of schools in Lithuania. In Czechia, a reform of financing of schools is envisaged with the aim to reinforce support of disadvantaged schools. In Croatia, investments will contribute to the transition to single-shift schools, allowing whole-day schooling and increasing of the number of instruction hours. In Romania, schools will be equipped with laboratories for sciences with the support of RRF. Cyprus will address skills mismatches between education and training and the labour market, starting actions in schools.

While some Member States[270] plan to undertake significant measures to promote the inclusiveness of school education, these are unlikely to meet the challenges which have been exacerbated by the pandemic. . Some countries[271] plan targeted measures to compensate for the loss of learning during the pandemic and related school closures, however, these remain scattered and may not meet the high demand. For example in Belgium, 30 000 students from the French community will benefit from individualised support to overcome learning gaps and address the dropout risk resulting from the partial school closure; they will also receive mental and emotional support.

266 BE, CY,CZ, DK, EE, ES, FR, HR, IE LV, LT, LU, PT, RO, SI, SK, FI.

267 e.g. AT,BE, CY ,CZ, DE, EL, ES, HR, IT, PT, RO, SK.

268 e.g. EL, RO, SK.

269 e.g. CY, EL, ES, HR, IT, LT, RO, SK.

270 e.g. AT, BE, CZ, EL, ES, FR, IT, CY, PT, RO, SK.

271 e.g. AT, CZ, DE, FR, SK.

France will fund mentoring for over 180 000 students. Dedicated reforms or programmes to fight early school leaving will be funded in Belgium, France, Romania, Malta and Spain. Spain will also finance a programme for education orientation and support for low performing students under its RRP. Other measures aimed at enhancing equity and inclusiveness of education are improving special needs education in Greece and supporting desegregation in Slovakia.

Many Member States[272] will invest in VET to address skills mismatches, improve the labour-market relevance of education and training systems and equip employees for the digital and green transitions. Supported measures will include reforms in apprenticeship schemes or dual learning and large-scale reskilling programmes. For example, Austria will support the training of 94 000 people to address qualification mismatches with a focus on basic qualifications and some professions for which there is high demand on the labour market (ICT, social and care and environment). To support the planned reform of the VET sector in Romania, the RRF will invest in equipping VET high schools, including agricultural schools, with laboratories as well as with IT laboratories. In addition, the RRF will finance the development of 10 regional consortia involving local VET bodies and interest groups. In Portugal, the RRF will finance measures to modernise the VET offer regulated by the National Qualifications Catalogue (CNQ) based on the anticipation system of qualifications needs. Important investments are foreseen to modernise VET institutions by creating and modernising specialised technological centres in public secondary schools, and also broadening and modernising the network of professional training centres of the public employment service.

Many countries[273] plan to use substantial resources for reforms in adult learning. This will include the definition and implementation of comprehensive strategies for lifelong learning, upskilling and reskilling, with specific measures for the development of digital skills and introducing or further developing schemes for individual learning accounts. For example, France plans to top up workers' entitlements on the already existing individual learning accounts ("*Compte personnel de formation*") with a €1 000 credit, which may be used for trainings linked to digital skills or digital careers. Greece plans to utilise Lifelong Skilling Accounts (LSAs) as one of the tools for continuous training, based on individualised needs. Lithuania plans to introduce a one-stop-shop model for lifelong learning that will consolidate the currently fragmented framework of adult skills development, including both VET and higher education.

Several countries will use the RRF to support the transformation in higher education[274] to improve its labour market relevance, but also enhance access. Such measures will include modernising study programmes[275], increasing the number of study places[276]; launching new study courses[277] including micro-credentials[278]; reviewing the funding model[279]; developing quality assurance and governance mechanisms[280]; tracking graduates[281]; internationalising higher education[282] and improving access[283]. For example, Slovakia will provide scholarships to improve access for domestic and international students. In France, 30 000 new study places will be created and 100 000 students will benefit from state-guaranteed student loans. Latvia is implementing a comprehensive higher education reform with support from the RRF, which envisages complex

272 e.g. CY, CZ, DE, EL, ES, FI, FR, HR, IE, IT, LT, LV, MT, PT, RO and SI.
273 e.g. AT, BE, CY, CZ, EL, ES, FR, HR, IT, LV, LT, PT.
274 e.g. BE, CZ, EL, ES, FR, HR, IE, CY, LV, LT, PT, RO, SI, SK, FI.
275 e.g. BE, CZ, EE, HR, IT, IE, SI.
276 e.g. FR, FI.
277 e.g. BE, CZ.
278 e.g. BE, CZ, EE.
279 e.g. LV, LT, SK.
280 e.g. SI, SK.
281 e.g. EL, CY.
282 e.g. EL, LT, SK.
283 e.g. FR, IT, PT, SK.

structural changes across three pillars: governance, funding, and human resources. Portugal will foster STEAM careers, while Finland will support a programme to attract and retain national and foreign talent. Romania will use the funds for digitalisation in higher education and preparation for the digital professions of the future; it will also allocate funding to student accommodation.

The majority of Member States plan to use the RRF to invest in education infrastructure to improve quality, equity and efficiency in education, as well as the green transitions. Investments aim to modernise buildings, build new facilities or improve energy efficiency. They cover all levels of education: early childhood education and care[284], schools[285], VET[286] and higher education[287]. Student campuses at upper secondary or tertiary level will also be renovated, extended or built[288]. As a result of these infrastructure investments, 70% of pupils in primary and lower secondary education in Croatia will be able to attend single-shift schools, compared with the current 40%. Lithuania aims to complete the consolidation of its school network. Portugal plans to use RRP funding to increase the affordability of students housing and intends to double the capacity by providing 5 000 new places. In Cyprus, two model technical schools will be built. In Romania, 40% of places renovated or newly created will be allocated to students from disadvantaged backgrounds.

Box 33: The Recovery and Resilience Facility (RRF) will support investment in educational infrastructure at all levels in Slovakia.

Slovakia plans to create additional 12 352 places in early childhood education to implement legal entitlement for 3 year-olds planned for 2025. At least 252 upper-secondary schools are going to be refurbished to improve their accessibility to students with disabilities, double-shifts in 49 primary schools will be eliminated, and 211 school libraries will be established or modernised, which aim to provide a high-quality learning environment to students with a disadvantaged background. At tertiary level, university buildings, including student dormitories, are going to be renovated to improve their energy efficiency.

284 e.g. AT,BE, CZ, DE, EL, ES, HR, IT, CY, PT, RO, SK.
285 e.g. AT,BE, FR, HR, IT, LV, LT, MT, PT, RO, SI, SK.
286 e.g. BE, CY, MT, PT, SI.
287 e.g. BE, CZ, ES FR, HR, LT, PT, RO, SI, SK.
288 e.g. CY,CZ, EL, ES, FR, PT, RO, SK.

Part 4

Annex

4 Annex

Figure 75: Detailed comparison of EEA and ET2020 targets

		EEA 2030	ET2020
		Low achieving 15-year-olds in basic skills	
1	Definition	**The share of low-achieving 15-year-olds in reading, mathematics and science should be less than 15%, by 2030.**	The share of 15 year-olds with underachivement in reading, mathematics and science should be below 15% by 2020
	Source	OECD PISA	OECD PISA
		Low achieving eight-graders in digital skills	Employment rates of recent graduates
2	Definition	The share of low-achieving eight-graders in computer and information literacy should be less than 15%, by 2030.	82% of recent graduates from upper secondary to tertiary education (age group 20-34) who are no longer in education or training should be in employment.
	Source	IEA (ICILS)	Eurostat (EU-LFS). Online data code [edat_lfse_24]
		Early childhood education and care	
3	Definition	**At least 96% of children between 3 years old and the starting age for compulsory primary education should participate in early childhood education and care, by 2030.**	At least 95% of children between the age of four and the age for starting compulsory primary education should participate in education.
	Source	Eurostat (UOE) online data code [educ_uoe_enra21]	Eurostat (UOE). Online data code [educ_uoe_enra10; educ_uoe_enra19 (age4); educ_uoe_enra18 (age5+)]
		Early leavers from education and training	
4	Definition	**The share of early leavers from education and training should be less than 9%, by 2030.**	The share of early leavers from education and training should be below 10%
	Source	Eurostat (EU-LFS). Online data code [edat_lfse_14]	Eurostat (EU-LFS). Online data code [edat_lfse_14]
		Tertiary education attainment	
5	Definition	**The share of 25-34 year-olds with tertiary educational attainment should be at least 45%, by 2030.**	The share of 30 to 34 year-olds with tertiary educational attainment should be at least 40%
	Source	Eurostat (EU-LFS). Online data code [edat_lfse_03]	Eurostat (EU-LFS). Online data code [edat_lfse_03]
		Exposure of VET graduates to work based learning	Learning mobility
6	Definition	**The share of recent graduates from VET benefiting from exposure to work-based learning during their vocational education and training should be at least 60%, by 2025.**	An EU average of at least 20% of higher education graduates should have had a period of higher education-related study or training (including work placements) abroad, representing a minimum of 15 ECTS credits or lasting a minimum of three months.
	Source	Eurostat (EU-LFS) collected from 2021 onwards as defined in the variable identifier 'HATWORK' in the Commission Implementing Regulation (EU) 2019/2240.	Eurostat (UOE). Online data code [educ_uoe_mob]
		Participation of adults in learning	
7	Definition	**At least 47% of adults aged 25-64 should have participated in learning during the last 12 months, by 2025**	An average of at least 15% of adults (age group 25-64) should participate in formal or non-formal learning.
	Source	Eurostat (EU-LFS) data collection from 2022 onwards	Eurostat (EU-LFS). Online data code [tmg_lfs_02]

Source: for column 1 (EEA): Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030) (2021/C 66/01) of 21 February 2021. For column 2 (ET2020): Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training ('ET 2020') (2009/C 119/02).

Note: The order of targets follows the current state of play; [bold] denotes indicators carried over from the outgoing strategy; [green] denotes new indicators.

Figure 76: Achievement in basic skills Summary table, 2020/21[289]

	Recent national reports on achievement			Use of performance data in school evaluation	Guidelines on underachievement as a topic in ITE			Additional resources provided by top-level authorities to schools with disadvantaged students
BE (fr)	R	M	S	●	R	M	S	●
BE (de)	R	M	S	●	R	M	S	●
BE (fl)	R	M	S	●	R	M	S	●
BG	R	M	S	●				●
CZ	R	M	S	●				●
DK	R	M	S	●	R	M	S	
DE	R	M	S	●	R			●
EE	R	M	S	●	R	M	S	●
IE	R	M	S	●	R	M		●
EL	R	M	S					●
ES	R	M	S	●	R	M	S	●
FR	R	M	S	●	R	M	S	●
HR	R	M	S					
IT	R	M		●				●
CY	R	M	S		R	M	S	●
LV	R	M		●				●
LT	R	M	S	●	R	M	S	●
LU	R	M		●	R	M	S	●
HU	R	M	S	●	R	M	S	
MT	R	M	S	●	R	M	S	●
NL	R	M	S	●				●
AT	R	M		●	R	M	S	●
PL	R	M	S	●	R	M	S	●
PT	R	M	S	●				●
RO	R	M	S	●				
SI	R	M	S					●
SK	R	M			R	M	S	●
FI	R	M						●
SE	R	M	S	●	R	M	S	●

Source: European Commission/EACEA/Eurydice (2021). Structural Indicators for Monitoring Education and Training Systems in Europe – 2021.

Note: "R" = reading; "M" = mathematics; "S" = science.

(*) No data collection on indicator 1 National tests in compulsory education for school year 2020/21.

The structural indicators on achievement in basic skills concentrate on a selection of policies that can contribute to improving student achievement. Due to the COVID-19 pandemic, around a third of all education systems were forced to cancel at least some of the national tests that were scheduled to take place in spring 2020. In the majority of European countries, standardised national assessments in compulsory education and national report on achievement focus on the

[289] The "structure indicators" presented here use qualitative system-level information to support the analysis in the Education and Training Monitor. Since 2015, these indicators provide annual information on the national policies and structures that contribute to achieving the benchmarks set in the strategic framework for European cooperation in education and training.

language of instruction and mathematics, and to a lesser extent on science. Additionally, the majority of countries include student performance data in the evaluation of schools and stipulate that competences to tackle low student achievement should be acquired during initial teacher education (ITE). The aim is to deal with student difficulties, and for this, 18 European systems provide central level regulations, recommendations and/or guidelines. Lastly, the central education authorities in most education systems allocate additional resources to schools that enrol large numbers of disadvantaged students.

Overall, there have been few policy changes and reforms in the past six years, possibly showing a lack of priority in this area.

Figure 77: Starting age of early childhood education and care and primary education

	Starting age of		
	Universal legal entitlement to ECEC	Compulsory ECEC	Compulsory primary education
BE (fr)	2y 6m	5	6
BE (de)	3	5	6
BE (fl)	2y 6m	5	6
BG		5	7
CZ	3	5	6
DK	6m		6
DE	1		6
EE	1y 6m		7
IE			6
EL		4	6
ES	3		6
FR		3	6
HR		6	7
IT			6
CY		4y 8m	5y 8m
LV	1y 6m	5	7
LT		6	7
LU	3	4	6
HU		3	6
MT			5
NL		5	6
AT		5	6
PL	3	6	7
PT	3		6
RO		5	6
SI	11m		6
SK			6
FI	9m	6	7
SE	1	6	7

Source: European Commission/EACEA/Eurydice (2021). Structural Indicators for Monitoring Education and Training Systems in Europe – 2021.

Note: "y" = years, "m" = months.

In the school year 2019/2020, several countries have conducted policy changes and reforms in the legal framework of early childhood education and care. Belgium lowered the starting age of compulsory education from 6 to 5 years in 2020/2021, including one year of ECEC, and Romania lowered the age of compulsory education to 5.

Other countries, such as Spain is expected to draw up an eight-year plan for increasing the offer of public places in the first cycle of ECEC to meet all requests for schooling of children under age three. In this process, students at risk of poverty and social exclusion will have priority. Lithuania, has also put emphasis on ameliorating the conditions of children at social risks for attending compulsory pre-primary education. Slovakia, Bulgaria and Lithuania will conduct reforms in the upcoming years.

Figure 78: Early childhood education and care selected quality aspects 2020/2021

	Staff		Curriculum or educational guidelines
	At least one staff member with a tertiary qualification in education sciences	CPD professional duty or necessary for promotion	
BE (fr)	■	●	●
BE (de)	■	●	■
BE (fl)	■	●	●
BG	●	■	■
CZ		■	■
DK			●
DE	●		●
EE	●	●	●
IE			●
EL	●	■	■
ES	■	■	●
FR	●	●	●
HR	●	●	●
IT	■	■	■
CY	■	■	■
LV		●	●
LT	●	●	●
LU	■	●	●
HU	■	●	●
MT		■	●
NL	■		■
AT		●	●
PL	■	■	■
PT	●	■	■
RO		●	●
SI	●	●	●
SK		■	■
FI	●	●	●
SE	●		●

Source: European Commission/EACEA/Eurydice (2021). Structural Indicators for Monitoring Education and Training Systems in Europe – 2021.

Notes: ■ = children aged 3 years or more[290]; ● = the entire ECEC phase (from birth to the start of compulsory education).
1. Tertiary qualification in education = minimum 3 years ISCED 6.
2. CPD refers to continuing professional development.

290 "■" refers to children aged 2.5 years or more in Belgium (French and Flemish Communities) and to children aged 4 years or more in Greece, the Netherlands and Liechtenstein.

Over the past five years, several countries have introduced structural reforms concerning staff qualification or continuing professional development (CPD). Some countries such as Ireland, Italy, Malta or Finland have raised or are in the process of raising a minimum qualification requirement for all or for a large proportion of staff working with children. The Flemish Community of Belgium and France have recently introduced non-binding educational guidelines for the youngest children. Currently, Italy and Portugal are in the process of adapting the educational guidelines for the ECEC provision for children under age 3. New ECEC educational guidelines are in place in several countries. Some countries conducted reforms such as Romania, which adopted a new ECEC Curriculum in 2019 proposes a unitary approach to early education and care from birth to age 6 as previously there were different guidelines for each group.

Figure 79: Early leavers from education and training (ELET) Summary table 1, 2020/2021

	National data collection on ELET based on a student register	Policies for increasing the flexibility and permeability of education pathways:			Policies for language support for students with a different mother tongue
		Providing alternative education & training pathways	Facilitating transitions within education & training systems	Recognising skills and/or qualifications	
BE (fr)	●	●	●	●	●
BE (de)		●	●	●	●
BE (fl)	●	●	●	●	●
BG	●	●		●	●
CZ	●	●	●	●	●
DK	●	●	●		●
DE		●	●		●
EE	●	●	●	●	●
IE	●	●			●
EL	●	●	●	●	●
ES		●	●	●	●
FR	●	●	●	●	●
HR	●		●	●	●
IT	●	●	●	●	●
CY	●	●	●		●
LV	●	●	●	●	●
LT	●	●	●	●	●
LU	●	●	●	●	●
HU	●	●			
MT	●	●	●	●	●
NL	●	●	●		●
AT	●	●	●		●
PL	●	●	●	●	●
PT		●	●	●	●
RO	●	●	●	●	●
SI		●	●	●	●
SK		●	●		●
FI	●	●	●	●	●
SE	●	●	●	●	●

Source: European Commission/EACEA/Eurydice (2021). Structural Indicators for Monitoring Education and Training Systems in Europe – 2021.

Figure 80: Early leavers from education and training (ELET) Summary table 2, 2020/2021

	Policies encouraging the inclusion of ELET in ITE and/or CPD	Education and career guidance in schools, ISCED 2 and 3*	Policies to support early leavers re-enter the education & training system		
			Second chance education	Education and career guidance	Youth guarantee
BE (fr)	●	●	●	●	●
BE (de)	●	●	●		
BE (fl)	●	●	●	●	●
BG		●	●	●	●
CZ		●	●	●	●
DK			●	●	●
DE	●	●	●	●	●
EE	●	●	●	●	●
IE	●	●	●	●	●
EL	●	●	●	●	●
ES	●	●	●	●	●
FR	●	●	●	●	●
HR			●	●	●
IT	●	●	●		●
CY	●	●	●	●	●
LV	●	●	●	●	●
LT		●	●	●	●
LU	●		●	●	●
HU	●	●	●		●
MT	●	●	●	●	●
NL	●		●	●	●
AT	●	●	●	●	●
PL		●	●	●	●
PT	●	●	●	●	●
RO		●	●	●	●
SI	●	●	●	●	●
SK		●	●		
FI		●	●	●	●
SE	●	●	●	●	●

Source: European Commission/EACEA/Eurydice (2021). Structural Indicators for Monitoring Education and Training Systems in Europe – 2021.

Note: * Education and career guidance provided both as a compulsory part of the curriculum and by school guidance services in lower and upper secondary education.

The structural indicators on ELET focus on key policies and measures to cover prevention, intervention and compensation. National data collection systems based on a student register can be used to understand the scale of the problem and implement the right policies. Increasing the flexibility helps preventing ELET by removing potential obstacles to the competition of programmes. Language support for students with a mother tongue other than the language of instruction is also crucial as these students are often at increased risk of early leaving. Addressing ELET in ITE and/or CPD improves teachers' understanding on how to support students who are showing signs of disengagement at school, additionally, education and career guidance services also play a crucial role in preventing students from leaving education and training. Lastly, support for early leavers to re-enter the education and training system has been strengthened through a

number of policy developments since 2015. These have involved the provision of second chance education, education and career guidance and/or "Youth guarantee" related initiatives.

Policy changes and reforms related to ELET have taken place in 2020/21 in three education systems (Cyprus, Poland and Portugal), additionally policy developments are implemented in Spain, which include the development of alternative education programmes, the recognition of professional skills and competences, and various language programmes implemented in different Autonomous Communities.

Figure 81: Tertiary level attainment (TEA) Summary table, 2020/2021

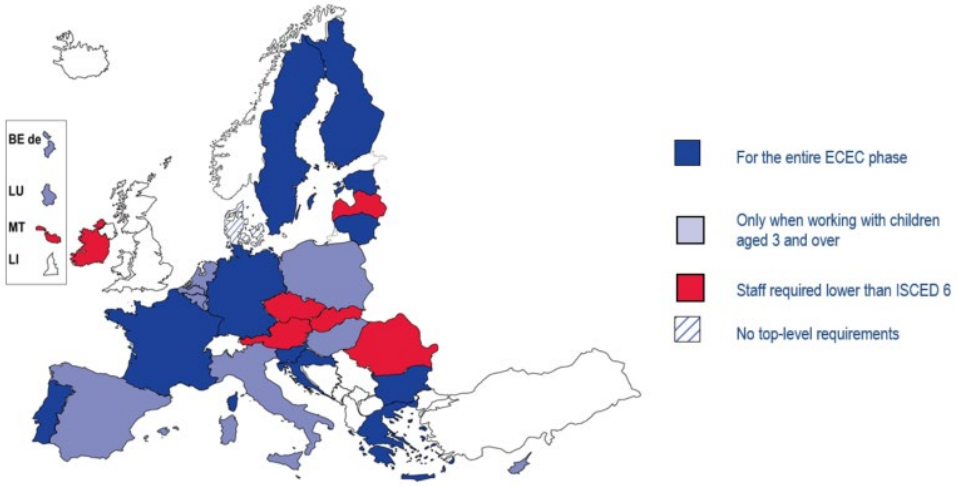
	Quantitative targets for widening participation and/or attainment of under-represented groups	Monitoring of socioeconomic background of students	Recognition of informal or non-formal learning in entry to higher education	Completion rates as a required criterion in external QA	Performance-based funding mechanisms with a social dimension focus
BE (fr)		●	●	●	
BE (de)				●	
BE (fl)		●	●		●
BG		●		●	
CZ					
DK		●	●		
DE		●	●	●	
EE			●	●	
IE	●	●	●	●	●
EL	●				
ES		●	●	●	●
FR	●	●	●	●	●
HR		●		●	●
IT		●	●	●	●
CY	●				
LV					
LT		●	●	●	
LU					
HU		●	●	●	
MT	●	●	●	●	
NL		●			
AT	●	●			●
PL		●	●	●	●
PT			●	●	●
RO		●		●	●
SI				●	
SK					
FI		●	●		
SE		●	●		

Source: European Commission/EACEA/Eurydice (2021). Structural Indicators for Monitoring Education and Training Systems in Europe – 2021.

Five structural indicators were developed related to the tertiary level attainment. Very few reforms have taken place since 2015. Areas with new policies were quantitative targets for widening participation and attainment of under-represented groups, and completion as a required criterion in external Quality Assurance (QA). For the reference year 2020/21, in more than two thirds of the education systems, monitoring of socio-.economic characteristics of the student body was most widely implemented policy. Also, recognition of prior informal or non-formal learning and the requirement of completion rates was implemented in more than half of the education systems. The two areas, which focus the most on the social dimension and widening participation in higher education, were implemented in less than half of the education systems.

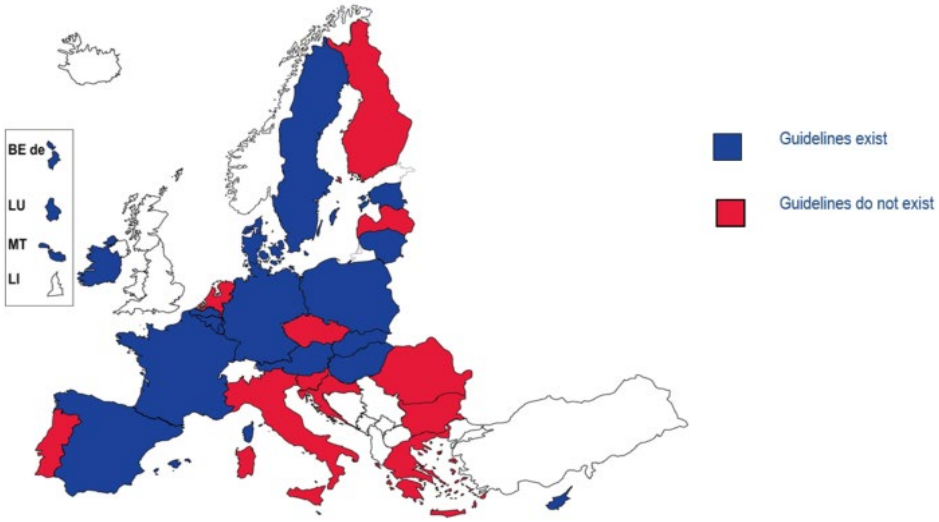
Figures below present the overall situation in the EU concerning one structural indicator from the areas of early childhood education and care (ECEC), achievement in basic skills, early leaving from education and training (ELET) and tertiary attainment.

Figure 82: At least one member of ECEC staff with a minimum of a Bachelor's level qualification (ISCED 6), 2020/21



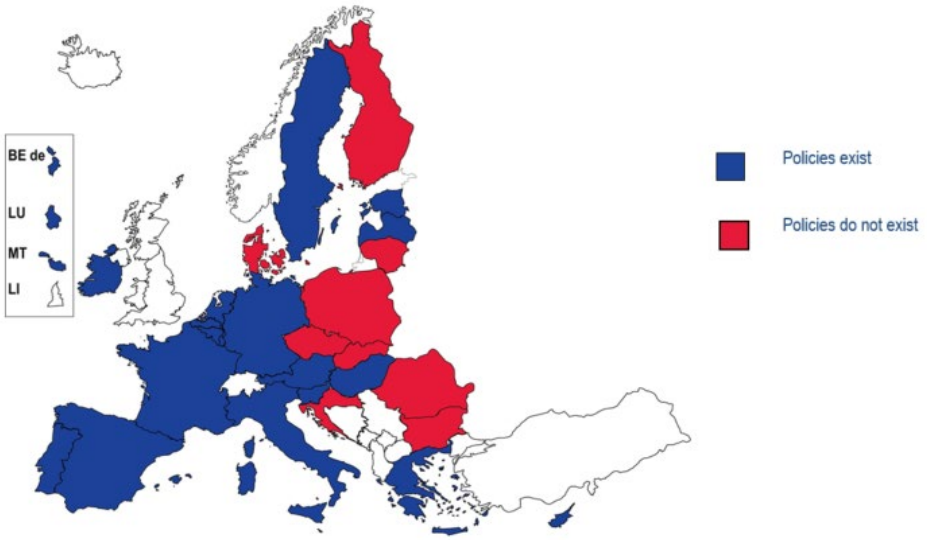
Source: Eurydice

Figure 83: Central guidelines on addressing student underachievement in initial teacher education (ITE), 2020/21



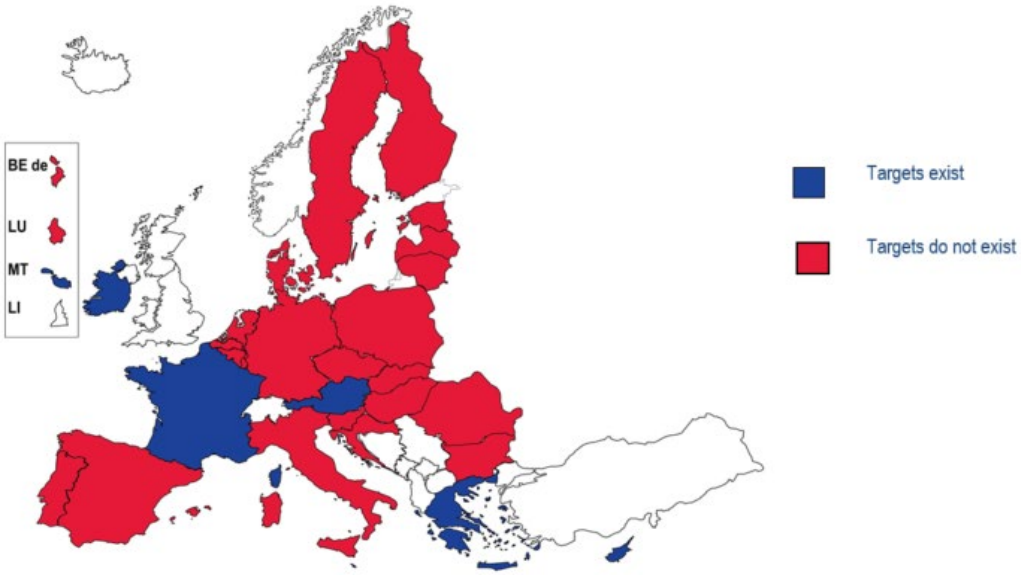
Source: Eurydice

Figure 84: Policies/measures encouraging the inclusion of ELET in ITE and/or CPD, 2020/21



Source: Eurydice

Figure 85: Quantitative targets for widening participation and/or attainment of under-represented groups in higher education, 2020/21

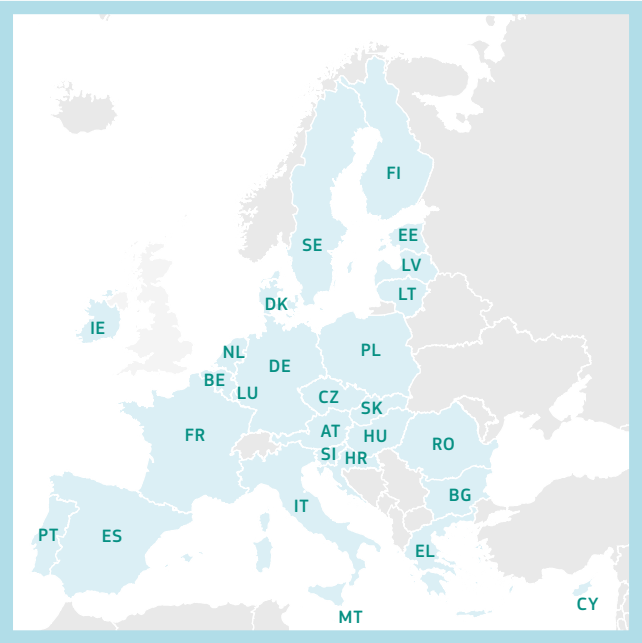


Source: Eurydice

Figure 86: ISCED levels

	ISCED 2011 levels
0	Early childhood education
1	Primary education
2	Lower secondary education
3	Upper secondary education
4	Post-secondary non-tertiary education
5	Short-cycle tertiary education
6	Bachelor or equivalent level
7	Master or equivalent level
8	Doctoral or equivalent level
9	Not elsewhere classified

Source: United Nations Educational, Scientific and Cultural Organization (UNESCO).



AT	Austria
BE	Belgium
BE fr	Belgium – French speaking community
BE fl	Belgium – Dutch speaking community
BE de	Belgium – German speaking community
BG	Bulgaria
CY	Cyprus
CZ	Czechia
DE	Germany
DK	Denmark
EE	Estonia
EL	Greece
ES	Spain
EU	European Union
FI	Finland
FR	France
HR	Croatia
HU	Hungary
IE	Ireland
IT	Italy
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
PL	Poland
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia

The 2021 Monitor is accompanied by

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ABBREVIATIONS

AES	EU Adult Education Survey (Eurostat)
C19 ISWS	COVID-19 International Student Well-being Study
COFOG	Classification of the Functions of Government
COM	Communication from the European Commission
CPD	Continuing professional development
DESI	Digital Economy and Society Index
DG EAC	Directorate-General Education, Youth, Sport and Culture (European Commission)
DG EMPL	Directorate-General Employment, Social Affairs and Inclusion (European Commission)
EACEA	Education, Audiovisual and Culture Executive Agency (European Commission)
ECE	Early childhood education
ECEC	Early childhood education and care
ECTS	European credit transfer and accumulation system
EENEE	European Expert Network on Economics of Education
EEA	European Education Area
ELET	Early leavers from education and training
ET 2020	The EU's strategic framework for European cooperation in education and training
Eurostat	Statistical Office of the European Union
GDP	Gross Domestic Product
HEIs	Higher education institutions
ICILS	International Computer and Information Literacy Study
ICT	Information and communication technology
IEA	International Association for the Evaluation of Educational Achievement
ISCED	International Standard Classification of Education
ITE	Initial teacher education
IVET	Initial vocational education and training
JRC	Joint Research Centre (European Commission)
LFS	EU Labour Force Survey (Eurostat)
NEET	Not in education, employment or training
NESET	Network of Experts working on the Social dimension of Education and Training.
NUTS	Nomenclature of territorial units for statistics
OECD	Organisation for Economic Co-operation and Development
OJ	Official Journal of the EU
PIAAC	Programme for the International Assessment of Adult Competencies (OECD)
PISA	Programme for International Student Assessment (OECD)
pps / pp	percentage points / percentage point
QA	Quality assurance
RRF	Recovery and Resilience Facility
RRP	Recovery and Resilience Plans
SDGs	Sustainable Development Goals
SILC	EU statistics on income and living conditions (Eurostat)
STEAM	Science, technology, engineering, the arts and mathematics
STEM	Science, technology, engineering and mathematics
SWD	Staff Working Document of the European Commission
TALIS	Teaching and Learning International Survey (OECD)
TEA	Tertiary level attainment
TIMSS	Trends in International Mathematics and Science Study (IEA)
UNESCO	United Nations Educational, Scientific and Cultural Organization
UOE	Common data collection of the UNESCO Institute for Statistics, OECD and Eurostat
VET	Vocational education and training

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