

1 Overview

This chapter summarises the main findings of the report. It introduces the concept of lifelong learning and discusses how the development of lifelong learning policies requires a profound paradigm change to ensure learning is responsive to lifelong evolutions. Lifelong learning is necessarily “lifewide”. It capitalises on individuals’ ability and willingness to acquire different skills and knowledge at different stages of their lives and in different contexts. The chapter presents key indicators allowing countries to benchmark their lifelong learning systems. It concludes by highlighting a set of policy principles that can guide the development of effective lifelong learning policies.

Policy implications

Recognise the heterogeneous nature of lifelong learning and lifelong learners. Lifelong learning occurs in formal, non-formal and informal settings. It involves individuals both young and old, with different experiences, motivations and attitudes. These differences influence not only whether and how people learn, but also their learning objectives. It is therefore essential to diversify the content and provision of learning, to account for the inherently heterogeneous nature of learning and learners. However, heterogeneity in learners' profiles, learning objectives, socio-demographic characteristics, attitudes towards learning and learning goals should be managed so that it does not lead to a strong separation in learning pathways, with important risks to social cohesion and inclusiveness.

Empower learners to engage in lifelong learning. Policy making should build trust in lifelong learning, but also trust learners to make the right choices. It should be learner-centric, facilitating individuals' learning journeys and empowering them with initial skills and information that will allow them to define and continually update their learning paths.

Promote information sharing. Educational and career guidance and orientation programmes should provide information on different occupations, the skills and knowledge required upon entry, and opportunities for career progression. Individuals learn about different occupations' financial rewards, opportunities for self-expression, time commitments, work environment and work-life balance.

Policy design should consider individuals' various learning objectives. The allocation public support for learning choices should be based on the distribution of benefits across individuals, existing employers and society as a whole. When evaluating the social benefits, policy makers should include a wide variety of perspectives and consider a broad range of benefits. Inclusiveness at the objective-setting stage is crucial to guarantee inclusiveness in participation and outcomes.

Embrace inclusiveness as a policy objective. Public policy has often aimed for parity of participation in learning. This objective should be replaced by a focus on inclusive policy design and implementation. Inclusive policy formulation ensures that learners are at the centre of decision-making. It can build engagement and motivation to participate in learning, by ensuring that learning provision is relevant to the short-, medium- and long-term needs of individual learners. In this manner, learners are active participants in defining learning paths that are not only affordable and accessible, but also adaptable and acceptable to all.

Public policy should promote affordability as a goal. The immediate costs of providing and participating in lifelong learning should be spread across individuals, employers and the broader community, recognising the long-term distributed benefits. In the same vein, the medium- and long-term costs of inaction should be considered alongside the immediate costs of organising provision.

Accessibility should be embraced in the design of learning programmes. This could eliminate barriers to participation, particularly of marginalised and socio-economically disadvantaged groups. Adaptability and acceptability should be paramount, with both learners and educators engaged in defining learning goals and learning methods. Thus, adopting holistic approaches when co-designing and co-ordinating programmes and strategies will not only help address learning needs and demands in a comprehensive manner, but will also promote willingness to participate and active engagement among participants.

Harness the power of technology to expand access to lifelong learning opportunities while keeping in mind the inequalities it can create.

Technology lowers the cost of accessing opportunities to develop technical skills and, as such, can be a powerful tool to promote engagement in lifelong learning. By relaxing the need for learners' physical presence at a specific time and place, technology can promote participation in learning opportunities among groups that have important time constraints or live in remote areas, entailing prohibitive travel costs to access physical learning spaces. Technology can also help organise learning opportunities matching specific learner objectives and profiles, by creating a critical mass of learners with similar needs to make such training viable. However, not all learning objectives and profiles can be adequately served by technology-based delivery. For example, individuals who lack digital skills and adequate technical infrastructure (e.g. hardware, software and connectivity) are excluded from learning opportunities that rely on such skills and technology. Furthermore, while technology can be exploited to pursue (formal) learning opportunities, it can hardly substitute for other forms of learning, such as informal workplace learning. Finally, while many forms of formal learning can be replaced by remote/online learning, other forms of learning cannot.

Build strong foundation skills, including positive attitudes towards lifelong learning. Strong foundation skills depend on both the ability and willingness to learn and put skills and knowledge to use. Information-processing skills, such as literacy and numeracy, remain key to ensure that individuals can build a broad set of skills, acquire knowledge and information, and mobilise such information effectively. Developing a habit of learning – i.e. lifelong learning attitudes – is equally important to developing information-processing abilities, so that learners can build on initial skills and adapt to changing circumstances.

Promote innovation, identify successful programmes and develop strategies to bring them to scale through continuous monitoring. The current fragmentation of formal, informal and non-formal learning provision can be exploited to promote experimentation in learning provision through innovative programmes and approaches, and a culture of programme evaluation.

Develop information systems that help monitor the effectiveness of different initiatives, identifying those that promote good outcomes, and learning from both successes and failures. Investments should also be made to determine which programmes could be brought to scale and which, by contrast, owe their success to unique characteristics that are difficult to replicate (such as the presence of an especially charismatic leader, or close ties between local employers and schools). Because learners' profiles and the context in which lifelong learning occurs change over time, the content, organisation and objectives of lifelong learning should change as well. The effectiveness of programmes and initiatives should be evaluated periodically, and the results used to update and upgrade lifelong learning frameworks and guidance.

Diversify validation and accreditation to value and recognise different forms of learning. Recognition, validation and accreditation (RVA) procedures, including for prior learning, are key to promoting lifelong learning. In OECD member countries, however, they are too often still non-existent or overly cumbersome. Hence, it is necessary to simplify RVA processes for lifelong learning, which largely involves non-formal and informal learning, by ensuring that national frameworks for RVA are communicated effectively and implemented by employers. Improved RVA procedures will empower employees, making their skills both more visible and transferable.

Create partnerships across actors. A wide range of stakeholders – including schools, the higher education sector, vocational education and training institutions, employers, associations, and civil society organisations – can help promote lifelong learning by catering to the diverse needs of different communities. Creating synergies across sectors can also ensure that individuals can navigate smoothly the transitions between forms of learning and learning at different stages. Creating partnerships across actors can also maximise opportunities for all to engage in lifelong learning.

Encourage employers to support lifelong learning. Employers could receive support to ensure that workers can participate in lifelong learning opportunities aimed at building their skills. Such support could be based on funding formulas that adequately incentivise employers to invest in learning. Employers should join forces with other local actors to provide guidance on learning opportunities to the community, thus minimising transaction and information-acquisition costs. Small enterprises and self-employed individuals should be supported in gaining access to learning opportunities.

Introduction

Before the term “lifelong learning” was used to characterise all forms of skill and competency development over the lifecycle, Paul Lengrand introduced the concept of “lifelong education” in the 1960s. Lifelong education emphasised the importance of continuous education from school to the working life (Lengrand, 1975^[1]). The concept arose in a period characterised by rapid demographic and technological progress. Today, developing systems that help individuals master the skills needed to successfully engage with the labour market or society is still highly relevant.

To ensure that all individuals are able to adapt and thrive in a rapidly changing world, it is crucial that they can access opportunities to develop and enhance their proficiency in a broad set of skills throughout their lives. The process starts in childhood and youth, continuing throughout adulthood and into old age: as its name indicates, lifelong learning happens from “the cradle to the grave”.

Designing skills policies that consider lifelong learning entails adopting both a “lifewide” and a lifelong perspective. Lifewide learning encompasses formal learning that takes place in formal settings like schools or training centres, non-formal learning (e.g. on-the-job training), informal learning (e.g. learning from co-workers) and unintentional learning derived from spontaneous social interactions in people’s homes and communities (OECD, 2019^[2]). When policies focus on lifelong and lifewide learning, they inevitably emphasise socio-emotional and motivational factors, such as willingness to learn, openness to different perspectives and perseverance. Individuals who engage in lifelong and lifewide learning must be committed to making space for learning, and approach everyday activities with the aim of improving their skills and accumulating knowledge. Lifelong learning does not involve clear learning paths leading to a well-defined destination. It is a process that guides and helps individuals navigate a reality in which the goal is continually redefined because of a changing world.

Lifelong learning is key if individuals are to succeed in labour markets and societies shaped by megatrends, such as increases in life expectancy, rapid technological changes, globalisation, migration, environmental changes and digitalisation, as well as sudden shocks such as the COVID-19 pandemic. In a fast-changing and uncertain world, lifelong learning can help individuals adapt and become resilient to external shocks, lowering their vulnerability. While providing support to individuals remains important to ensure that major structural changes do not lead to deep tears in the social fabric, creating a culture of lifelong learning gives individuals agency to manage change. This calls for evidence on the best ways to support lifelong learning journeys so that individuals can “learn how to learn”.

Disparities in access to learning opportunities in the early years have been extensively examined. Through its Programme for International Student Assessment (PISA), the OECD has played a key role in providing policy makers with detailed evidence on disparities, for instance by socio-economic condition, immigrant background and gender. Together with other international large-scale assessments of student populations, such as the Trends in International Mathematics and Science Study (TIMSS), and the Progress in International Reading Literacy (PIRLS), PISA has prompted government efforts to improve school systems around the world, both in terms of overall achievement in standardised tests and reducing disparities in achievement levels across demographic groups.

As important as schools are to reduce disparities in skill development, the large variations in access to learning opportunities outside of formal education, both in childhood and adulthood, are among the primary mechanisms driving persistent social and economic inequalities (Cunha et al., 2006^[3]). Mapping lifelong learning processes, and ensuring that such processes do not create increasingly diverging opportunities, is key to drafting policies that help societies move towards greater equity and inclusion.

The first step in designing effective lifelong learning policies is to identify all the stages in which learning can occur, how learning at each stage builds upon what happened at previous stages, and which factors promote successful transitions between stages. To this end, it is crucial to understand how learning at any given stage influences learning decisions and learning outcomes at later stages. Such interdependency arises because learning processes are characterised by complementarity rather than substitution: human brains do not have a fixed capacity to learn and do not fill up with finite amounts of information like baskets, drawers or backpacks. Acquiring new skills is easier for individuals who learned other skills in the past and have developed a habit of learning (Cunha and Heckman, 2007^[4]).

Furthermore, although learning occurs across the lifecycle, certain skills can be acquired more easily and efficiently early on, providing a long-term foundation for developing other skills as needed. Finally, strong collaboration across different sectors is crucial to ensure successful lifelong learning policies. At the government level, this requires strategic planning, co-ordination and buy-in on the part of central and local governments. It also entails devising coherent education, labour-market, economic development, social and welfare policies. Lifelong learning policies require co-operation between the public, the private sector and civil society groups, because learning can occur and be promoted in different settings. Figure 1.1 proposes a framework for understanding lifelong learning. It illustrates how decision makers need to consider five interrelated questions if lifelong learning policies are to succeed.

Figure 1.1. Framework of lifelong learning



Why focus on lifelong learning?

The technological, demographic and global changes have exacerbated the need to reframe learning with a lifelong perspective.

Fast-evolving technology has changed the nature of the skills required and rewarded in the labour market. On the one hand, the skills learned in the context of formal education or a job become obsolete more quickly. As a result, workers need to maintain, upgrade and expand their skills in order to adapt to and, if possible, anticipate technological developments. Digitalisation and automation at work mean that some of the skills needed to perform routine tasks and often used intensively in certain occupations, such as administration and production, are now less relevant (Autor, Levy and Murnane, 2003^[5]; Spitz-Oener, 2006^[6]). As a result, demand for certain skills in the labour market has declined, as shown in Chapter 5 of this report. On the other hand, technology also creates job opportunities requiring non-routine cognitive and interpersonal skills. Adapting to technological changes entails proactively engaging in learning, constantly building on solid foundation skills with specific competencies and abilities as well as skills knowledge. A simple tri-period view of life, exemplified by education-work-retirement, is obsolete in such a rapidly evolving context. If skills are defined as the capacity to carry out a complex and well-organised pattern of thinking (in the case of cognitive skills) or behaviours (in the case of behavioural skills) to achieve specific goals, then changing goals and changing contexts require individuals to acquire new skills or adapt those they developed in the past.

In the recent past, broadly corresponding to the period following the Second World War, rapid technological and social progress transformed when and how the general population acquired skills. Before the war, investments in initial education and training were limited. Few individuals continued their studies beyond the end of compulsory schooling, and only a minority participated in higher education: most developed their skills and knowledge on the job, through apprenticeships and non-formal learning. The emergence of large corporations, coupled with the expectation that workers would remain at the same firm throughout their working lives, drove the development of employer-sponsored formal and informal training within firms. Such programmes were designed to equip workers with skills that would benefit the growing firm, through greater productivity, and the worker, through career progression and higher wages. In the post-war period, rapid technological progress, higher economic well-being and intense international competition drove investments in initial education and training. In the United States and then elsewhere, initiatives emerged that extended the length of compulsory schooling, and then encouraged wider participation in post-secondary and tertiary education.

These advances led to a profound reorientation of skill investments and a polarisation of learning pathways. Individuals who invested heavily in initial education and training typically continued to develop skills by participating in adult learning programmes, allowing them to exploit technological innovations and acquire complementary skills. Those who did not invest in initial education and training – and who therefore stood to benefit the most from developing their skills as adults – often failed to do so. As a result, many of these workers failed to adapt to technological innovations.

Technological innovations interact with other factors to shape the need for individuals to invest in learning over the life course. Life expectancy is increasing in many OECD countries, while birth rates are declining. Individuals are increasingly required to work longer and invest in lifelong learning, both to maintain existing skills and acquire new skills, despite natural ageing processes. The share of the population aged 50 and older is projected to grow from 37% in 2020 to 45% across OECD countries by 2050, leading to increases in the retirement age and potentially less generous pension schemes (OECD, 2020^[7]). Meanwhile, governments are taking action to mitigate the effects of global warming, climate change and pollution levels, with far-reaching implications on industrial policies, and structural investments leading to a reallocation of production among sectors and industries.

As technological, demographic and environmental changes, along with globalisation, are making it even more relevant to engage in lifelong learning, the labour market is evolving in ways that can make it harder for many workers to do so, precisely when it is most needed. For example, employers are increasingly resorting to short-term and temporary contracts, so that workers often need to acquire new job-specific knowledge and skills. Such contracts also reduce incentives for employers to invest in skill development for temporary workers, as such investments reduce current output and benefits typically accrue over a longer timeframe.

Two major shocks in the past 15 years have influenced labour markets worldwide, with important implications for individuals' ability to pursue lifelong learning and potential labour-market restructuring. The great financial crisis of 2008 and the ongoing COVID-19 pandemic have led to large increases in the number of individuals who are not working, particularly youngsters, whose career prospects may suffer in the long term because of their inability to engage in learning at work. Furthermore, disruptions leading to a growing reliance on digital tools, have increased the need for individuals to engage in learning opportunities that equip them with specific digital skills.

Finally, globalisation affects local demand for skills through shifting industrial and occupational structures in response to market integration and international competitions, as well as the accelerating transnational migration of workers up until the pandemic struck. Even migrants who resettle because of employment will need to adapt or acquire knowledge and skills to operate effectively in a new economic and social context. Individuals who are forced to migrate because of environmental or geopolitical upheavals are likely to have even greater learning needs. Yet migrants may struggle to access learning opportunities because of

linguistic barriers, insufficient information, difficulties in having their qualifications and licences recognised, and a lack of established social networks.

When does learning occur? The stages of lifelong learning

Lifelong learning encompasses all forms of skill development and knowledge acquisition occurring over the lifecycle. Learning is a dynamic and long-lasting process that begins in childhood, continues during the schooling years, and lasts well into adulthood and even retirement. What is being learned, and how learning occurs, can differ over the lifecycle: what one is able to learn, and how efficiently one learns, depends on the interaction between biological determinants and social/institutional settings. Skills can be developed at different stages, and those that are acquired in a particular phase tend to facilitate the acquisition of new skills at subsequent stages. Therefore, skill development that takes place later in life depends on the stock of skills acquired earlier in life, as well as on prior investments: the benefits of investments in skill development at any one point depend on the level of skills an individual previously acquired (Kautz et al., 2014^[8]).

Although skills can be acquired throughout life, certain periods are critical for developing specific skills. For example, individuals' general ability to learn (fluid intelligence) can be influenced prenatally and until adolescence. It cannot be easily modified beyond this early period, although growing evidence shows that the malleability of specific skills depends on each individual's social context (Turkheimer et al., 2003^[9]). Similarly, while socio-emotional and motivational skills start forming early, they are malleable until later stages, and certainly into young adulthood. This suggests that while early childhood remains a sensitive period for stimulating skills, interventions in adulthood can still shape skill development (Kautz et al., 2014^[8]). By contrast, knowledge and experience (crystallised intelligence) can be acquired throughout the life course.

Where does learning occur? Setting matters for lifelong learning

Lifelong learning covers not only learning that takes place in formal settings like schools, higher education institutions, or vocational education and training centres, but also informal and non-formal learning imparted in workplaces, and unintentional learning stemming from spontaneous social interactions in people's homes and communities (OECD, 2019^[2]). Thus, learning can be characterised as "formal", "non-formal" and "informal", depending on the form it takes.

Formal learning is structured around well-specified objectives, and produces qualifications certifying the learner has met these objectives. Non-formal learning comprises organised learning that is designed to impart certain skills or knowledge, but is not recognised through formal certifications or qualifications. Participation in workshops and employer-provided training are forms of non-formal learning. Informal learning involves learning that is not organised nor objective-oriented, including learning through social interactions in school, work or general community settings. Activities that require learning from others and learning by doing are forms of informal learning.

Technology enables new forms of learning: individuals can participate in learning activities anytime and anywhere if they have the right tools and connectivity, and the ability to use them. For example, teleconferencing facilities allow individuals to participate in formal or non-formal learning sessions while at home or at work organised and delivered by instructors. Asynchronous training further expands opportunities to access learning: not only can individuals access such materials from anywhere (rather than from designated training centres), but they can also do so in their own time, fitting learning opportunities around other commitments rather than the other way around. Digital technologies, such as virtual reality systems, also allow learners to acquire and practice skills safely and cheaply, working on

simulated scenarios that would normally entail operating complex machines or performing procedures on live individuals.

Although technology can reduce the barriers to participation in lifelong learning related to time use and allocation, it creates new barriers related to the availability of adequate equipment and connectivity. Today, the ability to acquire new skills through technology is even more dependent on prior skills than the acquisition of new skills in face-to-face settings. First, individuals must possess digital skills. Second, they must have the capacity to initiate and sustain self-regulated learning with low levels of external motivational drivers (such as a teacher or colleague) and without a prior social commitment to engage in learning at a specific time and place.

Just as some skills are best developed at different stages of individuals' lives, so are different skills best developed in different settings, so that various settings could be used to ensure effective skill development. For example, some learners may feel threatened, intimidated or unmotivated by schools and formal education, for a variety of reasons: they may dislike the way in which learning is typically structured in such settings, they had negative experiences as youngsters, or they face discrimination and prejudice. For these individuals, learning from colleagues in non-formal and informal contexts, which are less characterised by power dynamics, and where learning is less abstract and more practical, could prove more conducive to acquiring skills. Moreover, while formal settings may be best suited to helping individuals acquire foundation skills, non-formal and informal settings could be more effective at promoting specific skills and knowledge.

What learning? Skills to mobilise individuals' knowledge, attitudes and values

To thrive in labour markets and societies, individuals must possess a combination of skills and knowledge, and be able to acquire new skills and new knowledge when needed. At the individual level, the capacity to adjust to changing circumstances rests on the ability and willingness to learn new skills. At the societal level, economic growth and social cohesion in a period of rapid technological and social transformations depend on individuals' goals and objectives when using their skills in the workplace and everyday life.

Building strong foundation skills in initial education and training is crucial if individuals are to possess the cognitive capacity to acquire new skills and knowledge, as well as the emotional and motivational capacity to do so. Effectively engaging in lifelong learning means that individuals can pursue learning paths that are both aligned with their personal goals and relevant to the needs of the labour market.

Psychological research on intelligence can be used to characterise skills, and how they interact with knowledge. Intelligence, as conceived by Gottfredson (1997^[10]) and Neisser et al. (1996^[11]) comprises the capacity to solve problems, understand complex ideas and think abstractly while learning from experience and adapting to the context in which reasoning takes place. According to Hunt (2009, p. 20^[12]), this capacity is "produced by an interaction between genetic potential and environmental support" and as such, is malleable to context, individual choices and policy interventions. Promoting this capacity is therefore a key objective of lifelong learning.

The Carroll model of intelligence provides a categorisation of intelligence, comprising a lower stratum of 50 to 60 narrowly defined independent abilities, 8 to 10 broad independent abilities, and a higher single factor "g" of general intellectual ability (Carroll, 1993^[13]). This categorisation was further refined in the Cattell-Horn-Carroll factor model, which integrates the Carroll model with Cattell's (1963^[14]) distinction between fluid and crystallised intelligence at the middle stratum. Fluid intelligence comprises the ability to solve novel reasoning problems and is independent of acquired knowledge, whereas crystallised intelligence involves acquired knowledge and characterises the ability to use it to solve problems.

Understanding the distinctions between higher-level constructs and narrowly defined abilities, and between abilities that rely on knowledge and those that do not, are crucial to developing effective lifelong learning

skills policies. However, such policies also depend on a vital ingredient without which active participation in learning is impossible: the motivation to learn. Motivation shapes engagement and participation in learning. It also determines whether participation effectively results in the development of skills and acquisition of knowledge.

How to promote lifelong learning? Intersectoral policy approaches that place learners at the centre

Lifelong learning policies require strong co-ordination between different actors and institutions to ensure that individuals learn to learn as youngsters and remain motivated to keep learning throughout life. Promoting participation in lifelong learning entails mobilising a range of stakeholders, ideally while considering the interrelated nature of learning experiences. The aim is to ensure that learners of all ages and backgrounds engage durably in the process, by developing learning pathways that enable them to participate actively in the design and implementation of learning opportunities. This requires an approach that is centred on the needs of learners, but also responsive to the evolving demand for skills and knowledge in the labour market and society.

The design of lifelong learning policies rests on the actions of professionals specialised in the early years, including early childhood educators, teachers, school principals and local education officers, as well as orientation specialists operating in schools and career advisors outside of schools. It relies on collaboration between tertiary education professionals, vocational education and training professionals, and social partners engaged in preventing early school leaving. It builds on the collaboration between public and private actors, including employers, national and local-level policy makers, business associations, worker unions and non-governmental organisations. It acknowledges the potential value of peer and intergenerational learning, but also directs resources to ensure that the informal and non-formal transmission of learning opportunities does not create persistent disparities but rather, promotes social cohesion and societal well-being.

Lifelong learning can allow individuals to be flexible and adaptable, but its organisation depends on strong co-ordination among policy sectors. For example, as family responsibilities are a key barrier to participation among many workers, supporting participation entails delivering opportunities that workers recognise as being relevant to them, as well as promoting access to childcare or elderly care, and providing financial support to make it affordable. Barriers to participation in learning are often interrelated; they should not be tackled in isolation, but rather through comprehensive strategies. Such strategies should also be well-aligned with other policy areas (including labour and social policy) to avoid conflicting incentives and misaligned objectives.

The following sections in this chapter summarise the key findings emerging from the analyses conducted and the review of policy approaches to support lifelong learning.

Starting young: Building the foundations of lifelong learning

Young people's attitudes towards learning shape how well they acquire skills in school. It also increases the likelihood that they will remain engaged with learning as adults, because learning becomes a habit.

Evidence from the 2018 PISA study indicates that when comparing 15-year-old students with similar characteristics in terms of socio-economic background, gender, age, immigration status and type of school attended, youngsters who developed stronger attitudes towards learning performed significantly better in reading, mathematics and science than those with weaker attitudes. In other words, they developed stronger foundation skills allowing them to process information. Students' *enjoyment of reading*, *motivation to master tasks* and *self-efficacy* in particular were highly associated with achievement. At the same time,

students with strong learning attitudes generally expected to remain in education longer and to work as professionals and managers – careers that require continuous learning and professional development, as well as important investments in skill development through participation in tertiary-level education.

As important as learning attitudes are in general, they have been especially important in the face of disruptions to regular schooling worldwide since the COVID-19 pandemic hit in 2020. Among the many challenges facing school-aged learners is the need to rely much more on intrinsic motivation and self-directed learning than during in-person schooling. Such dispositions to learning are particularly important for students from lower socio-economic backgrounds, who are generally less likely to receive support from their families or to have access to good information and communication technology infrastructure at home. Many of these learners have had their learning progression disrupted during distant learning and home schooling, and only those with high motivation to learn have been able to remain engaged in learning. Strong motivation is therefore essential, on a par with connectivity, access to digital devices and digital skills for both students and teachers.

Nevertheless, Table 1.1 indicates that not all students were equally likely to have developed strong learning attitudes by the time the pandemic disrupted schooling worldwide and many of these learners may have had their learning progression especially disrupted as a result. On average, students with at least one parent who obtained tertiary qualifications had levels of enjoyment of reading that were around 20% of a standard deviation higher than students whose parents did not obtain tertiary qualifications. Similarly, they reported levels of self-efficacy that were 10% of a standard deviation higher than students whose parents did not obtain tertiary qualifications. Socio-economically disadvantaged students, boys, and students with an immigrant background were considerably less likely to have developed positive learning attitudes by the age of 15. Socio-economic disparities were more pronounced than the OECD average in Australia and Germany, and less pronounced in Latvia, the United Kingdom and the United States. Gender disparities were most marked in Germany and Turkey. Disparities by immigrant status were the widest in Sweden and the United Kingdom. Girls expressed considerably higher levels of enjoyment of reading than boys – on average, differences were as high as 60% of a standard deviation across OECD countries – but they reported marginally lower levels of self-efficacy than boys.

Table 1.1. Snapshot of learning attitudes at age 15


	Index of enjoyment of reading				Index of self-efficacy			
	Mean index	High vs. low parental education ¹	Girls vs. boys	Immigrant vs. native	Mean index	High vs. low parental education ¹	Girls vs. boys	Immigrant vs. native
	Mean	Index diff.	Index diff.	Index diff.	Mean	Index diff.	Index diff.	Index diff.
OECD average	-0.05	0.192	0.596	0.067	0.00	0.115	-0.086	0.015
EU average	-0.10	0.190	0.650	0.005	-0.01	0.111	-0.068	-0.006
Australia	-0.13	0.263	0.534	0.154	0.03	0.192	-0.065	0.108
Austria	-0.28	0.185	0.755	-0.046	0.08	0.100	0.001	0.018
Belgium	-0.44	0.184	0.571	0.207	-0.21	0.057	-0.184	0.247
Canada	0.01	0.193	0.631	0.180	0.13	0.150	-0.107	0.093
Chile	0.04	0.309	0.611	0.088	0.29	0.069	-0.117	0.032
Czech Republic	-0.05	0.307	0.787	-0.011	-0.28	0.062	-0.067	-0.113
Denmark	-0.37	0.302	0.477	0.245	0.05	0.111	-0.224	0.001
Estonia	0.00	0.221	0.691	0.077	-0.03	0.186	-0.050	-0.130
Finland	-0.25	0.139	0.698	0.113	-0.03	0.144	-0.027	-0.016
France	-0.12	0.193	0.559	-0.088	-0.10	0.168	-0.240	0.194
Germany	-0.29	0.279	0.825	-0.013	-0.02	0.234	-0.130	0.001
Greece	0.11	0.236	0.568	-0.095	0.05	0.120	-0.024	-0.121
Hungary	0.03	0.171	0.815	0.109	0.17	0.111	-0.085	0.137

	Index of enjoyment of reading				Index of self-efficacy			
	Mean index	High vs. low parental education ¹	Girls vs. boys	Immigrant vs. native	Mean index	High vs. low parental education ¹	Girls vs. boys	Immigrant vs. native
	Mean	Index diff.	Index diff.	Index diff.	Mean	Index diff.	Index diff.	Index diff.
Iceland	-0.22	0.113	0.430	0.043	0.10	0.139	-0.170	-0.326
Ireland	-0.07	0.173	0.526	0.249	-0.04	0.131	-0.140	0.104
Israel	0.09	0.266	0.466	-0.001	0.17	0.114	0.170	-0.130
Italy	0.09	0.274	0.841	-0.098	-0.03	0.210	-0.070	-0.129
Japan	0.30	0.094	0.210		-0.61	0.123	-0.032	
Latvia	0.02	0.023	0.610	0.142	-0.19	-0.063	0.002	0.013
Lithuania	-0.11	0.158	0.644	0.039	0.23	0.051	0.176	-0.318
Luxembourg	-0.24	0.224	0.620	0.105	-0.01	0.234	-0.053	-0.035
Mexico	0.35	0.136	0.477	-0.059	0.36	0.136	-0.002	-0.184
Netherlands	-0.57	0.234	0.659	0.221	-0.11	0.119	-0.173	0.260
New Zealand	-0.08	0.175	0.492	0.209	-0.02	0.147	-0.041	0.142
Norway	-0.51	0.095	0.582	0.335	-0.11	0.142		
Poland	0.18	0.119	0.699		-0.06	0.013	-0.097	
Portugal	0.08	0.186	0.744	0.036	-0.01		-0.110	-0.044
Korea	0.23	0.295	0.156		-0.04	0.143	-0.244	
Slovak Republic	0.11	0.298	0.783	-0.198	-0.28	0.136	-0.081	0.054
Slovenia	-0.22	0.236	0.665	-0.037	-0.05	0.079	-0.209	0.021
Spain	0.08	0.078	0.729	0.085	0.17	0.11	-0.063	-0.071
Sweden	-0.31	0.163	0.420	0.285	-0.06	0.038	-0.192	0.188
Switzerland	-0.32	0.226	0.678	-0.023	0.02	0.104	-0.065	0.048
Turkey	0.68	0.249	0.757	-0.130	0.36	0.182	0.183	-0.123
United Kingdom	-0.21	0.013	0.492	0.342	-0.17	0.044	-0.271	0.214
United States	-0.07	0.123	0.510	0.080	0.17	0.035	-0.033	-0.091

Note: Diff.= difference. A blue shading indicates that the value of a specific indicator in a country is statistically significant above the relevant estimate for the OECD average (difference significant at the 5% level). A grey shading indicates that the value of a specific indicator in a country is statistically significant below the relevant estimate for the OECD average (difference significant at the 5% level). A white shading indicates that the value of a specific indicator in a country is not statistically significant different from the relevant estimate for the OECD average (the difference is not significant at the 5% level). Purple indicates that no data are available for a specific indicator. Differences across groups that are statistically significant at the 5% level are denoted in bold. All indices are standardised to have a mean of 0 and a standard deviation of 1 across OECD countries so that a difference of, for example, 0.5 on an index corresponds to a difference of 50% of a standard deviation. Differences smaller than 0.3 are considered small, differences between 0.3 and 0.5 are considered large, and differences over 0.5 are considered very large.

1. High parental education refers to students with at least one parent who obtained tertiary qualifications. Low parental education refers to students whose parents did not obtain tertiary degrees.

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

StatLink  <https://stat.link/twxs6>

Given the crucial role of learning attitudes in promoting effective learning and academic achievement it is important for governments and education policy makers to identify which policies can maximise the benefits of learning, particularly of distant and remote learning. Policies aiming to increase the support provided to young learners by their families and teachers bear the greatest promise of success.

Among the factors shaping the formation of lifelong learning attitudes, teachers and the practices they adopt appear particularly effective. Other things being equal, students who perceive their teachers as more supportive of their learning tend to display better attitudes towards learning than those who receive less support from their teachers. In particular, specific pedagogies or behaviours – such as teachers' enthusiasm for the content of instruction, their interactions with pupils during the lessons and their practice

of stimulating their critical ability – can help develop students *learning goals, motivation to master tasks, self-efficacy and enjoyment of reading*.

Table 1.2 illustrates the variation across education systems and schools with different characteristics in the proportion of children near the end of their compulsory studies in 2018 whose teachers displayed a high level of enthusiasm and put in place pedagogical approaches to stimulate their reading habits. On average, students in schools with an advantaged socio-economic composition reported that their teachers had greater levels of enthusiasm compared to those attending schools with a socio-economically disadvantaged composition, a difference corresponding to 10% of a standard deviation. Similarly, in many countries, teachers in private schools expressed greater enthusiasm than teachers in public schools.

Table 1.2. Snapshot of teacher practices at the secondary-school level

	Index of teacher enthusiasm				Index of teacher stimulation of reading			
	Mean Index	Top vs. bottom quartile of school-level socio-economic status	Private vs. public school	School located in rural vs. urban community	Mean index	Top vs. bottom quartile of school-level socio-economic status	Private vs. public school	School located in rural vs. urban community
	Mean index	Index diff.	Index diff.	Index diff.	Mean index	Index diff.	Index diff.	Index diff.
OECD average	0.012	0.118	0.148	0.052	-0.003	0.09	0.117	0.00
EU average	-0.054	0.123	0.144	0.070	-0.024	0.11	0.119	0.00
Australia	0.199	0.257	0.188	-0.105	0.176	0.24	0.112	-0.07
Austria	-0.090	0.009	-0.019	0.088	-0.147	0.04	0.040	-0.07
Belgium	0.045	-0.003			-0.169	-0.06		
Canada					0.216	0.07	-0.005	-0.08
Chile	0.321	0.084	0.080	0.064	0.274	-0.05	0.075	0.15
Czech Republic	-0.307	0.344	0.119	-0.030	-0.239	0.29	0.217	-0.18
Denmark	0.188	0.130	0.097	0.032	0.125	0.19	0.186	0.01
Estonia	-0.083	0.180	0.401	0.065	-0.110	0.10	0.292	-0.06
Finland	-0.147	0.207	0.254	0.111	-0.200	0.20	0.207	-0.06
France	0.029				-0.047			
Germany	-0.117	0.125	0.083		-0.085	-0.03	-0.008	
Greece	-0.225	0.018	0.355	0.134	0.019	0.10	0.330	0.00
Hungary	-0.030	0.222	0.062	-0.065	0.075	0.34	0.056	-0.04
Iceland	0.050	0.286		-0.096	-0.169	0.14		-0.07
Ireland	0.136	0.132	0.028	0.070	0.064	0.09	0.040	0.07
Israel	-0.080	-0.284		0.007	-0.099	-0.15		-0.06
Italy	-0.072	0.145	0.134	0.376	-0.209	0.07	0.137	0.35
Japan	-0.236	0.181	-0.010		0.127	0.19	-0.088	
Latvia	-0.195	0.049	0.237	0.004	0.092	0.09	-0.011	-0.11
Lithuania	-0.076	0.096	0.137	0.020	0.230	0.22	0.263	-0.03
Luxembourg	-0.158	0.204	0.173		-0.075	0.10	0.061	
Mexico	0.263	-0.104	0.033	0.164	0.087	-0.21	0.013	0.22
Netherlands	-0.183	0.278	0.001		-0.386	0.14	-0.037	
New Zealand	0.229	0.258	0.164	-0.063	0.158	0.15	0.164	-0.14
Norway	0.087	0.122			-0.220	0.19		
Poland	-0.240	0.000	0.055	0.187	0.109	0.03	0.164	0.11
Portugal	0.103	0.018	0.331	0.237	0.118	-0.09	0.229	0.11
Korea	0.437	0.164	0.067		0.344	0.04	0.001	

	Index of teacher enthusiasm				Index of teacher stimulation of reading			
	Mean Index	Top vs. bottom quartile of school-level socio-economic status	Private vs. public school	School located in rural vs. urban community	Mean index	Top vs. bottom quartile of school-level socio-economic status	Private vs. public school	School located in rural vs. urban community
	Mean index	Index diff.	Index diff.	Index diff.	Mean index	Index diff.	Index diff.	Index diff.
Slovak Republic	-0.270	0.012	-0.119	0.110	-0.089	0.12	-0.074	0.02
Slovenia	-0.104	0.222	0.489	0.156	-0.082	0.30	0.326	0.18
Spain	0.034	0.036	0.143	0.123	-0.309	-0.06	0.081	0.03
Sweden	0.011	0.155	0.154		-0.064	0.09	0.115	
Switzerland	0.106	0.118	0.191	-0.060	-0.021	0.15	0.267	-0.01
Turkey	-0.098	-0.018	0.141		0.073	0.10	0.158	
United Kingdom	0.231	0.122	0.085	-0.021	0.149	0.03	0.069	-0.12
United States	0.246	0.248	0.520	0.000	0.204	0.26	0.435	-0.23

Note: Diff.= difference. A blue shading indicates that the value of a specific indicator in a country is statistically significant above the relevant estimate for the OECD average (difference significant at the 5% level). A grey shading indicates that the value of a specific indicator in a country is statistically significant below the relevant estimate for the OECD average (difference significant at the 5% level). A white shading indicates that the value of a specific indicator in a country is not statistically significant different from the relevant estimate for the OECD average (the difference is not significant at the 5% level). Purple indicates that no data are available for a specific indicator. Differences across groups that are statistically significant at the 5% level are denoted in bold. All indices are standardised to have a mean of 0 and a standard deviation of 1 across OECD countries so that a difference of, for example, 0.5 on an index corresponds to a difference of 50% of a standard deviation. Differences smaller than 0.3 are considered small, differences between 0.3 and 0.5 are considered large and differences over 0.5 are considered very large.

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

StatLink  <https://stat.link/i420of>

Table 1.3. Snapshot of parental emotional support for 15-year-old students

	Index of parental emotional support			
	Mean index	High vs. low parental education ¹	Girls vs. boys	Students with an immigrant background vs. students without an immigrant background ²
	Mean	Index diff.	Index diff.	Index diff.
OECD average	0.00	0.139	0.134	-0.132
EU average	-0.04	0.133	0.168	-0.158
Australia	0.14	0.191	0.129	0.001
Austria	0.15	0.113	0.227	-0.088
Belgium	-0.03	0.128	0.153	0.003
Canada				
Chile	0.06	0.051	0.045	-0.047
Czech Republic	-0.33	0.090	0.030	-0.413
Denmark	0.12	0.249	0.158	-0.123
Estonia	-0.20	0.173	0.107	-0.296
Finland	-0.05	0.173	0.088	-0.135
France	0.05	0.074	0.095	-0.057
Germany	0.08	0.164	0.217	-0.167
Greece	-0.04	0.117	0.242	-0.246
Hungary	0.00	0.134	0.084	0.218

	Index of parental emotional support			
	Mean index	High vs. low parental education ¹	Girls vs. boys	Students with an immigrant background vs. students without an immigrant background ²
	Mean	Index diff.	Index diff.	Index diff.
Iceland	0.32	0.190	0.109	-0.528
Ireland	0.18	0.097	0.252	-0.137
Israel				
Italy	-0.17	0.061	0.183	-0.294
Japan	-0.26	0.090	0.285	
Latvia	-0.31	0.229	0.070	-0.033
Lithuania	0.04	0.199	0.268	-0.524
Luxembourg	-0.06	0.144	0.120	-0.224
Mexico	0.07	0.160	0.119	-0.040
Netherlands	0.09	0.124	0.126	-0.040
New Zealand	0.18	0.163	0.133	-0.039
Norway	0.17	0.264	0.128	-0.199
Poland	-0.36	0.180	0.054	
Portugal	0.25	0.158	0.127	-0.156
Korea	0.09	0.212	-0.016	
Slovak Republic	-0.26	0.101	0.180	-0.007
Slovenia	-0.03	0.085	0.224	-0.204
Spain	0.04	0.159	0.195	-0.214
Sweden	-0.01	0.153	0.131	-0.004
Switzerland	0.13	0.107	0.171	-0.211
Turkey	0.02	0.095	0.290	-0.172
United Kingdom	0.07	0.119	0.020	-0.094
United States	0.08	0.164	0.047	-0.122

Note: Diff.= difference. A blue shading indicates that the value of a specific indicator in a country is statistically significant above the relevant estimate for the OECD average (difference significant at the 5% level). A grey shading indicates that the value of a specific indicator in a country is statistically significant below the relevant estimate for the OECD average (difference significant at the 5% level). A white shading indicates that the value of a specific indicator in a country is not statistically significant different from the relevant estimate for the OECD average (the difference is not significant at the 5% level). Purple indicates that no data are available for a specific indicator. Differences across groups that are statistically significant at the 5% level are denoted in bold. Data refer to 15-year-old students surveyed in the PISA study conducted in 2018. All indices are standardised to have a mean of 0 and a standard deviation of 1 across OECD countries so that a difference of, for example, 0.5 on an index corresponds to a difference of 50% of a standard deviation. Differences smaller than 0.3 are considered small, differences between 0.3 and 0.5 are considered large, and differences over 0.5 are considered very large.

1. High parental education refers to students with at least one parent who obtained tertiary-level qualifications. Low parental education refers to students whose parents did not obtain tertiary degrees.

2. Students with an immigrant background are students who were born outside the country in which they sat the PISA test in 2018, or whose parents were born outside the country.

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

StatLink  <https://stat.link/h6mnu7>

Teachers' ability to influence the development of students' learning attitudes is related to the support they receive from schools and more broadly, education systems. For example, providing teachers with continuous training or professional development – especially if integrated into their workday – and encouraging collaborative environments with their colleagues can promote effective teaching practices.

Together with teachers, families play a key role in furthering children's lifelong learning attitudes. When parents provide emotional support to their children through behaviours that support their efforts and enhance their confidence, these children are more likely to internalise strong lifelong learning attitudes.

Additionally, students whose parents engage in social and political discussions, and spend time talking to them, are more likely to develop stronger learning attitudes than peers whose parents are less involved. Table 1.3 shows considerable variations among countries in parents' readiness to provide emotional support to their children. It reveals that socio-economically disadvantaged parents, and parents with immigrant backgrounds, may experience barriers to doing so effectively, reducing their children's readiness to learn throughout life. For example, on average across OECD countries 15-year-old students with at least one parent who had tertiary degrees were more likely to report receiving emotional support from their parents than students whose parents did not have tertiary degrees – a difference corresponding to around 15% of a standard deviation, but as high as 25% of a standard deviation in Norway.

Obstacles to effective parental engagement with their children's learning include lack of awareness of its importance, lack of knowledge and information on how parents can effectively engage, and lack of time to do so. Increasing parental participation, both in the earlier stages of a child's education and in adolescence, requires interventions that act on parental role construction, and strengthen links and communications between schools and parents. When schools organise initiatives that inform parents on practices they can embrace to support their children's learning, parental involvement increases. Providing lifelong learning opportunities to parents is also key to improving outcomes for the next generation.

During the pandemic, when parental support became crucial to enable many children to remain engaged with remote learning, many parents struggled to provide such support because of competing demands on their time, as well as stress induced by the health situation and the restrictions enforced to reduce the spread of COVID-19. Many governments have put in place interventions to ease the tension facing parents and children, such as introducing or extending leave opportunities for family reasons (OECD, 2020^[16]). Complementary efforts include providing information to help families and youngsters remain engaged with education and learning, instituting programmes to distribute hardware and establish connectivity so that children can access online learning, and creating dedicated platforms to help parents support their children's learning.

Although the pandemic and the associated reductions in face-to-face learning have led many children to experience lower-than-expected development of academic skills and knowledge, the greatest long-term risk is that the current generation of students may fail to develop the learning attitudes that sustain lifelong learning. With the right support, compensating for the lack of progress induced by disrupted schooling is possible – but not without a firm belief in the value of learning and a strong motivation to learn, underpinned by a mindset that welcomes learning in different forms and different settings.

In the short term, the pandemic could lead to increases in early school leavers and dropout rates. In the medium and long term, it could lead to lower engagement with learning throughout life, precisely at a time when all actors are called upon to step up efforts to ensure deep engagement with lifelong learning in order to weather the structural changes induced by the pandemic.

Beyond schooling: Promoting effective transitions into further education, training and the labour market

The early years represent a crucial period for developing foundation skills and attitudes that sustain lifelong learning. Although children already display differences in aptitude and attitudes, school systems are designed to guarantee that all children receive broadly similar educational experiences, although systems may differ in the amount and timing of the differentiation introduced.

The years marking the transition between adolescence and early adulthood represent an important period of rapid and profound changes. These include not only children's biological changes, but also important changes in the opportunities available to individuals and their agency over the direction of their learning trajectories. While biological changes are universal, agency acquisition differs vastly depending on a country's social and institutional features. These often interact with the educational, social, economic and

cultural capital on which individuals can rely because of their family background. From the teenage years onwards, opportunities for skill development become highly differentiated: individuals can choose for the first time to pursue various forms of education and training, or to engage in informal and non-formal learning opportunities in the workplace. The extent to which differentiation shapes individuals' lifelong learning trajectories can vary markedly across countries and groups of individuals within each country.

Individuals' experiences during this period can set them on divergent trajectories in their work, social and personal life, leading them to acquire key skills and consolidate lifelong learning habits. The pandemic has caused major disruptions in the provision of higher education and vocational education programmes, training courses and internships. It has also caused reductions in new labour market opportunities and disruptions in work patterns, with a shift to remote working or physically distanced work. Such disruptions may have pervasive long-term effects on youngsters, by shaping the opportunities available to them in the years immediately following the end of compulsory schooling. Identifying which groups may be especially vulnerable, and what factors reduce vulnerability, can help design policies that support vulnerable youngsters as the pandemic unfolds, and in the years to come.

The lack of harmonised longitudinal cross-country evidence prevents a detailed assessment of the manner in which skills – including information-processing skills and socio-emotional and motivational skills – previously evolved during the transition from the teenage years into young adulthood. However, it is possible to identify changes in achievement at the population level for similar birth cohorts. Table 1.4 shows that during the transition from the end of compulsory schooling (age 15) to young adulthood (age 27), literacy achievement for the birth cohort of individuals born in 1984/85 in OECD countries grew on average by around 30% of a standard deviation. Literacy achievement grew the most in Belgium, the Czech Republic, Germany, Israel, Japan and Poland. Within countries, literacy achievement grew more for the 1984/85 birth cohort among low achievers and individuals with tertiary-educated parents.

Table 1.4. Snapshot of achievement growth between age 15 and age 27

	Literacy levels		Literacy achievement growth				
	Age 15 (PISA 2000/03)	Age 26-28 (PIAAC 2012/15)	Mean	10 th percentile	90 th percentile	Low parental education ¹	High parental education ¹
	Mean score	Mean score	Score point diff.	Score point diff.	Score point diff.	Score point diff.	Score point diff.
OECD average	268	282	13.5	14.56	11.90	9.54	14.18
EU average	268	282	13.9	14.46	11.66	10.89	15.41
Australia	280	288	7.8	13.17	6.56	8.65	6.12
Austria	270	282	11.8	13.72	10.23	9.32	11.55
Belgium*	270	294	24.3	41.61	13.79	15.82	33.63
Canada	283	286	3.2	2.96	5.51	3.29	7.07
Chile	224	233	9.7	5.57	20.15	9.67	3.71
Czech Republic	263	285	22.7	23.81	12.30	22.87	21.69
Germany	259	284	25.2	35.07	13.45	23.94	11.93
Denmark	265	285	20.1	11.27	19.04	14.67	21.73
Spain	263	263	-0.6	-7.14	3.15	-1.98	4.77
Finland	289	307	18.1	21.53	20.61	17.95	18.62
France	269	279	10.4	3.79	11.11	10.21	13.92
United Kingdom*	278	281	3.6	-5.84	4.49	4.05	5.85
Greece**	254	251	-3.1	4.26	-4.83	-0.81	2.78
Ireland	279	276	-3.3	-4.94	-2.37	-5.75	-1.05
Israel	244	271	27.0	29.20	25.57	29.02	16.19
Italy	261	265	4.2	5.77	2.21	4.22	16.13
Japan	277	310	32.6	47.32	23.16		27.57
Korea	278	294	15.6	20.26	16.07	16.38	14.32

	Literacy levels		Literacy achievement growth				
	Age 15 (PISA 2000/03)	Age 26-28 (PIAAC 2012/15)	Mean	10 th percentile	90 th percentile	Low parental education ¹	High parental education ¹
	Mean score	Mean score	Score point diff.	Score point diff.	Score point diff.	Score point diff.	Score point diff.
Netherlands	282	299	17.6	14.15	20.13	12.40	20.93
Norway	269	288	19.0	14.76	13.57	7.84	25.47
New Zealand	280	285	5.0	12.41	-0.94	-5.20	6.10
Poland	257	281	24.6	28.50	22.91	23.83	17.47
Sweden	274	292	17.1	10.73	19.65	8.78	21.70
United States	269	280	11.3	7.42	9.99	-0.15	12.10

Note: Diff.= difference. Mean score expressed in PIAAC points. PIAAC= Programme for the International Assessment of Adult Competencies. A blue shading indicates that the value of a specific indicator in a country is statistically significant above the relevant estimate for the OECD average (difference significant at the 5% level). A grey shading indicates that the value of a specific indicator in a country is statistically significant below the relevant estimate for the OECD average (difference significant at the 5% level). A white shading indicates that the value of a specific indicator in a country is not statistically significant different from the relevant estimate for the OECD average (the difference is not significant at the 5% level). Purple indicates that no data are available for a specific indicator. Differences across groups that are statistically significant at the 5% level are denoted in bold. Data in the first column refer to 15-year-old students surveyed in the PISA study conducted in 2000 or 2003 in Chile, and Greece. Data in the second column refer to the cohort of individuals who were part of the PISA target population in 2000 or 2003 and were part of the PIAAC target population at age 26-28 in the PIAAC study. Data in the third column illustrate the change in PIAAC scores between age 15 and 26-28. Data in the fourth column refer to achievement growth among the lowest achieving 10% in each of the two studies. Data in the fifth column refer to achievement growth among the highest achieving 10% in each of the two studies. Data in the sixth column illustrate the change in PIAAC scores between age 15 and 26-28 among individuals whose parents did not obtain tertiary qualifications. Data in the seventh column illustrate the change in PIAAC scores between age 15 and 26-28 among individuals whose parents obtained tertiary qualifications. PISA reading scores are expressed in PIAAC literacy scores following (Borgonovi et al., 2017^[17]). In PISA 2000, the United Kingdom and the Netherlands fell short of the minimum response rate requirements. Information provided by the United Kingdom led to the assessment that response bias was likely negligible. No similar information was provided by the Netherlands.

1. High parental education refers to students with at least one parent who obtained tertiary-level qualifications. Low parental education refers to students whose parents did not obtain tertiary degrees.

*PIAAC data for Belgium refer only to Flanders and data for the United Kingdom refer to England and Northern Ireland jointly. The relevant estimated mean PIAAC score for Flemish community of Belgium in PISA 2000 is 282 and the PIAAC score difference between 15 and 27-year-olds corresponds to 12 points. The 10th percentile difference when achievement growth is calculated only considering 15-year-olds in the Flemish community of Belgium corresponds to 1 point, the 90th percentile difference corresponds to 8 points, the difference between individuals with low parental education corresponds to 4 points and the difference between individuals with high parental education corresponds to 25 points.

**The data for Greece include a large number of cases (1 032) in which there are responses to the background questionnaire but where responses to the assessment are missing. Proficiency scores have been estimated for these respondents based on their responses to the background questionnaire and the population model used to estimate plausible values for responses missing by design derived from the remaining 3 893 cases.

Source: OECD (2000^[18]), *PISA database 2000*; <https://www.oecd.org/pisa/data/database-pisa2000.htm>; OECD (2012^[19]), (2015^[20]), *Survey of Adult Skills (PIAAC) databases*; <http://www.oecd.org/skills/piaac/publicdataandanalysis/>.

StatLink  <https://stat.link/nzou18>

Public policies can ensure that the years between the end of compulsory schooling and reaching established tenure in the labour market are accompanied by rapid skill development for all. Ensuring that youngsters do not leave education without engaging in training or the labour market, and that those who leave re-engage promptly should be a priority. At the system level, differences in overall achievement are more related to the share of individuals not in education, employment or training (NEET) than to any other factor, including the share of individuals who participate in higher education programmes. Furthermore, reductions in NEET rates are associated with reduced disparities in achievement at the population level and lower intergenerational transmission of educational advantages.

Providing high-quality orientation programmes to school-aged children is a first step to reduce NEET rates and help individuals, irrespective of their background, navigate the transition between compulsory schooling and adulthood. Children can acquire information about further education and the labour market

through various means, including experience-based initiatives such as job-shadowing programmes. Creating stronger connections between schools and the labour market could be especially important following the pandemic, not only to reduce the number of school leavers who will become NEET, but also to ensure that youngsters understand the changing requirements of today's workplaces. Yet Table 1.5 suggests that participation in orientation programmes, especially internships, remains limited in many countries.

Table 1.5 further reveals that even before the pandemic hit, many youngsters – especially from socio-economically disadvantaged households – did not intend to continue formal education beyond the end of compulsory schooling, partly because of financial considerations and partly because they did not believe they needed further qualifications in their intended occupation. Furthermore, many expected to work in professions that were projected to require fewer workers because of technological innovations.

By changing how higher education and formal courses are delivered, creating greater financial constraints for families and increasing uncertainty, the pandemic is posing a severe risk of producing a lost generation with poor transition years. Many youngsters, particularly from socio-economically disadvantaged households, may drop out of education. Vocational education and training provision has also been disrupted, and labour-market contractions have decreased opportunities for skill development at work.

Table 1.5. Snapshot of educational orientation and youngsters' perspectives

	Percentage of 15-year-olds doing an internship ¹		Percentage of 15-year-olds who expect to be working in 5 years ²		Percentage of 15-year-olds who expect to be studying in 5 years ³		Percentage of 15-year-olds who expect to work an occupation that is expected to shrink by 2029 ⁴	
	Overall population	High vs. low parental education ⁵	Overall population	High vs. low parental education ¹	Overall population	High vs. low parental education ¹	Overall population	High vs. low parental education ¹
		Percentage point diff.		Percentage point diff.		Percentage point diff.		Percentage point diff.
OECD average	34	-0.3	14	-5.5	15	12.2	25	-4.4
EU average	35	-0.5	14	-6.1	17	11.6	27	-5.9
Australia	49	0.6	14	-6.3	12	17.1	26	-3.3
Austria	46	-1.1	17	-5.9	16	9.8	31	-6.1
Belgium*	10	2.9	12	-8.4	25	12.1	29	-5.2
Canada							17	-5.5
Chile							17	-5.4
Czech Republic							31	-7.1
Germany	87	-3.7					31	-4.2
Denmark	56	1.2	7	-3.5	17	2.7	27	-5.4
Spain	22	2.3	12	-6.4	13	14.9	23	-4.4
Finland							20	-6.0
France							29	-2.9
United Kingdom*	25	1.7	12	-3.2	13	11.9	20	-1.8
Greece*	39	1.6	12	-4.4	12	8.0	17	-3.7
Ireland	39	0.6	11	-3.0	13	17.4	25	-3.2
Israel	34	2.4	14	-1.5	20	9.1	18	-2.2
Italy	21	3.2	13	-2.3	11	6.3	24	-3.7
Japan		0.0					43	1.8
Korea	9	0.1	14	-5.8	5	11.5	29	-1.9
Netherlands		0.0					24	-6.6
Norway		0.0					21	-5.1
New Zealand	29	-1.0	12	-4.0	15	17.0	20	-1.6

	Percentage of 15-year-olds doing an internship ¹		Percentage of 15-year-olds who expect to be working in 5 years ²		Percentage of 15-year-olds who expect to be studying in 5 years ³		Percentage of 15-year-olds who expect to work an occupation that is expected to shrink by 2029 ⁴	
	Overall population	High vs. low parental education ⁵	Overall population	High vs. low parental education ¹	Overall population	High vs. low parental education ¹	Overall population	High vs. low parental education ¹
		Percentage point diff.		Percentage point diff.		Percentage point diff.		Percentage point diff.
Poland	15	-1.4	14	-11.0	17	19.6	26	-12.5
Sweden		0.0					34	-6.3
United States		0.0					19	-1.3

Note: A blue shading indicates that the value of a specific indicator in a country is statistically significantly above the relevant estimate for the OECD average (difference significant at the 5% level). A grey shading indicates that the value of a specific indicator in a country is statistically significant below the relevant estimate for the OECD average (difference significant at the 5% level). A white shading indicates that the value of a specific indicator in a country is not statistically significant different from the relevant estimate for the OECD average (the difference is not significant at the 5% level). Purple indicates that no data are available for a specific indicator. Differences across groups that are statistically significant at the 5% level are denoted in bold. Data refer to 15-year-old students surveyed in the PISA study conducted in 2018. Data are available only for countries that administered the optional Educational Career Questionnaire.

1. Refers to the percentage of students who answered yes to the following question: "Have you done an internship to find out about future study or types of work?"

2. Refers to the percentage of students who indicated they expect to work in five years because the occupation they want does not require a degree or because they need to be financially independent.

3. Refers to the percentage of students who indicated they expect to study in five years because the occupation they want requires a degree.

4. Refers to the percentage of students who indicated that by age 30, they expect to work in an occupation that is projected to shrink by the U.S. Bureau of Labor.

5. Low parental education refers to 15-year-old students who reported that neither of their parents achieved a tertiary-level qualification. High parental education refers to 15-year-old students who reported that at least one parent had achieved a tertiary degree.

*For Belgium, Greece, and the United Kingdom, see notes under Table 1.4.

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

StatLink  <https://stat.link/js6wr2>

Raising aspirations to learn: Engaging adults in learning

As previously noted, engagement in adult learning can bolster the acquisition of both foundation skills, as well as new skills and knowledge that will help individuals remain engaged in the labour market and society despite technological and social transformations. Many businesses restructured their operations during the pandemic, requiring many workers to undergo rapid upskilling and reskilling. However, Table 1.6 indicates that already before the pandemic, many workers did not participate in adult learning at work. One in two adults on average in OECD countries had already disengaged from adult learning reported being unwilling to participate in available learning opportunities. Around one in ten individuals were inactive but motivated, i.e. did not participate but expressed a desire to engage in available learning. Around 15% of adults in OECD countries were active and seeking additional learning, i.e. expressed an interest in increasing their participation in adult learning. Finally, one in four individuals had already participated in adult learning, but did not seek to engage in additional learning opportunities.

Table 1.6. Snapshot of participation in adult learning

	Overall population	Percentage of disengaged			
		High vs. low education ¹	Mature vs. prime-age workers ²	Females vs. males	High vs. low parental education ³
		Percentage point diff.	Percentage point diff.	Percentage point diff.	Percentage point diff.
OECD average	50	-27	15	2	-19
EU average	53	-28	15	0	-20
Australia	42	-29	15	2	-18
Austria	51	-22	18	2	-14
Belgium*	54	-29	19	3	-22
Canada	39	-21	18	1	-16
Chile	44	-30	19	7	-20
Czech Republic	52	-21	15	7	-12
Germany	45	-27	13	6	-19
Denmark	32	-24	19	-4	-16
Spain	49	-31	16	-1	-22
Estonia	43	-25	16	-8	-15
Finland	35	-25	19	-5	-15
France	59	-26	15	0	-20
United Kingdom*	42	-21	10	3	-17
Greece*	76	-29	14	0	-29
Hungary	62	-29	13	0	-21
Ireland	42	-28	14	3	-18
Israel	47	-28	11	-2	-19
Italy	70	-36	11	1	-31
Japan	57	-25	11	11	-16
Korea	44	-26	16	4	-15
Lithuania	66	-42	14	-6	-25
Mexico	63	-34	15	4	-28
Netherlands	40	-23	17	7	-17
Norway	36	-21	19	-1	-13
New Zealand	28	-14	11	0	-9
Poland	67	-39	19	1	-28
Slovak Republic	67	-32	10	3	-25
Slovenia	55	-32	17	-3	-24
Sweden	35	-19	13	-3	-13
Turkey	79	-35	14	14	-32
United States	36	-24	12	0	-15

Note: Diff.=difference. A blue shading indicates that the value of a specific indicator in a country is statistically significant above the relevant estimate for the OECD average (difference significant at the 5% level). A grey shading indicates that the value of a specific indicator in a country is statistically significant below the relevant estimate for the OECD average (difference significant at the 5% level). A white shading indicates that the value of a specific indicator in a country is not statistically significant different from the relevant estimate for the OECD average (the difference is not significant at the 5% level). Purple indicates that no data are available for a specific indicator. Differences across groups that are statistically significant at the 5% level are denoted in bold.


1. High education refers to workers who obtained tertiary- level qualifications. Low education refers to workers who did not obtain tertiary degrees.

2. Mature workers are workers between the ages of 55 and 65. Prime workers are workers between the ages of 25 and 35.

3. High parental education refers to workers with at least one parent who obtained tertiary-level qualifications. Low parental education refers to workers whose parents did not obtain tertiary degrees.

*For Belgium, Greece, and the United Kingdom, see notes under Table 1.4.

Source: OECD (2012_[19]), (2015_[20]), *Survey of Adult Skills (PIAAC) databases*, <http://www.oecd.org/skills/piaac/publicdataandanalysis/>.

StatLink  <https://stat.link/dqe3fo>

Educational attainment was one of the strongest predictors of individuals' willingness to participate in available learning opportunities. Across the OECD, tertiary-educated adults were on average 50% less likely to be disengaged from adult learning than workers with lower-secondary education or below. The pandemic hit these workers most: containment and mitigation strategies put in place to reduce transmission of the Sars-CoV-2 virus have had considerable direct and indirect effects on the availability of learning opportunities for adult workers who were participating, or interested in participating, in learning. Firms' reliance on remote working arrangements to reduce social interaction meant that many workers had fewer opportunities to engage in formal, non-formal and informal learning activities, unless these could take place remotely. Even then, creating meaningful opportunities to engage in learning remained challenging for workers with limited digital skills or competing time pressures, such as parents with young children. As a result, some workers might have involuntarily disengaged from lifelong learning.

In the global effort to limit the spread of the coronavirus and minimise its death toll, most governments introduced radical social distancing measures that partly or completely reduced workers' physical presence in the workplace. Table 1.7 shows that under several assumptions, COVID-19-induced shutdowns of economic activities decreased workers' participation in non-formal learning by on average 18%, and in informal learning by 25%. Before the pandemic, workers across OECD countries spent on average 4.9 hours per week on informal learning and 0.7 hours on non-formal learning. According to estimates, during the pandemic that time dropped to 3.7 hours for informal learning and 0.6 hours per week for non-formal learning. This represents a notable amount of lost learning, which may not be easily recovered. These estimates consider the partial transfer of some learning activities on line. The specific impact of the pandemic on adult learning depends on the number of informal and non-formal learning hours workers engaged in beforehand, the extent to which economic activities were affected by mitigation and containment strategies, and the feasibility of working (and learning) remotely in different countries and sectors.

Individuals' participation in adult learning is not only contingent on their willingness and the barriers they face through personal circumstances, but also on the availability of learning opportunities and incentives to participate. These, in turn, depend on their job and employer characteristics, including the type of employment contract, the risk of job automation, the level of experience required to fulfil expectations, the size and growth pattern of their firm, and the use (or not) of high-performance work practices and performance-based pay schemes. This means that the work context, and the demand for skills and knowledge, are crucial factors that need to be understood if individuals are to remain engaged in lifelong learning. Moreover, labour-market demands can guide not only participation, but also its content and objective.

Table 1.7. Snapshot of participation in informal and non-formal learning, pre- and post-COVID-19

	Informal learning – average number of hours per week, per worker			Non-formal learning – average number of hours per week, per worker		
	Pre-COVID-19	Widespread shutdown scenario	Limited shutdown scenario	Pre-COVID-19	Widespread shutdown scenario	Limited shutdown scenario
OECD average	4.9	3.7	4.1	0.7	0.6	0.6
EU average	4.8	3.7	4.0	0.6	0.5	0.6
Australia	6.1	4.7	5.2	0.9	0.7	0.8
Austria	4.6	3.5	3.8	0.7	0.6	0.6
Belgium*	4.7	3.8	4.1	0.6	0.5	0.5
Canada	6.0	4.6	5.0	0.9	0.8	0.8
Chile	5.4	3.7	4.3	0.5	0.4	0.5
Czech Republic	4.3	3.2	3.5	0.6	0.5	0.5
Denmark	5.4	4.4	4.7	1.1	0.9	1.0
United Kingdom*	4.9	3.8	4.2	0.8	0.7	0.7
Estonia	5.4	4.0	4.4	0.6	0.5	0.5
Finland	5.7	4.5	4.9	0.8	0.7	0.7
France	5.6	4.3	4.7	0.3	0.3	0.3
Germany	4.4	3.4	3.7	0.8	0.7	0.7
Greece*	3.9	2.8	3.1	0.3	0.3	0.3
Hungary	3.5	2.6	2.9	0.5	0.4	0.4
Ireland	4.9	3.8	4.2	0.8	0.7	0.7
Israel	5.1	4.0	4.3	0.8	0.7	0.7
Italy	4.1	3.1	3.4	0.4	0.3	0.3
Japan	4.2	3.1	3.4	0.6	0.5	0.5
Lithuania	2.8	2.1	2.3	0.4	0.4	0.4
Mexico	5.4	3.3	3.9	0.6	0.4	0.5
Netherlands	4.4	3.5	3.8	1.0	0.8	0.9
New Zealand	5.5	4.3	4.7	1.1	0.9	1.0
Norway	5.8	4.7	5.1	0.0	0.0	0.0
Poland	4.4	3.1	3.5	0.4	0.4	0.4
Korea	2.6	1.7	2.0	1.1	0.8	0.9
Slovak Republic	5.0	3.7	4.0	0.4	0.3	0.3
Slovenia	6.6	4.8	5.4	0.5	0.4	0.5
Spain	6.4	4.6	5.1	0.9	0.8	0.8
Sweden	5.6	4.6	4.9	0.9	0.7	0.8
Turkey	3.4	2.3	2.6	0.4	0.3	0.3
United States	6.4	4.8	5.2	1.2	1.0	1.1

Note: Details on the estimation of learning per week per working pre-COVID and under the widespread/limited scenario are available in OECD (2021^[21]), “Adult Learning and COVID-19: How much informal and non-formal learning are workers missing?”, <https://doi.org/10.1787/56a96569-en>.

*For Belgium, Greece, and the United Kingdom, see notes under Table 1.4.

Source: Author’s calculations, based on OECD (2021^[21]), “Adult Learning and COVID-19: How much informal and non-formal learning are workers missing?”, <https://doi.org/10.1787/56a96569-en>.

Skills for a lifetime? The role of transversal skills in helping individuals thrive in the labour market

Developing strong and positive lifelong learning attitudes early in life, and continuing to invest in skill development in adulthood, is key to navigating the rapid transformations of societies and labour markets. Digitalisation and automation are reshaping the way work is performed, and the way individuals acquire and use work-related skills. As economies evolve and new technologies are introduced in the productive process, developing and maintaining relevant skills is becoming crucial for workers to remain in the labour market in high-quality jobs.

The pandemic has highlighted the importance of building skill sets that bolster individuals' resilience to unforeseen shocks and structural changes. With the pandemic still raging, lifelong learning policies should seek to balance the need for rapid solutions to the emergency while also proposing long-lasting interventions to address more structural challenges, such as the impact of digitalisation and automation on jobs. In such a fast-evolving context, workers would benefit greatly from developing transversal skills, which are “not specifically related to a particular job, task, academic discipline or area of knowledge and ... can be used in a wide variety of situations and work settings” (UNESCO, 2013^[22]). Many workers will need to switch occupations and reinvent themselves to avoid or reduce adverse shocks permeating the labour market, but also adapt to long-term changes in jobs and skill demands.

Evidence from online job-vacancy data reveals that communication, teamwork and organisational skills are the most requested transversal skills across job openings. Cognitive skills, such as analytical, problem solving, leadership and presentation skills, were also considered highly transversal across a variety of jobs and work contexts. Digital skills were equally transversal, confirming the extensive penetration of tasks involving digital technologies across jobs in virtually all sectors.

Analyses further reveal that high-level cognitive skills, such as analytical skills, are key to increasing employability and securing a high-paying job. Leadership and decision-making skills also appear to be highly associated with higher wages, but are generally more relevant in occupations with fewer job openings, including managerial positions. By contrast, basic customer service or clerical skills are relevant in occupations with frequent job openings and are therefore deemed to increase employability, although they are associated with lower-wage jobs. Finally, organisational, teamwork and communication skills are not associated with positive wage or employment returns.

The acquisition of transversal skills requires interactive learning. Constructivist learning theories suggest that learning through authentic activities, as opposed to solely through instruction, facilitates active learning and developing key competences. Spurring such involvement can be challenging, but educational programmes at all levels should consider – and, wherever possible, reflect – real-life applications. Collaborative learning (e.g. project-based and problem-based learning approaches) allows learners to work together in small groups to achieve a common objective, and can help them develop several transversal skills simultaneously.

The pandemic has caused major disruptions to labour markets worldwide. In the short term, the resulting uncertainty, fear of infection, and policies leading to the suspension or closure of businesses have caused large contractions in economic activity. As a result, millions of workers have experienced a sudden reduction in, or complete loss of, their livelihoods. Crucially, entry into the labour market has been delayed for those seeking employment for the first time, with potentially lasting effects on their labour-market prospects.

This unprecedented drop in economic activity is reflected in the 40% decrease in new job vacancies posted on line by early May 2020. Over May-July 2020, the situation had improved in several countries, leading to a slight increase in the number of new jobs published on line relative to previous months. Many low-paid and often low-educated workers were particularly affected by declining job openings for occupations they

typically filled before the COVID-19 crisis. On average, at the peak of the first wave of infections (March-April 2020), the volume of new job advertisements posted on line seeking workers with a secondary education had declined more than the volume of jobs for individuals with post-secondary or tertiary education, although the situation changed as the pandemic progressed. At the same time, the number of job postings requiring individuals to work from home increased sharply during the pandemic, clearly indicating the need for workers with digital skills and internet connectivity. However, the total volume of online job advertisements remains lower than in the pre-crisis period.

In the longer term, the transformations caused by the pandemic will interact with existing structural changes to shape the demand for skills. Projections for the United States indicate that occupations in the energy sector – many of which are directly related to the introduction of “green” technologies, like wind turbine service technicians or solar photovoltaic installers – are expected to grow by more than 50% in the next decade. These trends are likely to be replicated in other developed OECD countries, particularly in the European Union, as the New Green Deal is implemented. An analysis of the skills requested in online vacancies indicates that workers in these occupations will need to develop a broad range of skills, from wind energy engineering, electronics and power generation to sales and marketing.

Population ageing is also poised to transform labour markets substantially. Employment in the healthcare sector is expected to increase dramatically in the next decade, with surging demand for occupations such as nurse practitioners, home health and personal care aides, physical therapist assistants, and medical and health services managers. Jobs in the tech and data analysis sector should also grow significantly, thanks to exponential growth in data availability for commercial, research and business use. Demand for statisticians, information security analysts, data scientists and mathematical science occupations, software developers and software quality-assurance analysts and testers, should also expand. The skills and technologies associated with these jobs (e.g. knowledge of software development and programming principles, or of specific programming languages such as Java), will be increasingly in demand, highlighting the need for training systems to adapt to these new requirements while keeping abreast of further changes in technology and corporate needs.

Report roadmap

The report details key results that can help OECD countries map the context of lifelong learning in the early 2020s. Most of the indicators and statistics refer to outcomes observed before the COVID-19 pandemic. The disruptions caused by the pandemic and the policy responses to limit its effects will have an impact on how skills are developed and used in the future. The lifelong learning framework illustrated in previous sections of this chapter emphasises the importance of adopting a long-term perspective on this matter. Future skill development and use depend heavily on past investments, choices and policy actions, with an important bearing on the design of effective responses to the pandemic.

The report reviews the experiences of countries that have successfully developed lifelong learning opportunities for all, and highlights policy lessons from the analyses. Such policy lessons provide broad guidance on the principles to be considered when designing and implementing skills policies centred on a lifelong perspective. They are not prescriptive, and should be tailored to the countries’ unique context at various points in time.

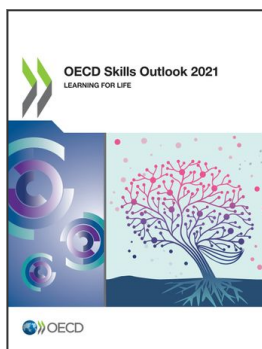
The report presents four analytical chapters featuring detailed results and examples of policy initiatives implemented in different countries or national subregions. For analytical purposes, chapters 2, 3 and 4 each consider a particular stage of people’s lives, delving into some of the processes guiding the development of skills, attitudes and knowledge at that particular stage. Many reports focus on lifelong learning from both a theoretical and an analytical perspective. This report centres on aspects that have traditionally been less considered, exploiting comparative quantitative data – namely, socio-emotional and motivational factors that influence engagement with lifelong learning. While such factors are uniquely

important to sustain lifelong learning in general, the pandemic has further increased their relevance. Finally, Chapter 5 mines information from online vacancies to evaluate the demand for different skills, knowledge and attitudes in various occupations, using a data-driven approach to characterise the degree of skill transversality and labour-market returns.

References

- Autor, D., F. Levy and R. Murnane (2003), “The skill content of recent technological change: An empirical exploration”, *The Quarterly Journal of Economics*, Vol. 118/4, pp. 1279-1333, <http://dx.doi.org/10.1162/003355303322552801>. [5]
- Borgonovi, F. et al. (2017), “Youth in transition: How do some of the cohorts participating in PISA fare in PIAAC?”, *OECD Education Working Papers*, No. 155, OECD Publishing, Paris, <https://dx.doi.org/10.1787/51479ec2-en>. [17]
- Carroll, J. (1993), *Human Cognitive Abilities*, Cambridge University Press, Cambridge, <http://dx.doi.org/10.1017/cbo9780511571312>. [13]
- Cattell, R. (1963), “Theory of fluid and crystallized intelligence: A critical experiment.”, *Journal of Educational Psychology*, Vol. 54/1, pp. 1-22, <http://dx.doi.org/10.1037/h0046743>. [14]
- Cunha, F. and J. Heckman (2007), “The technology of skill formation”, *American Economic Review*, Vol. 97/2, pp. 31-47, <http://dx.doi.org/10.1257/aer.97.2.31>. [4]
- Cunha, F. et al. (2006), “Interpreting the evidence on life cycle skill formation”, in *Handbook of the Economics of Education, Handbook of the Economics of Education Volume 1*, Elsevier, [http://dx.doi.org/10.1016/s1574-0692\(06\)01012-9](http://dx.doi.org/10.1016/s1574-0692(06)01012-9). [3]
- Gottfredson, L. (1997), “Mainstream science on intelligence: An editorial with 52 signatories, history, and bibliography”, *Intelligence*, Vol. 24/1, pp. 13-23, [http://dx.doi.org/10.1016/s0160-2896\(97\)90011-8](http://dx.doi.org/10.1016/s0160-2896(97)90011-8). [10]
- Hunt, E. (2009), *Human Intelligence*, Cambridge University Press, Cambridge, <http://dx.doi.org/10.1017/cbo9780511781308>. [12]
- Kautz, T. et al. (2014), “Fostering and measuring skills: Improving cognitive and non-cognitive skills to promote lifetime success”, *NBER Working Paper*, No. 20749, NBER, Cambridge, <http://dx.doi.org/10.3386/w20749>. [8]
- Lengrand, P. (1975), *An Introduction to Lifelong Education*, UNESCO, Paris. [1]
- Neisser, U. et al. (1996), “Intelligence: Knowns and unknowns.”, *American Psychologist*, Vol. 51/2, pp. 77-101, <http://dx.doi.org/10.1037/0003-066x.51.2.77>. [11]
- OECD (2021), “Adult learning and COVID-19: How much informal and non-formal learning are workers missing?”, *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, <https://doi.org/10.1787/56a96569-en>. [21]
- OECD (2020), *Promoting an Age-Inclusive Workforce: Living, Learning and Earning Longer*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/59752153-en>. [7]

- OECD (2020), "Strengthening online learning when schools are closed: The role of families and teachers in supporting students during the COVID-19 crisis", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, <https://doi.org/10.1787/c4ecba6c-en>. [16]
- OECD (2019), *OECD Skills Outlook 2019 : Thriving in a Digital World*, OECD Publishing, Paris, <https://dx.doi.org/10.1787/df80bc12-en>. [2]
- OECD (2018), *PISA 2018 database*, <https://www.oecd.org/pisa/data/2018database/>. [15]
- OECD (2015), *Survey of Adult Skills (PIAAC) database*, <http://www.oecd.org/skills/piaac/publicdataandanalysis/>. [20]
- OECD (2012), *Survey of Adult Skills (PIAAC) database*, <http://www.oecd.org/skills/piaac/publicdataandanalysis/>. [19]
- OECD (2000), *PISA 2000 database*, <http://www.oecd.org/pisa/data/database-pisa2000.htm>. [18]
- Spitz-Oener, A. (2006), "Technical change, job tasks, and rising educational demands: Looking outside the wage structure", *Journal of Labor Economics*, Vol. 24/2, pp. 235-270, <http://dx.doi.org/10.1086/499972>. [6]
- Turkheimer, E. et al. (2003), "Socioeconomic status modifies heritability of IQ in young children", *Psychological Science*, Vol. 14/6, pp. 623-628, http://dx.doi.org/10.1046/j.0956-7976.2003.psci_1475.x. [9]
- UNESCO (2013), *Glossary of Curriculum Terminology*, UNESCO-IBE, Geneva, http://www.ibe.unesco.org/fileadmin/user_upload/Publications/IBE_GlossaryCurriculumTerminology2013_eng.pdf. [22]



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