Educational Research and Innovation

Educational Opportunity for All

OVERCOMING INEQUALITY THROUGHOUT THE LIFE COURSE

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BETTER POLICIES FOR BETTER LIVES

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Foreword

Many OECD countries are experiencing an increase in social inequalities, not only with regard to earnings, income and wealth, but also in access to many other social goods and opportunities. Social inequalities are responsible for weakening the fabric of societies, a growing disconnect between citizens and public institutions, and a feeling amongst many individuals that they have been disempowered. Social inequalities are also connected to weakened economic growth, a waste of human capital and the failure to translate rapid technological change into shared productivity growth across all firms and economic sectors.

In 2012 the OECD launched the Inclusive Growth initiative to develop a strategic policy agenda for rethinking economic growth in such a way that all socio-economic groups can contribute and derive fair benefits from their participation. The evidence shows that education plays a vital role in mitigating against the drivers of rising social inequalities. Equitable education systems allow disadvantaged students to succeed. But it doesn't always work like this. Education can be seen as a system of distributing the cards of social opportunity, but it does this not only on the basis of talent, effort and merit, but by taking into account the economic, social and cultural resources that students bring from their families into the school.

Equity in educational opportunities and learning outcomes has featured prominently in OECD's education and skills work over the past fifteen years. A number of reports produced by the OECD Directorate for Education and Skills have provided evidence and analytical insights into the complex mechanisms through which education systems simultaneously reproduce social inequalities and compensate for social disadvantage and into the policies that seem to be more effective in moving the balance from the former towards the latter. Because of the importance of education in the framework of inclusive growth, the time seems ripe for a new synthesis. This book brings together the wealth of knowledge produced in OECD education and skills work over the past years. It integrates the evidence on educational inequalities in a life course perspective, demonstrating that what happens in one stage in the educational trajectory builds upon the previous one, but also that opportunities are available in each stage to compensate for or bring corrections to the missed ones in previous stages.

Dirk Van Damme, Head of Division, Education Ambassador for Inclusive Growth

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Executive summary

Education can reinforce inclusive economic growth and social cohesion

In a globalised, knowledge-intensive economy where technological change is continually reshaping the labour market, individuals with low levels of educational attainment and skills are increasingly penalised. Gaps in the labour market outcomes between highly and poorly educated workers have been widening in the past three decades across OECD countries. Education and training play a significant role in helping individuals to climb the socio-economic ladder and to reach their full potential. Education and labour market policies and practices that support the most vulnerable groups can bolster inclusive economic growth and increase social cohesion. A country's prosperity depends on how well it equips individuals of all backgrounds with the skills to obtain decent jobs, to become more productive and innovative, and potentially, to create jobs, as well as to make smarter political, economic and life choices.

Far too many people from disadvantaged backgrounds fall behind

Many children, students and adults from socio-economically disadvantaged backgrounds fall behind, receiving too little support to succeed in school and in the labour market. The 2015 Programme for International Student Assessment (PISA) results found that socio-economically disadvantaged students in OECD countries are almost three times more likely than advantaged students to perform below the baseline (Level 2) proficiency in science. The average score gap in science between students whose parents have attained tertiary education and those with parents with lower secondary education is 84 score points, the equivalent of 2.8 years of schooling. This gap only widens as they transition into adulthood. The Adult Skills Survey revealed that a substantial gap (a difference of 46 points) in numeracy scores separated adults aged 20-29 with highly educated parents from those whose parents were poorly educated. The discrepancy is particularly high in Austria, Israel, the Slovak Republic, the United Kingdom (England) and the United States. On average across the OECD, adults with highly educated parents were four times more likely to obtain a tertiary degree than those whose parents were poorly educated.

Lifelong learning opportunities for all

All countries have ample room for improvement to ensure better learning outcomes for individuals from disadvantaged backgrounds, especially over their entire lifespan. Access to quality early childhood education, to schools with highly qualified teachers and to adult education and training is still a privilege for highly skilled, well-educated adults and employees of large firms in many countries. If public policies do not deal directly with the root causes of income and social inequality through education and skills formation over the life course, the cost of redistributive policies like taxes and transfers is likely to be much higher.

Equitable learning opportunities need to be made available throughout life. In the early years, investment needs to be made in ensuring good early childhood education for all, but the imperative is even more acute for children from disadvantaged backgrounds. Family and community-based support and programmes can also be helpful (see Chapter 3). For students, targeted support is necessary for low performers from disadvantaged backgrounds and disadvantaged schools (see Chapter 4).

Providing equitable learning opportunities early in life is critical, but so are learning opportunities for adults in today's volatile labour markets. This is particularly true for adults who lack the resources to participate in learning and to upgrade their skills. According to the 2012 OECD population database, 66% of the population on average was of working age, and 18% of school age and under the age of 15. Given the size of the working population, and its significant economic and social role, it is too important to leave to individuals the task of obtaining new skills. Governments, employers and local communities need to pool their efforts to offer adult learning programmes that focus on improving employability, through a combination of education and training and practical job training. Support should be targeted to the most vulnerable in the population. Barriers to participation in learning need to be removed, and delivery methods should be more innovative and flexible (see Chapter 5).

Prioritising equity in lifelong learning

To create an equitable lifelong learning system, equity must be made an explicit priority. Progress needs to be rewarded systematically, through monitoring and evaluations. This can serve as an important motivator for policy makers, school leaders, teachers and local authorities dedicated to making a difference and challenging equity-related issues. Specific goals for reducing levels of inequality in education should be set at every level, nationally, locally, in schools and in classrooms. National policies can identify ways to attract effective principals and teaching staff to disadvantaged schools. Evaluation and appraisals need to include the evaluation of a school's performance on equity (see Chapter 2).

At the same time, with insufficient public spending on education, individuals with limited income are unlikely to be able to afford the help they require. Overall, education budgets should be aligned with the educational challenges at every level of government. The priorities should be investing in school leaders and teaching staff, and offering additional support to disadvantaged schools and students.

A whole-of-government and stakeholder approach to tackling inequality

A co-ordinated whole-of-government and stakeholder approach is the best way to address economic, social and educational inequality. Yet, government ministries and local authorities often work in silos, implementing fragmented policies and services and frequently revising public policies as political administrations change. Instead, they should join forces with school leaders, teachers, parents and local communities to tackle inequality in education and provide support to disadvantaged children, students and adults throughout their life. This means identifying key stakeholders, designating responsible bodies for implementation, building networks and creating a common working platform for the relevant stakeholders (see Chapter 2).

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Chapter 1

Overview: Towards equitable learning opportunities throughout life

This Chapter provides the background to the publication which is the main output of the Fostering Good Education for All project – the contribution of the Directorate for Education and Skills to the OECD-wide Inclusive Growth initiative. It outlines the main factors that can affect an individual's life outcomes such as lack of skills and unequal learning opportunities. It also provides policy recommendations for ensuring equitable educational outcomes at each stage of life.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Background rationale

The concept of equal opportunity for all has been widely shared and promoted across many countries around the world (Kamp, 2009; Fish, 2013). It advocates that everyone should have the chance to reach their full potential and enjoy the fruits of their hard labour, regardless of their circumstances in life. But has this ideal become a mere dream for the majority, while a privileged few enjoy abundant opportunities to succeed in life? Recent studies (Corak, 2013; OECD, 2015a; OECD, 2012; IMF, 2015) point to growing economic and social inequality around the globe and cast doubt on the notion that everyone can succeed.

Why is inequality on the rise? To begin with, the global economy has become more knowledge intensive. Together with skills-biased technological changes, globalisation and the growing influence of the financial sector on the economy, the demand for high-skilled workers and jobs with non-routine tasks has increased over the last three decades. As a result, a premium has been put on the wages of high-skilled workers, raising the wage gap between high- and low-skilled workers (Sill, 2002; Card and Di Nardo, 2002; Autor and Acemoglu, 2011). In this context, quality education and skills formation that equip individuals with labour market-relevant skills are more important than ever.

A critical question is whether learning opportunities are accessible to all, regardless of economic and social background. This report finds that the progress different countries have made in providing educational and skills development opportunities to disadvantaged individuals has varied widely. Only a few countries have been successful in providing lifelong learning opportunities. Most have offered sporadic interventions at certain stages of life, rather than continued support over the course of an individual's lifespan.

What this report offers

This report analyses how countries are advancing in providing equitable lifelong learning opportunities for individuals from disadvantaged backgrounds, using a set of 12 indicators relevant to economic and educational equity. It examines how disadvantages can accumulate over a lifetime (Chapter 1). The report takes a closer look at equity issues at each stage of life, from early childhood education (Chapter 2), student and school outcomes (Chapter 3) through adult education and skills formation (Chapter 4). Each chapter offers policy recommendations and describes policies on education and skills that can ensure lifelong equitable learning opportunities for the socio-economically disadvantaged, as well as best policy practices and lessons from selected countries.

Box 1.1. **The Fostering Good Education for All project**

The Fostering Good Education for All project, began in November 2015 as a contribution of the Directorate for Education and Skills to the OECD-wide Inclusive Growth initiative, with funding support from the Open Society Foundations (OSF). *Opportunity for All: Overcoming Educational Inequalities over the Life Course* (OECD, forthcoming), is a main output of the Fostering Good Education for All project. This report aims to provide extensive analysis of inequality in education, and concrete policy recommendations to provide solutions for this pressing issue.

Comprehensive desk-based research on issues related to economic, social and educational inequalities was conducted in preparing this report. It benefited from the rich experience and knowledge of the Directorate of Education and Skills on equity in education for young children, students and adults (OECD, 2011; Field, Kuczera and Pont, 2007; OECD, 2012; OECD, 2016a). Assessment and survey databases such as the Programme for International Student Assessment (PISA) and the Survey of Adult Skills (a product of the Programme for the International Assessment of Adult Competencies, PIAAC) were used to support the findings of this report. These sources also allow analysis of data from the OECD's partnering and developing countries where relevant and possible. The work of other directorates across the OECD, such as the Office of the Secretary General; the Directorate for Employment, Labour and Social Policies; the Economics Department; and the Local Economic and Employment Development (LEED) programme were used. Where relevant, research work of Thomas J. Alexander Fellowship (TJA) fellows and of other external scholars has been used. The findings of this report contribute to co-ordinated efforts between OECD directorates on inclusive growth (see Box 1.2).

The OECD gathered a group of experts in London in March 2016 to get constructive feedback on the report's preliminary literature review, outline and framework. This expert group meeting stimulated discussions on critical issues related to educational inequalities throughout the life course.

The findings of *Opportunity for All* have been presented on a number of occasions, including: the International Education Inequalities Conference in March, 2016 in London; the Centre for Education Research and Innovation (CERI) Governing Board meeting in April 2016 in Paris; the OECD symposium "From Inclusion and Equity in Education to Social and Economic Prosperity" on 17 June 2016 in Paris; the Education Policy Outlook Seminar on 27 June 2016 in Paris; the Inclusive Growth Seminar on 6 September 2016 in Paris; the Comparative and International Education Society (CIES) conference "Problematizing (In)Equality: The Promise of Comparative and International Education", on 6 March 2017 in Atlanta; and the 21st Education Policy Committee (EDPC) meeting in April 2017. The main findings of this report were also contributed to the preparation of report for 43rd G7 summit, 2017 OECD Ministerial Meeting and an OECD and Eurofound joint high-level conference on "The only way is up? Social Mobility and Equal Opportunities"

Sources:

Field, S., M. Kuczera and B. Pont (2007), *No More Failures: Ten Steps to Equity in Education, Education and Training Policy*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264032606-en.

OECD (2016a), *Skills Matter: Further Results from the Survey of Adult Skills*, http://dx.doi.org/10.1787/9789264258051-en.

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OECD (2006), Starting Strong II: Early Childhood Education and Care, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264035461-en.

Box 1.2. **Inclusive growth initiatives at the OECD**

Inclusive Growth initiative

To respond to economic and social challenges, the OECD launched the New Approaches to Economic Challenges (NAEC) initiative in 2012. NAEC seeks to re-evaluate past OECD working practices that focused on economic growth and failed to address many of the root causes of economic crises and growing inequality. The development of policies that also encourage well-being and inclusive growth has become an integral part of the OECD's broader agenda. The Inclusive Growth initiative (IG) was launched in 2012 to support NAEC in producing a strategic policy agenda centred on inclusive growth. The preliminary product of this initiative, *The OECD Framework for Inclusive Growth*, was released in 2014. It provides the policy framework to measure well-being based on multidimensional living standards, not just Gross Domestic Product (GDP). This initiative is comprised of three important elements:

- Multidimensionality: Both monetary and non-monetary outcomes are considered, among a variety of dimensions, which include education, jobs, health status, environment, civic participation and social connections.
- Emphasis on distribution: Inclusive growth means that all members of society, regardless of socio-economic background, ethnic origin, gender or place of origin, should receive both equal opportunities to contribute to growth and equitable benefits from the outcomes of this growth.
- Policy relevance: In order to realise effective and dynamic policies, policy tools need to be linked to the financial and non-financial dimensions highlighted above. Policy makers must also consider distributional impacts and potential outcomes with respect to all dimensions of inclusiveness. Trade-offs that arise from policies which encourage both growth and inclusiveness must also be explored.

The initiative's first report, *All on Board: Making Inclusive Growth Happen*, was released in 2015 (OECD, 2015b). It discusses concrete policy recommendations that promote inclusiveness in education and skills, macro-economic policies, labour market policies, innovation and entrepreneurship, infrastructure, public services, development and urban policies. This publication also includes strategies for the design and implementation of policies based on underlying governance requirements. Furthermore, it establishes causal linkages between policies and outcomes. The most recent addition to the Inclusive Growth initiative is the Inclusive Growth in Cities campaign, which was launched in March 2016. The campaign seeks to reduce inequalities in major cities across the world. It promotes inclusive urban development policies targeting the education system, the labour market, the housing market, infrastructure and public services.

OECD Centre for Opportunity and Equality (COPE)

The OECD Centre for Opportunity and Equality (COPE) was established as part of the OECD's "All on Board for Inclusive Growth" Initiative. It was founded to serve as a platform for policy-oriented research centred around the trends, causes and consequences of inequalities in society and the economy. The centre also serves as a forum to examine policy-based solutions to mitigate these inequalities. The centre has three primary functions for encouraging inclusive growth, the first of which is to produce pioneering reports on inequality. The Centre promotes exchanges of information and expertise on inequality by hosting visiting researchers and experts. It interacts closely with the Growth Advisory Group of International Experts on inequalities and inclusive growth.

Box 1.2. **Inclusive growth initiatives at the OECD** *(cont.)*

Innovation for Inclusive Growth

Another inclusion-based initiative is the Innovation for Inclusive Growth project. Developed in 2013, the project champions the use of innovation initiatives and innovation products to improve the welfare of citizens from low-income backgrounds and other groups who have traditionally been excluded from society and the economy. Giving these groups access to innovative technology can support their well-being. Innovation and technology can also encourage greater inclusiveness across a wide variety of sectors. The 2015 OECD report *Innovation Policies for Inclusive Growth* identifies improving inclusiveness in education as a key goal. It stresses the importance of providing "economically deprived groups with enhanced access to high-quality education and educational resources" (OECD, 2015c). Innovative mechanisms such as low-cost and widely used technologies like online platforms, mobile phones and tablets can help disadvantaged groups access high-quality education. Redesigned infrastructure, new approaches to curriculum design, school networks and student assessment can also all play a major part in increasing inclusiveness in education.

Sources:
OECD (2016b), "Perspectives on Innovation and Inclusive Growth", OECD official document DSTI/STP (2016)5, OECD Directorate for Science, Technology and Innovation, March 2016.
OECD (2015b), *All on Board: Making Inclusive Growth Happen*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264218512-en.
OECD (2015c), *Innovation Policies for Inclusive Growth*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264229488-en.
OECD Centre for Opportunity and Equality, http://www.oecd.org/inclusive-growth/about/centre-for-opportunity-and-equality/.

Skills premium due to skills-biased technological changes

In recent decades, acquiring skills and obtaining educational qualifications that are well-recognised and rewarded in the labour market has become more important than ever. This is due in part to the fact that the global economy has become more knowledge intensive. In addition, technological changes, globalisation and growing size and influence of the financial sector contributed to the increase in demand for workers with cognitive, non-routine and high level of information technology skills. All of these factors resulted in how much the labour market rewards skills they look for, placing a high wage premium on high-skilled workers over the last three decades (Sill, 2002; Card and Di Nardo, 2002; Autor and Acemoglu, 2011).

According to the latest *Education at a Glance* publication (2016c), adults without an upper secondary level of education earn on average 19% less than those with an upper secondary level of education, while those with a tertiary degree earn 55% more than those with upper secondary education on average across OECD countries. The earnings premium for tertiary education is largest in Brazil, Chile, Colombia, Hungary and Mexico, where the tertiary-educated adults earn more than twice as much as adults with upper secondary education. Across OECD countries, adults with a master's, doctoral or equivalent degree enjoy a significant earnings premium compared to those with upper secondary education or with a bachelor's degree. In the last ten years, the proportion of 25-64 year-olds with tertiary education attainment has increased from 21% to 30%, and the wage premium for adults with a tertiary education has increased by 6 percentage points (OECD, 2016c). This trend suggests that the demand for tertiary-educated individuals has kept up with the increasing supply from higher educational institutions in most OECD countries.

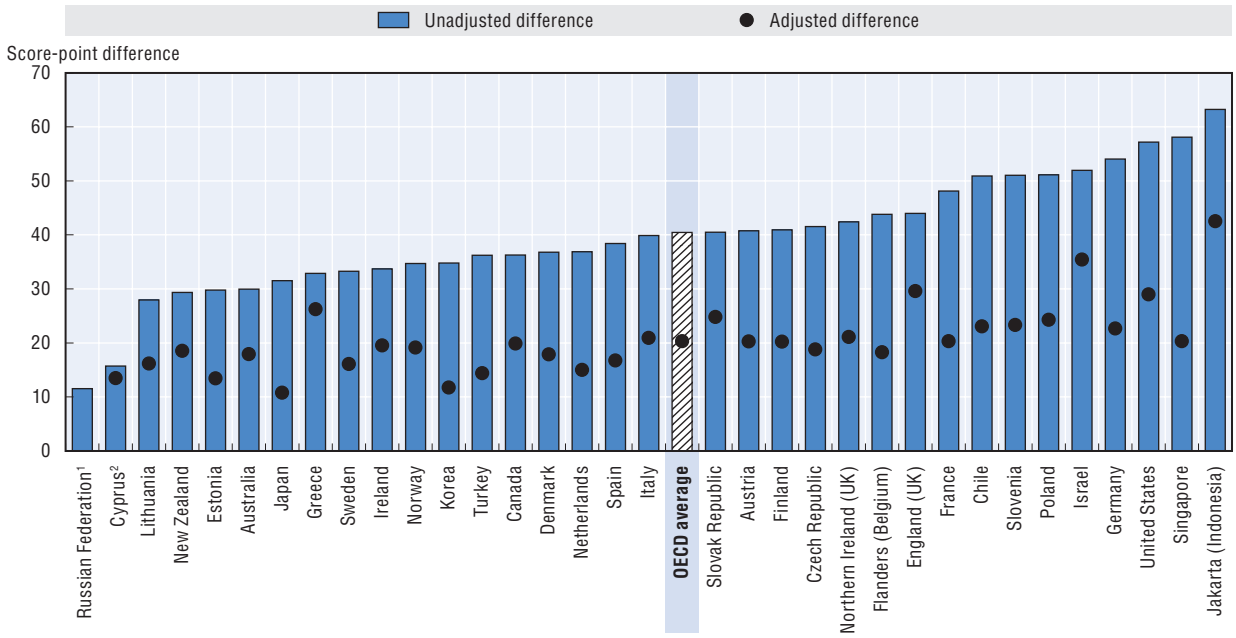
Unequal learning opportunities and outcomes over the life course

Considering how important education and skills have become in the labour market, a critical question is whether such learning opportunities can be accessible to all. This report finds that countries have been advancing at different rates in providing quality education and skills development opportunities to disadvantaged individuals. In most countries, inequality in learning

opportunities begins at birth, and often widens as individuals grow older. These inequalities result in very different life outcomes for adults. In some countries, access to learning opportunities differs considerably between certain population groups. As a result, a substantial gap in literacy scores has been found between adults with highly and poorly educated parents, according to the Adult Skills Survey (Figure 1.1). Even after accounting for socio-demographic factors such as gender, age, foreign-born status and years that a respondent has been working for the current employer or has been self-employed, a gap in literacy skills remains in all countries participating in the survey. The gaps are particularly high in Israel, the United Kingdom (England), the United States, Greece, the Slovak Republic, Poland, Slovenia and Chile (OECD, 2016a).

Figure 1.1. **Difference in literacy proficiency between adults with highly and poorly educated parents**

Difference in literacy proficiency between adults with at least one parent with tertiary education and adults whose parents have not attained upper secondary education



1. The sample for the Russian Federation does not include the population of the Moscow municipal area.

Notes: All differences are statistically significant. Unadjusted differences are the differences between the two means for each contrast category. Adjusted differences are based on a regression model and take account of differences associated with other factors such as, age, gender, education, immigrant, and language background. Only the score-point differences between two contrast categories are shown, which is useful for showing the relative significance of parents' educational attainment in relation to observed score-point differences. Upper secondary education includes ISCED 3A, 3B, 3C long and 4. Tertiary includes ISCED 5A, 5B and 6. Adjusted difference for the Russian Federation is missing due to the lack of language variables.

2. Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Source: OECD (2016a), *Skills Matter: Further Results from the Survey of Adult Skills*, http://dx.doi.org/10.1787/9789264258051-en,

StatLink http://dx.doi.org/10.1787/888933638106

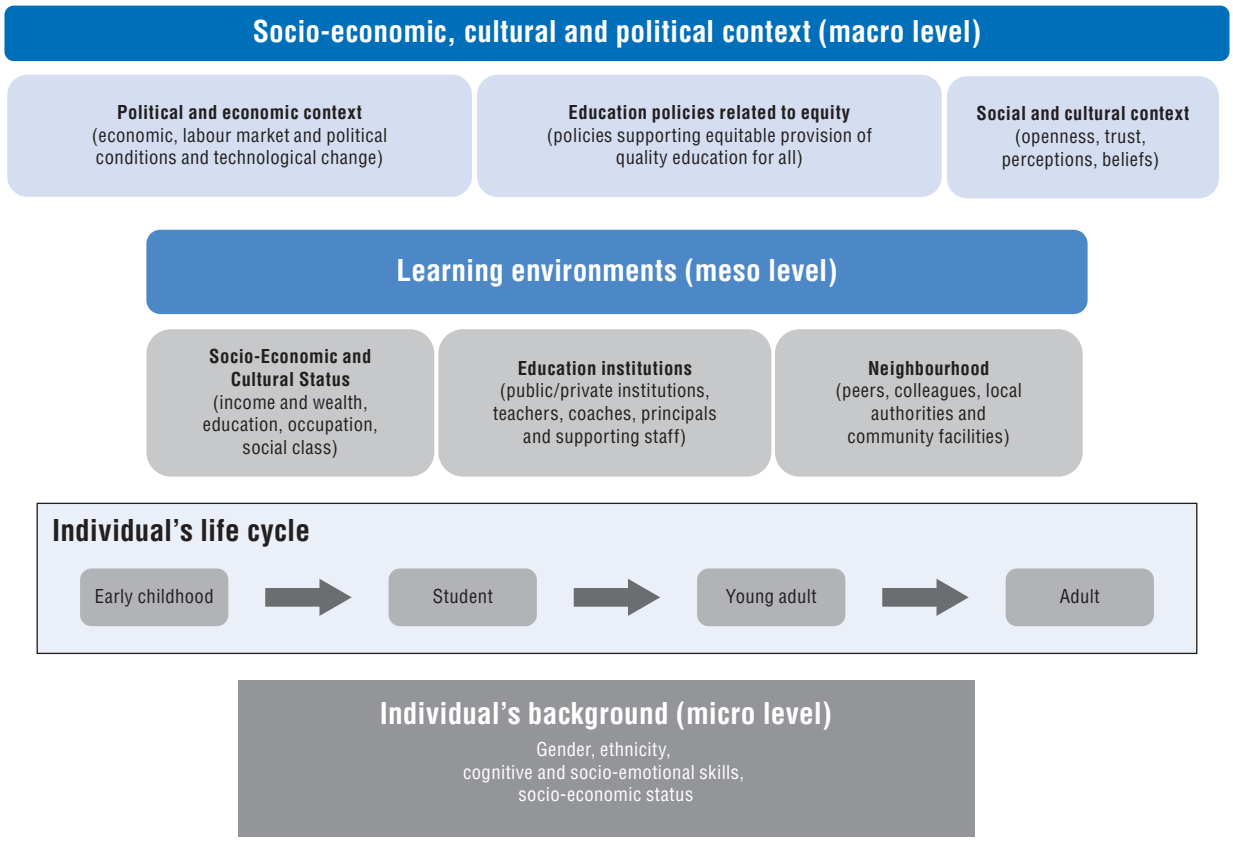
Various factors affecting individuals' life outcomes

Unequal distribution of learning outcomes by socio-economic status exists in all countries without exception. However, the gap varies considerably across countries. This suggests that countries have made varying progress in mitigating the impact of

families' socio-economic backgrounds on their children's life outcomes. Prior to exploring the action that countries have taken to address issues of equity, it is crucial to understand which factors affect individual life outcomes, in order to identify areas of intervention for policy makers. This report presents a conceptual framework that captures various factors affecting individual life outcomes on three levels: namely, individual backgrounds, learning environments, and socio-economic and political contexts (Figure 1.2). The framework highlights comprehensive and multidimensional factors affecting outcomes that are not confined to parents' socio-economic status. The quality of education institutions, teachers, school leaders and neighbourhoods can also have a direct impact on individual outcomes. In addition, public policies, such as education and labour market policies, political and economic conditions, as well as socio-cultural contexts, can influence outcomes.

Figure 1.2. **Conceptual framework**

Sources of inequality that affect individuals' socio-economic outcomes



Sources: Author's own work, based on Autor D. and D. Acemoglu (2011), "Skills, tasks and technologies: Implications for employment and earnings", in O. Ashenfelter and D. Card (eds.), *Handbook of Economics*, Vol. 4; Card, D. and J. Di Nardo (2002), "Skill-biased technological change and rising wage inequality: Some problems and puzzles," *Journal of Labor Economics*, Vol. 20/4, pp. 733-83; Corak, M. (2013), "Income Inequality, Equality of Opportunity, and Intergenerational Mobility", *IZA Discussion Paper*, No. 7520; D'Addio, A. (2007), "Intergenerational Transmission of Disadvantage: Mobility or Immobility Across Generations?", *OECD Social, Employment and Migration Working Papers*, No. 52, http://dx.doi.org/10.1787/21773050555; OECD (2015e), *Skills for Social Progress: The Power of Social and Emotional Skills*, OECD Skills Studies, http://dx.doi.org/10.1787/9789264226159-en; OECD (2013), *PISA 2012 Results: What Makes Schools Successful (Volume IV): Resources, Policies and Practices*, http://dx.doi.org/10.1787/9789264201156-en; and OECD (2006), *Starting Strong II: Early Childhood Education and Care*, http://dx.doi.org/10.1787/9789264035461-en;

How are countries performing on equity-relevant indicators?

A set of 11 equity-relevant indicators have been selected to help illuminate how countries are advancing in providing equitable learning opportunities for individuals from disadvantaged backgrounds and to identify the stages at which improvements in equity are needed (Table 1.1 and Annex Tables 2.A2.1; 2.A2.2 and 2.A2.3 in Chapter 2). Only a few OECD countries demonstrated outstanding equity performance over the individual life course. Estonia, Japan, Korea and the Netherlands have a level of equity performance above the OECD average in 10 out of 11 indicators relevant to equity in education, while most other countries have ample room for improvement to ensure better learning outcomes for individuals from disadvantaged backgrounds. On the other hand, Israel, the Slovak Republic and the United States, show above-OECD average performance in only 1 or 2 indicators out of 11 indicators relevant to education equity. Chile, France, Poland, Turkey and the United Kingdom have performance above the OECD average in 3 or 4 out of 11 indicators. These countries show exceptionally large gaps between the socio-economically advantaged and disadvantaged groups. This suggests that disadvantaged children from these countries are less likely to obtain the skills necessary for today's technology-rich and versatile labour markets and improve their socio-economic status. Considering that acquiring labour market-relevant skills and obtaining well-recognised educational qualifications have become major determinants of labour market outcomes, the lack of equity in education in these countries is worrisome.

Some countries stand out with regards to indicators on early childhood education. In 2012, over 85% of 15-year-olds from the most disadvantaged backgrounds in Belgium, France, Hungary, Iceland, Japan and the Netherlands reported having more than a year of pre-primary education experience (Table 1.1 and Annex Table 2.A2.1 in Chapter 2). For educational investments made during early childhood to be productive, continued support throughout schooling is crucial. This is particularly true for those disadvantaged students who have had little to no preschool experience. Some countries stand out in providing access to early childhood education for children from the most disadvantaged socio-economic backgrounds. However, the learning outcomes of these students at the age 15 and from 20 to 29 are not as successful. Austria, Belgium, France and Italy fall into this group of countries. Yet, Canada, Estonia, Finland, Ireland, Japan, Korea, Latvia and Spain perform above the OECD average on equity grounds in at least 3 performance levels out of 4. In particular, Estonia, Finland, Japan and Korea had an exceptionally high proportion of resilient students. About 46% of students in Estonia were found to be resilient in 2006. In Finland the figure was 53%, in Japan 41% and in Korea 44% (Table 1.1 and Annex Table 2.A2.1 in Chapter 2).

In addition, equity performance of young adults aged 20 to 29 in 2012 and 2015, which includes PISA 2006 cohorts, continued to be high in Estonia, Finland, Japan and Korea. Numeracy score differences between young adults with highly and poorly educated parents were below the OECD average in these countries. The percentage of young adults with poorly educated parents scoring below Level 2 in numeracy was lower than the OECD average. Estonia, Finland, Japan and Korea also have lower than the OECD average proportion of 16-29 year-old "Not in Education, Employment, or Training" (NEETs) with poorly educated parents, as measured by the Survey of Adult Skills. These countries managed to maintain high equity during the student years of individuals' lives and through young adulthood (Table 1.1 and Table 2.A2.3 in Chapter 2).

Table 1.1. **Snapshot of indicators relevant to equity in education throughout the life course**

	Early Childhood	Student learning outcomes				Adult skills and labour market outcomes		
	Early childhood education experience among disadvantaged students[1]	Score-point difference in science associated with one-unit increase in the index of ESCS[2] (PISA 2006)	Difference in science performance between students whose parents are highly and poorly educated[3] (PISA 2006)	Percentage of disadvantaged students performing below Level 2 in science (PISA 2006)	Percentage of resilient students[4] (PISA 2006)	Score-point difference between 20-29 year-old adults with highly and poorly educated parents[5]	Percentage of 20-29 year-olds with poorly educated parents[5] performing below Level 2 in numeracy	Proportion of 16-29 year-olds not in education, employment, or training (NEETs) with poorly educated parents[5]
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	%	Score dif.	Score dif.	%	%	Score dif.	%	%
OECD average	**66.3**	**40**	**79**	**48.0**	**27.7**	**46**	**34.6**	**19.5**
Australia	42.7	43	62	34.3	33.1	38	29.4	18.1
Austria	80.7	46	108	47.3	28.1	58	28.3	13.2
Belgium	89.2	48	98	47.3	25.8	56	27.9	9.2
Canada	42.6	33	71	25.8	38.0	36	33.8	16.8
Chile	27.9	38	93	85.4	15.0	53	71.2	16.5
Czech Republic	84.4	51	c	41.4	28.8	56	34.6	23.1
Denmark	72.6	39	86	48.7	19.6	48	27.3	11.4
Estonia	76.7	31	c	20.0	46.2	37	25.4	17.8
Finland	51.4	31	39	11.3	53.1	50	22.0	7.7
France	87.5	54	84	55.3	23.6	50	28.4	21.0
Germany	79.2	46	94	41.6	24.8	47	34.4	13.5
Greece	59.9	37	80	61.4	20.4	36	37.6	36.4
Ireland	34.2	39	66	40.1	29.2	36	31.0	20.5
Israel	73.0	43	81	79.6	13.4	61	52.1	25.8
Italy	84.2	31	49	62.5	23.7	36	34.3	25.3
Japan	95.8	39	c	32.3	40.5	27	16.2	17.5
Korea	79.8	32	55	28.9	43.6	23	12.0	17.3
Netherlands	92.7	44	70	36.8	32.0	36	17.0	5.6
New Zealand	60.3	52	82	37.8	35.1	44	30.0	12.9
Norway	78.0	36	c	49.2	17.2	48	43.4	7.7
Poland	28.4	39	121	44.5	31.4	55	34.6	26.3
Slovak Republic	63.9	45	152	54.9	20.3	80	53.3	58.3
Slovenia	61.4	46	111	38.9	30.3	45	31.2	18.1
Spain	80.1	31	56	49.6	28.5	32	29.9	16.8
Sweden	61.9	38	59	42.0	24.0	39	19.3	12.6
Turkey	1.7	31	74	87.6	23.2	42	45.3	33.6
United Kingdom*	61.1	48	87	42.6	30.5	65	58.5	29.0
United States	61.1	49	97	62.7	19.3	57	50.6	12.8

1. Percentage of students from the bottom quarter of the socio-economic profile reporting more than a year of pre-primary education.
2. ESCS refers to the PISA index of economic, social and cultural status.
3. Highly educated means one or both parents attained tertiary education (ISCED level 5 and 6); low educated means one or both parents attained secondary education (ISCED level 2) as their highest level of education.
4. A student is classified as resilient if he or she is in the bottom quarter of the PISA index of economic, social and cultural status (ESCS) in the country/economy of assessment and performs in the top quarter of students among all countries/economies, after accounting for socio-economic status.
5. Highly educated parents are defined as at least one parent obtained tertiary education and poorly educated parents are defined as neither parents obtained upper secondary education.
"c" indicates there are too few observations to provide reliable estimates (i.e., there are fewer than 3 percent of students for this cell or too few schools for valid inferences).
*Data estimates for United Kingdom for indicators (6), (7), (8) denote data for England.

Sources: (1) PISA 2012 Database: OECD (2013), *PISA 2012 Results: What Makes Schools Successful (Volume IV): Resources, Policies and Practices*, http://dx.doi.org/10.1787/9789264201156-en, Table IV.3.34V; (2) *OECD PISA 2006 Database*, Table 4.4c, http://www.oecd.org/pisa/data/database-pisa2006.htm, OECD (2007), *PISA 2006: Science Competencies for Tomorrow's World: Volume 1: Analysis*, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264040014-en (3) *OECD PISA 2006 Database*, Table 4.7a, OECD (2007), *PISA 2006: Science Competencies for Tomorrow's World: Volume 1: Analysis*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264040014-en, (4) *OECD, PISA 2006 Database*, Table I.2.2a, http://www.oecd.org/pisa/data/database-pisa2006.htm; OECD (2016), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264266490-en (5) *OECD, PISA 2006 Database*, Table I.6.17, http://www.oecd.org/pisa/data/database-pisa2006.htm OECD (2007), PISA 2006: Science Competencies for Tomorrow's World: Volume 1: Analysis, OECD Publishing, Paris. http://dx.doi.org/10.1787/9789264040014-en (6, 7, 8), OECD (2016d), *Survey of Adult Skills (PIAAC)* (Database 2012, 2015), www.oecd.org/site/piaac/publicdataandanalysis.htm.

StatLink http://dx.doi.org/10.1787/888933638087

Recent improvements in educational equity over time

Together with key equity indicators that focus on specific cohorts, the recent changes in equity-related indicators over time have important implications. The changes over time in equity indicators demonstrate whether education systems have been improving with respect to equity. They can also help to predict the levels of inequality in both learning and labour market outcomes in the future workforce. Analysis of the trends in equity indicators suggests that all countries need to continue working on improving equity throughout the life course of individuals (OECD, 2016g).

Across most OECD countries, neither performance in the sciences nor levels of equity vastly changed between 2006 and 2015. In PISA 2015, the degree to which students' socio-economic status predicted performance in science decreased to 12.9%, a drop of 1.4 percentage points. Although it is encouraging to observe that in recent years, several countries, such as the United States, Mexico and Chile, have made great improvements in providing more equitable educational opportunities, this does not make up for the lack of support that disadvantaged students from earlier cohorts have already experienced. These students who have now become adults need targeted support to make up for the loss during their school years. In addition, although these countries have narrowed the gaps in performance between students from different socio-economic backgrounds, the size of the gap in these countries is still relatively large when compared to the OECD average and to the gap in highly equitable countries. The trend data also suggests that no significant improvements have been made in equity among countries with a traditionally high level of equity performance in PISA. In fact, in a number of countries, equity outcomes have deteriorated in the last nine years. In Finland and Korea, for example, the gap in science performance between students from different socio-economic backgrounds has widened.

Public policies that empower individuals and create inclusive growth

Policies and systems that focus on empowering individuals can achieve long-lasting, inclusive economic growth and social cohesion. Such policies include providing, especially to disadvantaged individuals, healthcare and lifelong opportunities to improve skills relevant to the labour market (Sunde and Vischer, 2011; OECD, 2015a). Policies that empower low-income individuals to obtain high-quality, stable jobs can mitigate inequalities, especially if efforts are directed at those who earn the least. These policies can also make inclusive and sustainable economic growth more feasible. Research shows that lowering inequality by reducing income disparities at the bottom of the income distribution has a greater impact on economic growth than reducing inequality at the top end of the distribution (Rajan, 2010; OECD, 2015a). This is due in part to the fact that reducing inequality for low-income people allows the benefits of growth to be shared with a wider section of the population. In addition, dealing directly, at an earlier stage, with the root causes of income inequality, such as education and skills inequality, is more effective than trying to fix the symptoms at later stages of life, through redistribution policies like taxes and transfers (OECD, 2015a).

Prioritising public spending

Effective policies are to empower individuals require adequate investment in social sectors like education. In 2016, public social spending was 21% of GDP on average across OECD countries. In recent years, public social spending-to-GDP ratios have been highest in France, at 32% of GDP, followed by Finland (over 30%). Social spending-to-GDP ratios have

fallen in a few OECD countries, including Hungary, Luxembourg, Latvia and Ireland, but have only slightly increased or have remained stable in most.

Most OECD countries spend far less on education as a percentage of GDP, especially post-secondary education, than on pensions or healthcare. On average, public expenditure on primary, secondary and post-secondary education as a percentage of GDP was 3.4%. In addition, between 2010 and 2012, public spending as a percentage of GDP for all levels of education fell by 3% on average across OECD countries where data is available. Australia, Estonia, Hungary, Norway, Portugal and Spain lowered spending by more than 8% during this period (OECD, 2016d). Although public expenditure decisions depend on the priorities of each country, investment in education, especially for children and disadvantaged individuals, need to be prioritised to build equitable and inclusive societies.

Policy recommendations on ensuring equitable educational outcomes at each stage of life

Given the importance of lifelong educational support for individuals from disadvantaged backgrounds, this report brings together policy recommendations on ensuring educational equity in each stage of life. These recommendations are drawn from existing OECD research, as well as from research papers and studies outside the OECD. This report also provides concrete policy examples and practices that have been successful in providing equitable educational opportunities for the disadvantaged.

Invest in early childhood education (Chapter 3)

Early childhood is a critical phase for human development. Research shows that the cognitive, social and emotional skills developed during the first years of life set the stage for future potential (OECD, 2015e). Early learning deficiencies can be overcome, but inadequate learning environments and lack of support can hamper educational development and have lasting impacts on individuals later in life (OECD, 2015e). Children from less privileged socio-economic backgrounds are far less likely to benefit from high-quality home learning environments and early childhood education and care services (ECEC) than their more affluent peers. As a consequence, targeted policies need to be considered to ensure high-quality learning opportunities for children from disadvantaged backgrounds. These include:

Remove barriers to ECEC

Children from disadvantaged backgrounds are more likely to face barriers in accessing quality ECEC facilities. These include the cost, proximity and availability of good ECEC facilities, and a lack of information about ECEC services. Some OECD countries have been successful overcoming these barriers, but others, including Chile, Ireland, Poland and Turkey have not been very successful in providing access to ECEC for children from the most disadvantaged socio-economic backgrounds (Table 1.A1.1 in the Annex). In these countries, further efforts need to be made to remove barriers preventing children from disadvantaged backgrounds from access to ECEC services.

Ensure provision of quality of ECEC

Low quality ECEC without strong health, safety and other quality regulations can have negative and severe consequences on children's physical and socio-emotional development, as well as on their learning outcomes. Children from disadvantaged backgrounds are generally at higher risk of not being able to access quality ECEC services. OECD research on ECEC (OECD, 2006; OECD, 2001) has found that low staff-child ratios and small group sizes

must be maintained to ensure safety and quality of ECEC services. Standards for ECEC staff qualifications and experience and the training for teaching and caring for young children must be maintained to ensure quality ECEC services. To attract effective teachers to ECEC, salaries and working conditions must be attractive. National ECEC curricula and manuals, and guides for professional staff members, also play a crucial role in ensuring quality of ECEC services. The curricula need to cover learning that accounts for children's developmental stages into consideration. Standards for the design, layout, space and hygiene of ECEC facilities need to be set. Such regulations can ensure that children are learning and being cared for in a safe, creative environment that optimises learning and interactions with their peers and teachers.

Support family and community-based interventions

Young children spend a majority of their time at home with either parents or caregivers. Home learning environments thus have a direct impact on children's early childhood outcomes. Evidence-based parenting programmes for families, home visits for troubled families and subsidies to boost family income can help such families improve the learning environment they provide for their children (OECD, 2011).

Support low performers from disadvantaged backgrounds and disadvantaged schools (Chapter 4)

For educational investments made during early childhood to be productive, continued support throughout schooling is crucial. This is particularly true for disadvantaged students who have had little to no preschool experience. Some countries are particularly successful in providing access to ECEC for children from the most disadvantaged socio-economic backgrounds but the learning outcomes for these students at the age 15 and from 20 to 29 are not as successful. Austria, Belgium, France and Italy fall into this group (Tables 2.A2.1 and 2.A2.2 in Annex 2.A2). Disadvantaged schools are typically most in need of high-quality resources and support, but in most countries, they are more likely to suffer from financial constraints and a lack of staff. Disadvantaged schools also tend to have a disproportionately high number of students considered to be low performers and at risk of dropping out (OECD, 2016f). The following policy recommendations should be taken into consideration:

Identify low performers early and provide targeted support

Low performers need to be identified early, so that teachers and parents can provide early, regular and timely support to those at risk of falling behind. Sorting and segregation mechanisms such as academic tracking and ability grouping can perpetuate educational inequality in schools. This is often costly, not to mention ineffective in improving educational outcomes. In particular, disadvantaged students are far more likely than more advantaged students to be sorted into non-academic tracks, such as Vocational Education and Training programmes. Academic selection should be delayed and grade repetition avoided for greater equity. Instead, high academic commitment, attitude and behaviour should be expected from all.

Support disadvantaged schools

Allocation of adequate resources to disadvantaged schools is essential in ensuring that all students receive the high-quality education and training they need to fully participate in society (OECD, 2016f). Providing such schools with additional financial and human resources is essential. School budgets should prioritise spending, as well as investing in high-quality human resources such as school leaders and teachers, who play a critical role

in reducing educational inequality in their schools. Monetary or professional-level incentives can also be used to attract effective school leaders and teachers to disadvantaged schools. Targeted support should be given to school leaders and teachers in disadvantaged schools, and efforts need to be made to connect them to other school leaders and teachers, which can help them share knowledge and provide assistance to each other (OECD, 2012; OECD, 2016f).

Provide continuing education opportunities for adults (Chapter 5)

Failed interventions and investments in early childhood and schooling can result in serious consequences in adulthood that are harder to resolve. Many adults who have dropped out of school early may have less than a basic level of literacy and numeracy skills. This is an enormous obstacle to overcome in entering the job market or participating in training later in life. It is therefore crucial that these adults be provided with adequate opportunities to improve their basic skills. On average across OECD countries, according to the OECD population database (OECD, 2017a and 2017b) in 2012, 66% of the population was of working age (16-64 year-olds) compared to 18% of the school-age population under 15. Given the size of the working-age population and the significant economic and social role it plays, it is too important to leave these adults to their own devices to upgrade, maintain and add to their existing skills. Inaction will only exacerbate inequality in skills distribution in the society, since those with more resources are likely to invest more on their lifelong learning and those without the resources are less likely to do so. Participation rate in adult education and training is significantly higher for high-skilled adults than mid- to low-skilled adults (Grotlüschen et al., 2016). In particular, low-skilled adults who are unemployed or of immigrant background participate much less in training than their more skilled counterparts, despite the very large potential gains (Grotlüschen et al., 2016). The following policy solutions should be taken into consideration:

Focus on improving employability of adults from disadvantaged backgrounds

Education and training have a critical role in equipping learners with skills, knowledge and personal attributes that increase their likelihood of being employed and pursuing occupations of their choice (also known as "employability"). To increase adults' employability, it is important to ensure that they have the basic requirements, such as literacy, numeracy and computer skills, through education and training programmes (OECD, 2016a). Opportunities for learning, such as apprenticeships, internships and well-designed work-based learning, if combined with work experience, can enhance their transition into the labour market. France, Germany, Switzerland and the United Kingdom have introduced various initiatives to incorporate work experience in learning. Career information and guidance can help adults make informed decisions about their careers, and better prepare them to enter the labour market (OECD, 2015d). Experience in OECD countries shows that governments need to provide financial incentives for employers to take on unemployed adults as trainees and set up simple, transparent administrative procedures to ensure that sufficient places are available.

Provide targeted support to the most vulnerable group of adults

In adult learning is to be effective, targeted support is crucial. The most vulnerable groups of adults need to be identified and offered opportunities tailored to their needs. This report focuses on learning opportunities for adults with a low level of education and skills. They include population groups who face particular challenges and barriers to learning, such as: unemployed young adults; single mothers and women who have been out of the labour market for a long period; and immigrants without language skills. Each group faces

different challenges and barriers, and policies and support systems are needed to address their particular concerns. Since these groups are the most vulnerable to economic changes and labour market conditions, investing in maintaining and enhancing their skills should be made a priority.

Reducing barriers to participation in adult education

Removing financial, situational and time-related barriers to participation in learning programmes is absolutely essential, especially for the socio-economically disadvantaged. Co-financing and tax incentives are particularly effective. A variety of co-financing arrangements policymakers are one option to consider, including Individual Learning Accounts (ILA), accounts set up exclusively for adult-learning purposes, vouchers and training allowances and training leave. In addition, tax-based mechanisms such as tax allowances and tax credits that reduce the tax liability on at least part of an individual's spending directly related to skills training costs can remove cost barriers and act as an incentive for participating in adult learning (OECD, 2017). Such tax incentives can increase the returns to skills by making the costs of skills acquisition deductible for personal tax purposes. To remove time and situational barriers, innovative and effective adult learning programmes, such as online, distance and family-based learning programmes can be used. In addition, providing courses on a part-time basis, on evenings and weekends, can help increase flexibility and encourage participation in adult education (OECD, 2005).

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Chapter 2

Accumulation of disadvantages over the life course

This chapter describes how disadvantages can accumulate over the life of an individual, starting at birth and moving on to varying economic and social outcomes in adulthood. In the context of rising inequality in income and wealth, the extent of inequality in opportunities has become a particular concern in recent years. Acknowledging that such disadvantages accumulate over time, equity policies need to take a comprehensive view of human capital accumulation over the life cycle. This implies that investments and support need to be continuous throughout an individual's life span. The role of public policies has become ever more important in ensuring equal educational opportunity.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Opportunity for all?

"Life should be better and richer and fuller for everyone, with opportunity for each according to ability or achievement […], regardless of the fortuitous circumstances of birth or position" (Adams, 1931, pp. 214-215). This is the definition of the American Dream as described by James Truslow Adams in his book *The Epic of America*, published in 1931. The essence of the American Dream is that "all men are created equal" with the right to "Life, Liberty and the Pursuit of Happiness"[1]. This concept of equal opportunities for all, however, has become a mere dream for some, while a privileged few enjoy abundant opportunities to succeed in life. Recent studies (Corak, 2013; OECD, 2015a; OECD, 2012; IMF, 2015) point to growing economic and social inequality around the world and call into question the notion that everyone can succeed.

In an era of increasing income inequality, an individual's socio-economic and demographic background tends to play a major role in determining life outcome. Inequality in income and wealth can limit the opportunities for those who in the lower levels of income and wealth distribution to move up the economic and social ladder. Those who start at a disadvantage are less likely to have access to a high-quality learning environment and to receive support for developing the capacity to climb up the socio-economic ladder as they grow up. As a result, educational and skills gaps between individuals of different socio-economic status (SES) can exacerbate income and wealth inequality, perpetuating the vicious cycle. Given that a good education is essential for obtaining the skills needed to achieve successful outcomes later in life, education policies and school practices need to focus on providing equitable educational opportunities for all (see Box 2.1).

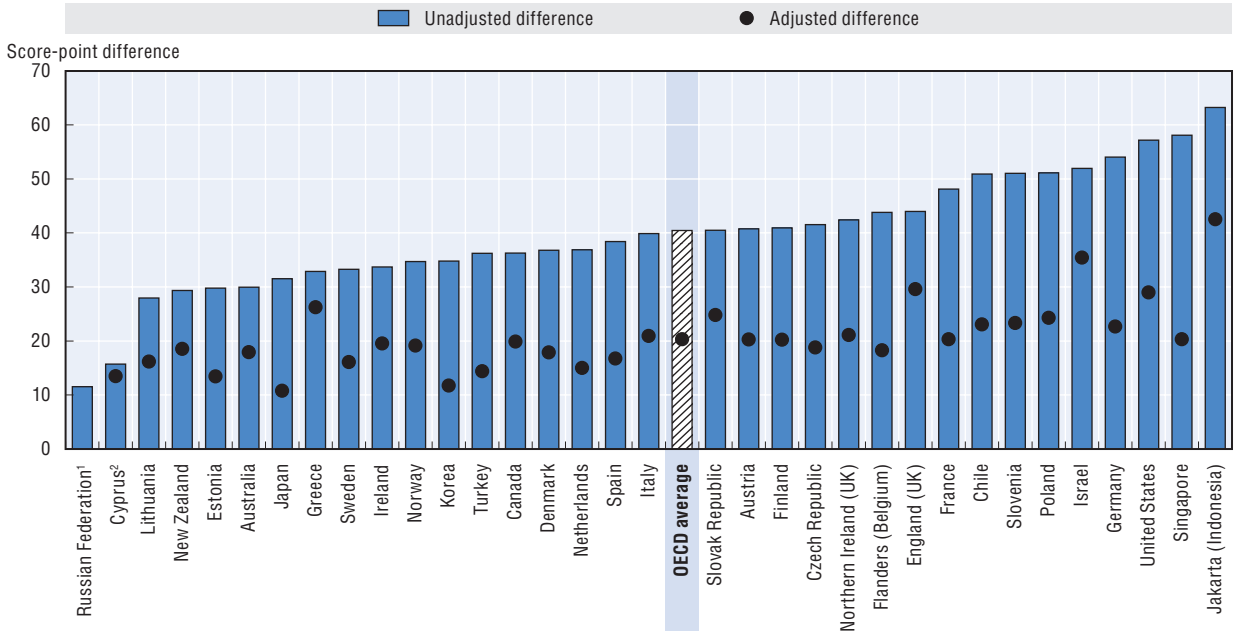
Box 2.1. **Equity in education**

Equity in education is commonly understood as providing similar educational opportunities to all (in other words, fairer access), regardless of gender, family background or socioeconomic status. Unfortunately, a formal definition of equal opportunities does not guarantee equitable outcomes, because individuals with disadvantages may require targeted support to benefit from those opportunities. *Compensatory* measures may be necessary to make up for individuals' unfavourable backgrounds. In this sense, the concept of equity in education incorporates well-targeted support that helps individuals to rise to the same starting point as those of more advantaged backgrounds at each stage of life. For example, some early childhood programmes are designed to provide extra support to children from disadvantaged backgrounds to put them on an equal footing when they begin primary school) and ensure that everyone achieves the minimum standard of education required to fully participate in society. Field, M. Kuczera and B. Pont, in their 2007 OECD report, also highlight *fairness*, that is, ensuring that personal and social circumstances – for example gender, socioeconomic status or ethnic origin – do not present an obstacle to achieving educational potential. They also identify another concept, of *inclusion*, which implies ensuring a basic minimum standard of education for all. As presented by the report, this is exemplified as ensuring that all students are able to read, write and perform simple arithmetic. While fairness and inclusion overlap, they are different concepts.

The Survey of Adult Skills (the Programme for the International Assessment of Adult Competencies, PIAAC) provides a wide range of information indicating how adult outcomes differ according to socio-economic status (OECD, 2016a). Evidence of the accumulation of disadvantages is reflected in levels of education, skills and earnings. The Adult Skills Survey revealed a substantial gap (a difference of 40 points) in literacy scores between adults with highly and poorly educated parents (Figure 2.1.). Even after accounting for socio-demographic factors such as gender, age, foreign-born status and the number of years the respondent has been working for a current employer or has been self-employed, a gap in literacy skills remains in all countries participating in the survey (OECD, 2016a). The gaps are particularly high in Israel, the United Kingdom (England), the United States, Greece, the Slovak Republic, Poland, Slovenia and Chile (OECD, 2016a). This suggests that adults with more educated parents have benefited from much better learning opportunities and support than those whose parents who are not as well educated. Public education systems must be better designed to reduce these gaps, particularly in countries where especially large gaps are found among individuals of different socio-economic backgrounds.

Figure 2.1. **Difference in literacy proficiency between adults with highly and poorly educated parents**

Difference in literacy proficiency between adults with at least one parent with tertiary education and adults without a parent who has attained upper secondary education



1. The sample for the Russian Federation does not include the population of the Moscow municipal area.
2. Note by Turkey: information in this document referring to "Cyprus" relates to the southern part of the island. No single authority represents both Turkish and Greek Cypriots. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".
Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations, with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.
Notes: All differences are statistically significant. Unadjusted differences are the differences between the two means for each contrast category. Adjusted differences are based on a regression model and take account of differences associated with other factors, such as age, gender, education, immigrant and language background. Only the score-point differences between two contrast categories are shown, which is useful for showing the relative significance of parents' educational attainment in relation to observed score-point differences. Upper secondary education includes ISCED 3A, 3B, 3C long and 4. Tertiary includes ISCED 5A, 5B and 6. The adjusted difference for the Russian Federation is missing due to the lack of language variables.

Source: OECD (2016a), *Skills Matter: Further Results from the Survey of Adult Skills*, http://dx.doi.org/10.1787/9789264258051-en.

StatLink http://dx.doi.org/10.1787/888933638106

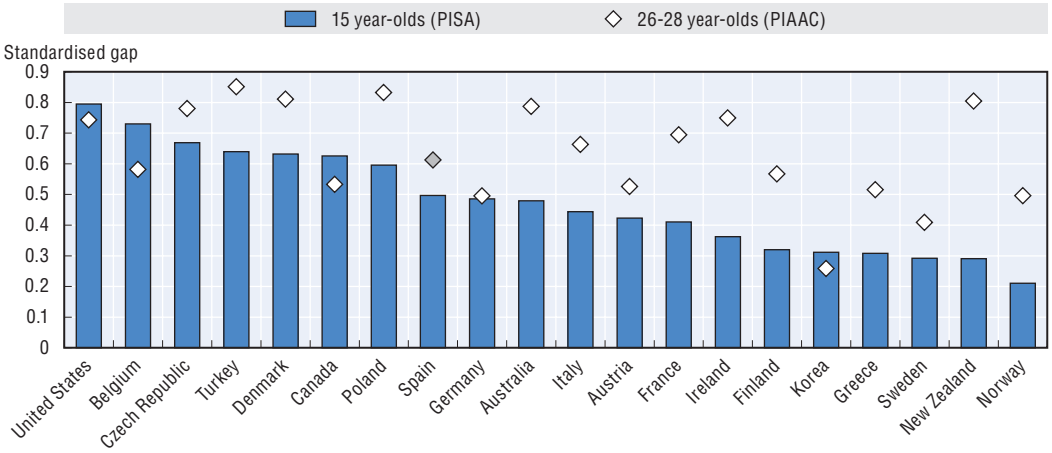
Accumulation of disadvantages over life course: the vicious cycle

Learning gaps in literacy proficiency between adults with highly and poorly educated parents in the Survey of Adult Skills appear to be a result of the variation in learning opportunities and environments during the formative years. Those with highly educated parents are more likely to have experienced a high-quality learning environment in early childhood, both at home and thanks to early childhood education and care (ECEC) services. If they have a head start in their early years, their cognitive and non-cognitive learning abilities are likely to develop further during their school years, in part due to the continued support of their highly educated parents. These positive influences, both from their parents and their learning outcomes, are likely to predispose them to pursue a degree in higher education and to benefit from greater labour market returns on their education. Unequal socio-economic backgrounds can exacerbate the accumulation of advantages or disadvantages over an individual's life, creating a vicious or virtuous cycle. Unless additional support is given to those who are falling behind, particularly through high-quality education, it is very difficult for individuals to overcome their initial disadvantages in the longer term.

The latest working paper from the OECD on youth transition (Borgonovi et al., 2017), confirms that the gap in reading between 15-year-olds who have highly educated parents and those who have poorly educated parents widens by the age of 27 in literacy proficiency (Figure 2.2). The increase in the gap is substantial as students transition into adulthood in Australia, France, Ireland, New Zealand. On the other hand, Korea had a small gap for those of the age of 15, which even slightly decreased by the age of 27. Belgium (Flanders), Canada and the United States had a large gap at age 15, but the gap had narrowed slightly by age 27. In particular, the report finds that skills gaps widen much faster among the lowest achievers. Between the ages of 15 and 27, the literacy gap on average between those of highly and those of poorly educated parents for those at the bottom end of the performance scale (10th percentile) widened much more than for those at the higher level of skills distribution.

Figure 2.2. **Disparities in literacy between individuals with and without tertiary-educated parents at the age of 15 and for 26-28 year-olds**

PISA 2000 (15-year-olds) and PIAAC 2012 or 2015 (26-28 year-olds)



Note: The standardised gap refers to the difference in the mean scores of individuals with at least one parent educated at the tertiary level and individuals without tertiary-educated level parents divided by the average standard deviation of countries participating in the study. Countries are ranked in descending order of the gap in PISA. Diamonds highlighted in a darker shade, as in Spain, represent groups for which the gap is statistically insignificant at the 5% level. For Greece, New Zealand and Turkey the year of reference is 2015 for the 26-28 year-olds and 2003 for the 15-year-olds.

Source: Borgonovi et al. (2017), "Youth in transition: How do some of the cohorts participating in PISA fare in PIAAC?", *OECD Education Working Paper*, No. 155, http://dx.doi.org/10.1787/51479ec2-en.

StatLink http://dx.doi.org/10.1787/888933638125

Early childhood

Early childhood is a critical period. As the American economist and Nobel laureate James Heckman explains in his paper "Policies to foster human capital" (2000), "Early learning begets later learning and early success breeds later success, just as early failure breeds later failure". In several follow-up research papers, he describes how human capital accumulates over time and how the returns to investment vary at different stages in life (Carneiro and Heckman, 2003; Cunha et al., 2005). He calls this a "dynamic complementary" model, revealing the "self-productive or self-reinforcing" character of skills, which determine how "skill and ability beget future skill and ability". Children with high levels of learning ability at an early age are more likely to augment their skills and benefit from better outcomes in future (Carneiro and Heckman, 2003; Cunha and Heckman, 2005).

In the context of Heckman's argument, children who enjoy a higher level of early learning opportunities are more likely to augment their skills throughout their lives and achieve better life outcomes, thanks to better skills formation. Since children from families of high socio-economic status (SES) are much more likely to benefit from early learning investments and enjoy a higher likelihood of attending quality early childhood education and care services (ECEC), by comparison with their peers of low SES families (OECD, 2016f), the outcomes for these two groups are likely to differ later in life.

According to the results of the PISA 2012 study across OECD countries, students who reported having had more than one year of pre-primary school experience scored on average 53 points higher in mathematics than students who had not attended pre-primary education: in other words, the equivalent of more than one year of schooling. Research has shown that participation in early childhood education, especially of good quality, can have an important influence on children's learning outcomes, not only during early childhood, but throughout their formal schooling (Berlinski, Galiani and Gertler, 2009; Entwisle, Alexander and Olson, 1997; Mistry et al., 2010). However, only around 66% of 15-year-olds from the most disadvantaged backgrounds reported more than a year of experience in early childhood education, while 81% of their peers from the highest tranche of socio-economic backgrounds reported more than a year experience of pre-primary education on average across OECD countries (OECD, 2013a).

School years

Differences in early childhood development opportunities can thus lead to a substantial gap in cognitive and non-cognitive skills upon entry to primary school. This gap is unlikely to narrow in the course of schooling, and is likely to be perpetuated. If education policies do not have a strong equity focus and are not implemented well in schools, education systems can exacerbate SES differences. Early academic tracking and grade repetition are well-known to reinforce inequalities in educational outcome. On the other hand, additional and early support for students who fall behind can help to reduce these gaps.

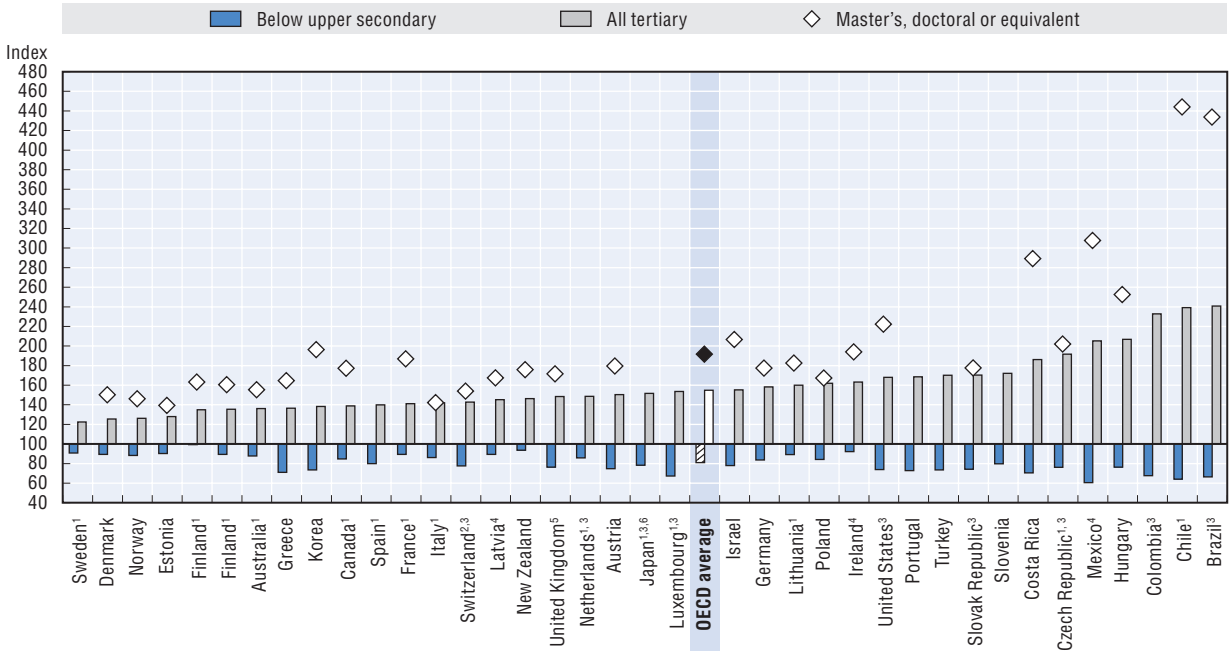
The latest PISA results show that disadvantaged students are 80% more likely to have repeated a grade, either in primary or secondary school, than their peers from advantaged backgrounds, even after their performance is taken into account (OECD, 2016g). Studies have repeatedly confirmed that grade repetition is expensive and that it is not effective in improving students' academic achievement (Jimerson, 2001; Choi et al., 2016; Fruehwirth, Navarro and Takahashi, 2016). In addition, according to school principals' reports from PISA 2015, students in advantaged schools have access to better educational materials and human resources than their peers in disadvantaged schools in most OECD countries (OECD, 2016g).

Adulthood and labour market returns onto education and skills

Not surprisingly, learning gaps during school years, and the financial resources of a student's family affect the likelihood that the student will attain a tertiary level of education, which in turn influences an individual's opportunities in the labour market. Figure 2.3 illustrates relative earnings of adults aged 25 to 64 by their levels of educational attainment, with upper secondary education as the base line (=100). On average across OECD countries, adults without an upper secondary level of education earn on average 19% less than those with an upper secondary level of education, while those with a tertiary degree earn 55% more than those with only an upper secondary education. The earnings premium for tertiary education is largest in Brazil, Chile, Colombia, Hungary and Mexico, where tertiary-educated adults earn more than twice as much as adults with only an upper secondary education. Adults in OECD countries with a master's, doctoral or equivalent degree enjoy a significant earnings premium compared to those with an upper secondary education or a bachelor's degree. Despite an increase in the last 10 years from 21% to 30% in the proportion of 25-64 year-olds who have attained tertiary education, the wage premium for adults with a tertiary education has increased by 6 percentage points over the same period (OECD, 2016c). This trend suggests that the demand for tertiary-educated individuals has kept up with the increasing supply from higher education institutions in most OECD countries.

Figure 2.3. **Relative earnings of full-time working population, by educational attainment (2014)**

25-64 year-olds with income from employment; upper secondary education = 100



Note: All tertiary education includes short-cycle tertiary, bachelor's, master's, doctoral or equivalent degrees.

1. Year of reference differs from 2014.
2. Some levels of education are included with others.
3. Index 100 refers to the combined International Standard Classification of Education (ISCED) Levels 3 and 4 of the educational attainment levels in the ISCED 2011 or ISCED-97 classification.
4. Earnings net of income tax.
5. Data for upper secondary attainment include completion of a sufficient volume and standard of programmes that would be classified individually as completion of intermediate upper secondary programmes (18% of adults fall into this group).
6. Data refer to all earners.

Countries are ranked in ascending order of the relative earnings of 25-64 year-olds with tertiary education.

Source: OECD (2016c), *Education at a Glance 2016: OECD Indicators*, Table A6.1, http://dx.doi.org/10.1787/888933397166

StatLink http://dx.doi.org/10.1787/888933638144

Despite such high returns on the attainment of qualifications beyond a bachelor's degree, the likelihood of attaining a master's degree is very low for those with poorly educated parents. OECD research conducted in 2016 (OECD, 2016b) demonstrated that the likelihood of obtaining at least a master's degree for those with poorly educated parents is as low as 3%. On the other hand, it also found that on average in OECD countries participating in the Survey of Adult Skills in 2012, this likelihood increases by almost fourfold if parents have an upper secondary education, and by seven times if parents have a tertiary education.

A set of equity-relevant indicators over the life course

Fully capturing the progress of individuals' learning outcomes, labour market outcomes and socio-emotional and other well-being requires analyses of longitudinal data. A large-scale longitudinal survey following individual outcomes from early childhood to adulthood could help track how individuals are progressing in life, and which factors affect their outcomes. If it were designed to compare certain policy impacts on learning, and labour market outcomes on treatment groups, the survey results could also help to evaluate the impact of policies on different population groups. Unfortunately, internationally comparable longitudinal datasets are not yet available.

Since comprehensive longitudinal data is not available, this report uses a set of indicators (see Box 2.2) to analyse how education systems in different countries ensure equitable learning outcomes for children, students and adults of various socio-economic backgrounds (Tables 2.A2.1; 2.A2.2 and 2.A2.3 in Annex 2.A2). The indicators are mainly derived from PISA and Survey of Adult Skills databases. They are used to understand learning and labour market outcomes of individuals of different socio-economic backgrounds. While most indicators used are taken from available OECD data, indicators on adult learning and labour market outcomes for certain age groups (20-29 year-olds and 30-65 year-olds) have been derived for the first time from the 2012 and 2015 Survey of Adult Skills databases and are presented in this report (Table 2.A2.3 in Annex). In addition, Gini coefficient values have been added to further illuminate where countries stand in terms of income inequality (Table 2.A2.1 in Annex 2.A2).

Furthermore, to capture the effect of certain education policies and systems on the life course of individuals, this report takes a cohort approach. The data is taken from cohorts born in similar years for the PISA test, and similar age groups for the results of the 2012 and 2015 Survey of Adult Skills. Cohorts born between 1984 and 1991 were 15 years old in 2000, 2003 and 2006 when they took the PISA test. These teenagers became young adults of age 20 to 29 in 2012 and 2015, when the Survey of Adult Skills was administered to individuals of the same age cohort (see Box 2.2 for more information).

Box 2.2. **Key indicators relevant to equity in education over the life course**

The following set of 11 equity-relevant indicators has been used to construct Tables 2.A2.1; 2.A2.2 and 2.A2.3.

1. **Economic indicators:** Gini coefficient.
2. **Early childhood:** Percentage of students from the bottom quarter of the socio-economic profile reporting more than a year of pre-primary education (PISA, 2012).
3. **Students:** Score-point difference in science associated with a one-unit increase in the index of economic, social and cultural status (ESCS)* (PISA 2003 and 2006); difference in science performance between students whose parents are highly educated and poorly educated* (PISA 2006); percentage of students from the bottom quarter of the PISA ESCS performing below Level 2 in science (PISA 2006); and percentage of resilient students (PISA 2006).

Box 2.2. **Key indicators relevant to equity in education over the life course** *(cont.)*

4. **Adults:** Score-point difference between 20-29 year-old adults with highly and poorly educated parents*; percentage of 20-29 year-olds with poorly educated parents performing below Level 2 in numeracy*; proportion of 16-29 year-olds Not in Education, Employment, or Training (NEETs) with poorly educated parents*; difference in employment rate between 30-65 year-olds with highly and poorly educated parents*; difference in hourly earnings (including bonuses for wage and salary earners, in PPP-adjusted USD) between 30-65 year-olds with highly and poorly educated parents*.

It is quite tricky to compare cohorts when studying PISA data and results from the Survey of Adult Skills together (OECD, 2005; OECD, 2009; OECD, 2014; OECD, 2016e). The PISA assessment is administered to a single cohort. PISA test takers must be aged between 15 years and 3 months and 16 years and 2 months at the time of testing, with a one-month variation allowed within these age parameters. The earliest data available from PISA is from 2000, with students born in 1984 or 1985. However, equity-relevant data from a number of OECD countries, including Chile, Estonia and the United Kingdom, are only available from 2006. The same is true for several partnering countries, such as Argentina, Azerbaijan, Bulgaria, Colombia, Croatia, Israel, Jordan, Kyrgyzstan, Lithuania and Montenegro. Therefore, the PISA 2006 database has been used mainly in Tables A.1 and A.2 in the Annex.

PISA 2006 was administered to cohorts born in 1990 or within the appropriate 12-month age span. These students were aged 21 to 23 when they took the 2012 Survey of Adult Skills and were aged 24 to 26 when they took the 2015 Survey of Adult Skills. Ideally, the Survey of Adult Skills outcomes of students who were born in 1990 would be examined, but given the limited sample size, the age range was expanded to individuals who were 20-29 years old in 2012 and 2015. This age range represents a generation of students similar to those who took the PISA test in 2006.

For the difference in labour market outcomes (employment rate and earnings) between adults with highly and poorly educated parents, older adults of 30 to 65 have been selected. This selection helps eliminate the effects of unstable labour market outcomes of young adults and those in education, while making it possible to see the effect of parental education on the outcomes of their children for those who were of age 30 to 65 in 2012 and 2015. This will give a complete picture of life-course perspective.

* ESCS, which allows for comparison between students and schools with different socio-economic backgrounds, is composed of the following variables relating to the family background of a student: parents' occupation; parents' education levels; the number of educational resources, such as books, at home; and material possessions at home. Socio-economic backgrounds are defined either as the index of economic, social and cultural status (ESCS) in PISA or parents' level of education attainment in the Survey of Adult Skills.

Sources: OECD (2016e), *The Survey of Adult Skills: Reader's Companion*, second edition, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264258075-en.

OECD (2014), *PISA 2012 Technical Report*, OECD Publishing, Paris, www.oecd.org/pisa/pisaproducts/PISA-2012-technical-report-final.pdf.

OECD (2009), *PISA 2006 Technical Report*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264048096-en.

OECD (2005), *PISA 2003 Technical Report*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264010543-en.

How are countries performing on equity-relevant indicators?

The unequal distribution of learning outcomes by socio-economic status exists in all countries without exception, but the size of the gap varies considerably. This suggests that countries have made varying progress in mitigating the impact of families' socio-economic backgrounds on their children's life outcomes. A set of 11 equity-relevant indicators have been brought together in Tables 2.A2.1; 2.A2.2 and 2.A2.3 in Annex 2.A2 to give a snapshot of advances in providing equitable learning opportunities for individuals from disadvantaged backgrounds and to identify the stages at which improvements in equity are needed. Among many other indicators, these indicators are chosen to provide an overall equity performance, which all countries commonly experience. For example, issues related to the immigrant population are examined in detail in Chapters 3 and 4

and are not included in 11 equity-relevant indicators, since some of the OECD countries do not have substantial immigrant populations. In the case of data on parents' level of income for the adult population, the Survey of Adult Skills does not include information on this indicator. However, considering that parents' level of education is a good proxy for overall socio-economic variables, such as parents' level of income and occupation (see Chapter 3 for more information) and that it is difficult to obtain accurate information on parents' level of income from the adult population aged between 16 and 65, parents' level of education is the best measure for understanding the socio-economic background of the adult population.

Equity performance over the life course

Only a few OECD countries demonstrated outstanding equity performance over the individual life course. Estonia, Japan, Korea and the Netherlands have a level of equity performance above the OECD average in 9 out of 10 indicators relevant to equity in education, while most other countries have ample room for improvement to ensure better learning outcomes for individuals from disadvantaged backgrounds. Australia, Canada, Finland and Sweden also have above the OECD average level of equity performance in 9 out of 11 indicators. On the other hand, Israel, the Slovak Republic and the United States, show above-OECD average performance in only 1 or 2 indicators out of 10 indicators relevant to education equity. Chile, France, Poland, Turkey and the United Kingdom have performance above the OECD average in 3 or 4 out of 10 indicators. These countries show exceptionally large gaps between the socio-economically advantaged and disadvantaged in access to early childhood education, learning outcomes of students and young adults, and labour market outcomes for adults. This suggests that disadvantaged children from these countries are less likely to obtain the skills necessary for today's technology-rich and versatile labour markets and improve their socio-economic status. Considering that acquiring labour market-relevant skills and obtaining well-recognised educational qualifications have become major determinants of labour market outcomes, the lack of equity in education in these countries is worrisome.

Early childhood outcomes

Some countries stand out with regards to indicators in early childhood education. In 2012, over 85% of 15-year-olds from the most disadvantaged backgrounds in Belgium, France, Hungary, Iceland, Japan and the Netherlands reported having more than a year of pre-primary education experience (see Table 2.A2.1 in the Annex). In other countries, however, a very low proportion of students from the most disadvantaged backgrounds reported having had more than one year of pre-primary education. Only 1.7% of 15-year-old students in Turkey, 27.9% in Chile, 28.4% in Poland and 34% in Ireland reported receiving more than one year of early childhood education in 2012. It is well-established that early childhood is a critical development phase for individuals and that its outcome influences outcomes later in life. Considering that children from disadvantaged backgrounds are less likely to benefit from high-quality home learning environments than their peers from more affluent families, provision of quality early childhood education at low or no cost is crucial for their development. Countries where disadvantaged children's participation in early childhood education is at levels that are below the OECD average and that also have high childcare costs need to put more effort into improving equity in early childhood education (for more information, see Chapter 3).

Students' learning outcomes

For educational investments made during early childhood to be productive, continued support throughout schooling is crucial. This is particularly true for those disadvantaged students who have had little to no preschool experience. However, while some countries provide excellent access to early childhood education for children from the most disadvantaged socio-economic backgrounds, either at no cost or at an affordable cost, learning outcomes of these same countries' students at age 15 and from ages 20 to 29 are less successful. Austria, Belgium, France and Italy fall into this group of countries (Tables 2.A2.1 and 2.A2.2 in the Annex).

As shown in Tables 2.A2.3, in some countries, the gap in learning outcomes between students from disadvantaged and advantaged backgrounds is particularly large. The score-point difference in science associated with a one-unit increase in the index of ESCS was around or over 50 score points in France, New Zealand, the Czech Republic and the United States in PISA 2006. Considering that around 38 score points is the equivalent of one year of schooling, the gap caused by socio-economic status is very large in these countries. In addition, difference in science performance between students with highly educated and poorly educated parents was 111 score points in Slovenia, 121 points in Poland and 152 score points in the Slovak Republic. In addition, the proportion of disadvantaged students below baseline proficiency (Level 2) in PISA assessments is worryingly high in many OECD countries. On average, 48% of 15-year-old students from disadvantaged backgrounds performed below Level 2 in science. The percentages are 88% in Turkey, 85% in Chile, 80% in Israel and 63% in the United States. Considering that Level 2 in PISA is the baseline level of proficiency needed to participate effectively and productively in life, the fact that the majority of disadvantaged students does not achieve baseline proficiency is a serious concern. Furthermore, data from the Survey of Adult Skills show that learning gaps between disadvantaged and advantaged students at the age of 15 do not narrow when they reach their 20s, particularly in the above-mentioned countries.

On the other hand, Canada, Estonia, Finland, Ireland, Japan, Korea, Latvia and Spain perform above the OECD average in equity in at least three out of four performance levels (Table 2.A2.2 in the Annex). In particular, Estonia, Finland, Japan and Korea had an exceptionally high proportion of resilient students. Some 46% of students in Estonia were found to be resilient in 2006. In Finland that figure was 53%, while in Japan it was 41% and in Korea 44% (for more information, see Chapter 3).

Inequality in skills and labour market outcomes of adults

In addition, equity performance of young adults aged 20 to 29 in 2012 and 2015, which includes PISA 2006 cohorts, continued to be high in Estonia, Finland, Japan and Korea. Numeracy score differences between young adults with highly and poorly educated parents were below the OECD average in these countries, as was the percentage of young adults with poorly educated parents scoring below Level 2. Finland, Japan and Korea also have a lower than the OECD average proportion of 16-29 year-old NEETs with poorly educated parents, as measured by the Survey of Adult Skills (Table 2.A2.3 in the Annex). These countries managed to maintain high levels of equity from students' formal schooling all the way through young adulthood. However, in Korea and Estonia, the difference in labour market outcomes between those with highly and poorly educated parents among older cohorts between the ages 30-65 years old in 2012 was slightly higher than the OECD average.

Unsurprisingly, countries with a high level of inequality in learning outcomes for students at the age of 15 demonstrate a large gap in numeracy skills at the age of 20 to 29. As shown in Table 2.A2.3, the score-point difference in numeracy between those who have highly educated parents and those who do not among 20-29 year-old adults is largest in Chile, England (United Kingdom) and Israel. In addition, 80% of 20-29 year-olds with poorly educated parents in the Slovak Republic, 65% in England (United Kingdom) and 61% in Israel scored below the baseline (Level 2) numeracy proficiency in the Survey of Adult Skills. Without basic literacy and numeracy skills, it is extremely difficult to secure a quality job that pays well, especially in today's labour market, where skills are very much appreciated. However, in Japan (16%), Korea (12%), the Netherlands (17%) and Sweden (19%), less than 20% of young adults between the ages of 20 to 29 with poorly educated parents performed below the baseline in numeracy.

Although early intervention and support are important in building a good foundation for the future, continued learning and skills development opportunities need to be provided for those adults who left the education system without a basic level of skills proficiency. Significant economic and social concerns can arise in countries where a large number of young adults leave the educational system without the baseline knowledge and skills. This is not only a concern to the individuals who are penalised in the labour market but a concern for the society. For example, as shown in Table 2.A2.3, almost 20% of 16-29 year-olds with poorly educated parents are not in education, employment or training (NEETs) on average across OECD countries. In the Slovak Republic, 58% of those young adults are NEETs, and between 29% and 36% of 16-29 year-olds with poorly educated parents are NEETs in Greece, Turkey and England (United Kingdom). Countries where a large number of young people do not participate in the labour market may need to compensate for lower tax revenues, higher welfare payments and deal with social instability (OECD, 2015b). In addition, if second learning and skills development opportunities are not provided to these NEETs, especially for those from the disadvantaged backgrounds, it can also affect their children and perpetuate inequality over generations (for more information, see Chapter 5).

The recent trends in disparities in educational equity

Together with key equity indicators that focus on specific cohorts, it is important to understand the recent changes in equity-related indicators over time. Analysing the change in educational equity indicators is only possible using PISA trend data at this point, because of the lack of trend data available for the Survey of Adult Skills. This section compares PISA 2006 and 2015 equity-relevant indicators on science (OECD, 2016g). The changes over time in equity indicators suggest whether education systems have been improving in regards to equity. In addition, they can also help predict the levels of inequality in both learning and labour market outcomes in the workforce in future. An analysis of the trends in equity indicators finds that all countries need to continue working on improving equity throughout individuals' life course. Although it is encouraging to observe that in recent years, several countries, such as the United States, Mexico and Chile, have made great improvements in providing more equitable educational opportunities, this does not make up for the lack of support that disadvantaged students from earlier cohorts have already experienced. Students who have now become adults need targeted support to make up for the loss during their school years. In addition, although these countries have narrowed the gaps in performance between students of different socio-economic backgrounds, the size of the gap in these countries is still relatively large compared to the OECD average and to those of

highly equitable countries. The trend data also suggest that no significant improvements have been made in equity in countries with a traditionally high level of equity performance in PISA. In fact, equity outcomes in a number of countries have deteriorated in the last nine years. In Finland and Korea, for example, the gap in science performance between students of different socio-economic background has widened.

In most OECD countries between 2006 and 2015, neither performance in the sciences nor levels of equity changed to a statistically significant degree. In PISA 2015, the degree to which students' socio-economic status predicted performance in science decreased to 12.9% – a drop of 1.4 percentage points. The difference in performance between students with a one-unit increase in the ESCS index had dropped by 1 point since 2006. However, for several countries, students' socio-economic status had become less important in determining science achievement, and did not experience a drop in performance levels between 2006 and 2015. Brazil, Bulgaria, Chile, Denmark, Germany, Slovenia, Thailand and the United States fall into this category of countries. The United States had the largest reduction in the average impact of socio-economic status on science performance – by 13 score points – and the percentage of variation explained by students' socio-economic status also decreased by 6 percentage points. In addition, between 2006 and 2015, the percentage of resilient students grew by 12.3 percentage points, from 19.3% to 31.6% in the United States, which is again the largest improvement across all countries participating in PISA. Denmark also reduced the average impact of socio-economic status on science performance by 7 score points and the variation explained by students' socio-economic status by 3.6 percentage points, while improving the percentage of resilient students by 7.9 percentage points. Along with the United States and Denmark, Turkey and Chile also showed major improvement in reducing the impact of students' socio-economic background on their performance, by 8.1 and 6.0 score points respectively.

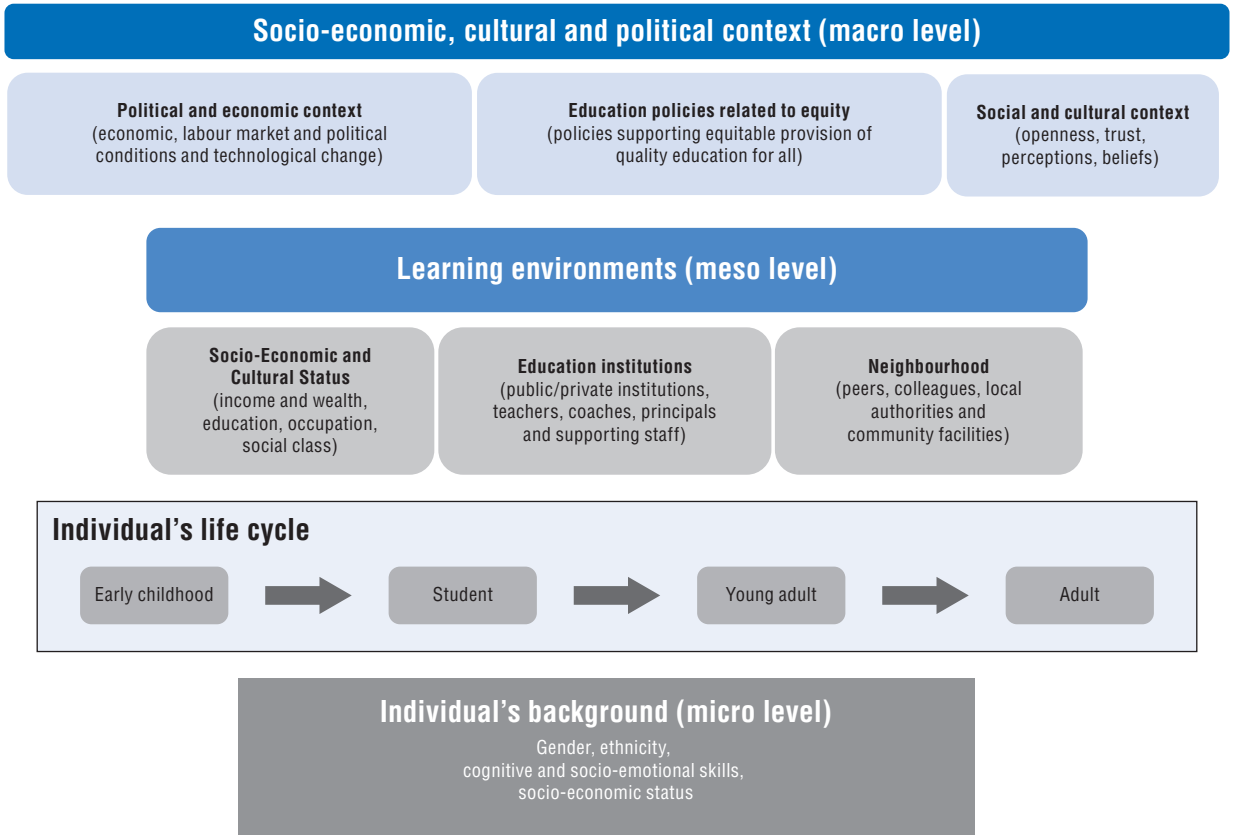
On the other hand, among the top performers in science in 2006 and 2015, Finland and Korea have slid down the equity scale. Finland, one of the top five performers in science in 2015, saw a 10 score-point increase in the average impact of socio-economic status on science performance and a 1.8 percentage point increase in performance variation explained by students' socio-economic status. Korea saw a 3.1 percentage point increase in variation explained by students' socio-economic status and a 13.0 score-point increase in the average impact of socio-economic status on science performance. The percentage of resilient students fell by 10.4 percentage points in Finland and 3.2 percentage points in Korea.

Various factors affecting individuals' life outcomes

It is crucial for policy makers to understand which factors affect individual life outcomes, in order to identify areas of intervention. This report presents a conceptual framework that captures various factors affecting individual life outcomes on three levels: individual backgrounds, learning environments, and socio-economic and political contexts (Figure 2.4). The framework highlights comprehensive and multidimensional factors affecting outcomes that are not only confined to parents' socio-economic status. The quality of education institutions, teachers, school leaders and neighbourhoods can also have a direct impact on individual outcomes. In addition, public policies such as education and labour market policies, political and economic conditions, as well as socio-cultural contexts, can influence outcomes. Some of the main factors are explained below.

Figure 2.4. **Conceptual framework**

Sources of inequality that affect individuals' socio-economic outcomes



Sources: Author's own work, based on Autor D. and D. Acemoglu (2011), "Skills, tasks and technologies: Implications for employment and earnings", in O. Ashenfelter and D. Card (eds.), *Handbook of Economics*, Vol. 4,, Card, D. and J. Di Nardo (2002), "Skill-biased technological change and rising wage inequality: Some problems and puzzles," *Journal of Labor Economics*, Vol. 20/4, pp. 733-83; Corak, M. (2013), "Income Inequality, Equality of Opportunity, and Intergenerational Mobility", *IZA Discussion Paper*, No. 7520; D'Addio, A. (2007), "Intergenerational Transmission of Disadvantage: Mobility or Immobility Across Generations?", *OECD Social, Employment and Migration Working Papers*, No. 52, http://dx.doi.org/10.1787/21773050555; OECD (2015e), *Skills for Social Progress: The Power of Social and Emotional Skills*, OECD Skills Studies, http://dx.doi.org/10.1787/9789264226159-en; OECD (2013), *PISA 2012 Results: What Makes Schools Successful (Volume IV): Resources, Policies and Practices*, http://dx.doi.org/10.1787/9789264201156-en and OECD (2006), *Starting Strong II: Early Childhood Education and Care*, http://dx.doi.org/10.1787/9789264035461-en;

Economic and social context

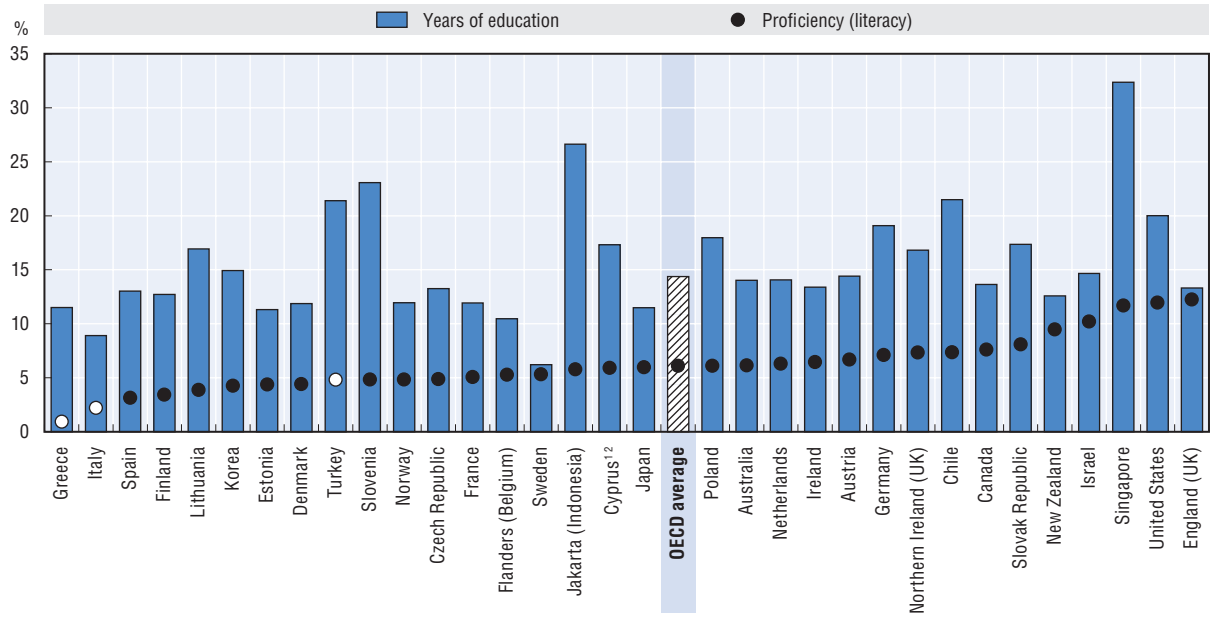
The global economy has become more knowledge-intensive over the last three decades. Together with skills-biased technological changes, globalisation and the growing influence of the financial sector on the economy, the demand for high-skilled workers and jobs with non-routine tasks has increased in the last 30 years. As a result, a premium has been put on the wages of high-skilled workers, raising the wage differential between high- and low-skilled workers (Sill, 2002; Card and Di Nardo, 2002; Autor and Acemoglu, 2011). Quality education and skills formation that equip individuals with skills relevant in the labour market are more important than ever.

According to the Survey of Adult Skills (OECD, 2016a), adults with a higher proficiency in literacy, numeracy and those with higher levels of educational attainment tend to have better labour market outcomes than their less proficient and less well-educated peers. A one standard deviation rise in years of education (3.4 years for the working population) is associated with

a 3.1 percentage point increase in the likelihood of being employed and with a 14% average increase in wages (Figure 2.5). As regards literacy skills, an increase of 48 points (the equivalent of one standard deviation) is, on average, associated with a 0.8 percentage point increase in the likelihood of being employed and with a 6% increase in wages, after taking age, gender and immigrant background into account. In Chile, Jakarta (Indonesia), Slovenia, Turkey and the United States, the increase in wages is more than 20%, and in Singapore, more than 30% (Figure 2.1). In these countries, individuals without educational qualifications and foundational skills are much more likely to be penalised in the labour market (Solon, 2004; OECD, 2016a). A high rate of return to wages associated with years of education and literacy skills is a result of several factors. These include unequal distribution of education opportunities and skills formation, demand and supply of skills, wage structures, and labour market institutional factors such as minimum wages, degree of collective bargaining power and strictness of employment protection legislation (OECD, 2015c). According to the findings of the OECD *Employment Outlook 2015* (OECD, 2015c), wage inequality tends to be lower in countries where there is a better match between the demand and supply of skills, particularly at the top of the wage distribution, and in countries where skills are more equally distributed.

Figure 2.5. **Impact of education and literacy proficiency on wages**

Percentage change in wages associated with a change of one standard deviation in years of education and proficiency in literacy



Notes:

1. Hourly wages, including bonuses, in PPP-adjusted USD (2012). Coefficients from the ordinary least squares (OLS) regression of log hourly wages on years of education and literacy proficiency, directly interpreted as percentage effects wages. Coefficients adjusted for age, gender and foreign-born status.
2. For Cyprus: see Note 2, Figure 2.1.

Countries and economies are ranked in ascending order of the effect of literacy proficiency on wages.

Source: OECD (2016a), *Skills Matter: Further Results from the Survey of Adult Skills*, http://dx.doi.org/10.1787/9789264258051-en, Table A5.4.

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Income inequality can also affect individuals' learning and labour market outcomes. A growing body of research has demonstrated the relationship between high income inequality and low intergenerational earnings mobility, a relationship that has been

referred to as "The Great Gatsby Curve" (Corak, 2013; Heckman 2013; OECD, 2012). Among OECD countries, the Nordic countries, Australia and Canada have low income inequality, coupled with high intergenerational mobility, while Chile, France, Italy, the United Kingdom and the United States have high income inequality and low intergenerational mobility. Partnering countries such as Argentina, Brazil, China, Singapore and Peru have particularly high levels of income inequality and low levels of intergenerational mobility. In countries where inequality in income is high and intergenerational mobility is low, children's chances of earning a higher income than their parents are much lower. The OECD publication *Divided We Stand* (2011a, p. 40) summarises this trend, concluding that high levels of income inequality "can stifle upward social mobility, making it harder for talented and hard-working people to get the rewards they deserve" (see Box 2.3).

Box 2.3. **The effect of economic inequality**

While some economists argue that a certain level of inequality in society can be beneficial, on the grounds that inequality can promote incentives and rewards for high productivity and a desire to take risks (Freeman, 2012; Friedman, 2008; Edsall, 2014), a large body of international research suggests that excessive and growing inequalities hamper economic growth and social cohesion in the long term (Larsen, 2013; Clarke, 1995; Stiglitz, 2009; Wilkinson, 2001).

High levels of income inequality hamper economic growth

The claims of "trickle-down" economics have generally been discredited. The argument is that the economic gains of investors, businesses and entrepreneurs will filter through to all members of society by stimulating production, which can help create new opportunities (i.e. more jobs) for the economically disadvantaged. An IMF report, *Causes and Consequences of Income Inequality: A Global Perspective* (2015) argued that this approach was used for decades to legitimate growing income inequality, on the erroneous basis that decreasing tax rates for marginal and capital gains would benefit the population at large. The IMF report found that increases in the income share of the top 20% reduces GDP growth over the medium term, while a 1% increase in income share of the bottom 20% of the population results in a 0.38 percentage point rise in GDP growth. The OECD publication *In It Together: Why Less Inequality Benefits All* (2015) supports this assertion, arguing that inequality hampers economic growth. This research estimated that an increase of three Gini points over the past decades has cut GDP on average by around 8.5%.

High levels of income inequality are negatively correlated with health and social cohesion

Quite apart from economic concerns, researchers (Pickett, 2010; Wilkinson, 2001) have identified that countries with high levels of income inequality suffer from high rates of health issues (obesity, mental illness, homicides and substance abuse) and social problems (conflicts, mistrust among strangers, teenage births, low status of women in society and low life expectancy). In particular, research suggests that more equitable societies have greater social cohesion and community involvement, such as social connectedness, fellowship, volunteering and empathy. Christian Albrekt Larsen (2013), for example, has demonstrated how inequality levels negatively affect the levels of trust between fellow citizens in both Denmark and Sweden. Joseph Stiglitz, winner of the Nobel Prize in Economics, further argues in *The Price of Inequality: How Today's Divided Society Endangers Our Future* (2009) that inequalities in income and wealth increase mistrust of businesses and the government.

Parents' socio-economic status

Among the factors affecting individuals' learning, labour and well-being outcomes, parents' socio-economic status plays a crucial role. Numerous studies have shown that parents' SES has an influence on their children's learning outcomes that is closely correlated with the children's chances of economic and social mobility (OECD, 2016a; OECD, 2016g; Corak 2013; D'Addio, 2007 and OECD, 2015d). The quality of learning environments, a crucial component in skills formation, varies significantly by SES. Parents' levels of education, income and occupation can contribute to the quality of home and other learning environments. For instance, richer parents generally invest more in the development of their children's human capital, which includes sending their children to schools of high quality and providing private tutoring and additional enrichment activities (Solon, 2004). The latest results from the Survey of Adult Skills also show a strong, cross-country relationship between parents' levels of educational attainment and adults' skills acquisition (OECD, 2016a).

Public policies

Policies and systems that focus on empowering individuals can achieve long-lasting, inclusive economic growth and social cohesion. These can include a number of objectives, such as providing lifelong learning opportunities, skills relevant in the labour market and health care, while targeting disadvantaged individuals in particular (Sunde and Vischer, 2011; OECD, 2015a). Policies that allow low-income individuals to obtain high-quality, stable jobs can mitigate inequality, especially if efforts are directed at those who earn the least. These policies can also make inclusive and sustainable economic growth more feasible. Research shows that lowering inequality by reducing income disparities at the bottom of the income distribution has a greater impact on economic growth than does reducing inequality at the top end of the distribution (Rajan, 2010; OECD, 2015a). This is due in part to the fact that reducing inequality for low-income people allows the benefits of growth to be shared with a wider section of the population. In addition, dealing directly with the root causes of income inequality, such as education and skills inequality, is more effective than trying to fix the symptoms of inequality at later stages of life through redistribution policies like taxes and transfers (OECD, 2015a).

Mitigating the differences in learning opportunities emerging from families' diverse SES can be challenging. However, public education systems can and should ensure that all children have similar chances to succeed. In order to do so, public policies need to address the gap in learning opportunities by designing and implementing compensatory measures for disadvantaged children so that life outcomes are not predetermined at birth (according to the notion known as the "lottery of birth")[2]. Quality education can empower individuals to overcome inequalities by increasing their knowledge and their cognitive, social and emotional skills, which enable them to reach their full potential and to improve their socio-economic status as a reward for their hard work. The benefits of education, such as better earnings, employment, better health, successful parenting and civic participation, need to be widely shared across society.

What does it take to improve educational equity?

Well-designed education and skills policies play a crucial role in reducing inequality. While policies intended to reduce inequalities are complex and multidimensional, often involving a high degree of trade-offs, education and skills policies that promote educational opportunities can enhance inclusive economic growth and social cohesion simultaneously.

In particular, an increase in investment and support for the disadvantaged can improve a population's overall skill levels, which in turn can contribute to higher productivity and growth (Causa and Johansson, 2010; D'Addio, 2007). Successful education and skills policies enhance human capital development of the disadvantaged. Offering them a strong start in life and the extra support they need throughout their education can play a significant role in improving economic and social well-being in general. Some countries have been successful in ensuring quality and equity in education, demonstrating that these two traits are not mutually exclusive (OECD, 2013b).

Prioritising equity in all levels

To create an equitable lifelong education system, equity needs to be explicitly promoted as a priority. Such efforts need to be rewarded systematically and include monitoring and evaluation processes that measure the progress made both in overall equity and in individuals' academic achievement and skills. This can serve as an important motivator for policy makers, school leaders, teachers and local authorities to continue making a difference and challenging equity-related issues. Specific goals related to reducing the level of inequality in accessing quality education need to be set at every level, nationally, locally, in schools and in classrooms. National policies need to find ways to attract effective principals and teaching staff in disadvantaged schools. Evaluation and appraisals needs to include evaluation of a school's performance on equity. Early formative assessments need to be administered to young students as early possible, to identify the low performers and provide adequate support. Grants available for further studies need to be primarily allocated to individuals of disadvantaged backgrounds, and adult learning centres can provide customised courses for individuals of less privileged backgrounds at no or little cost.

Whole-of-government and stakeholder approach to tackling inequality

Understanding that multidimensional factors affect individuals' outcomes in life, it is important to take a co-ordinated whole-of-government and stakeholder approach to addressing economic, social and educational inequality. Government ministries, local authorities, school leaders, teachers, parents and local communities need to join forces to tackle inequality in education and provide additional support to disadvantaged children, students and adults throughout their life. The role of government is particularly crucial in ensuring equitable lifelong educational opportunities. The government and the local authorities in charge of education and employment have the responsibility and capacity to improve equitable educational outcomes. In addition, they may have a more comprehensive view of the policies that have been enacted over the long term, which may be difficult to perceive at the school level. Despite the importance of the government's role in ensuring equitable educational opportunities and outcomes, many government ministries and departments work within silos, implementing fragmented policies and services and frequently revising public policies as a result of changes in government. This can become a barrier to lifelong learning opportunities and continued support for all (Froy and Giguère, 2010; OECD, 2012b).

To achieve a co-ordinated whole-of government strategy to address inequality issues over individuals' life cycle, Ministries and departments can decide on a set of priorities to tackle within an agreed timeframe. To ensure continued support from one stage in life to another, policy makers, local authorities and schools can collaborate on a joint strategy and action plan for achieving a common goal in a coherent manner. This requires

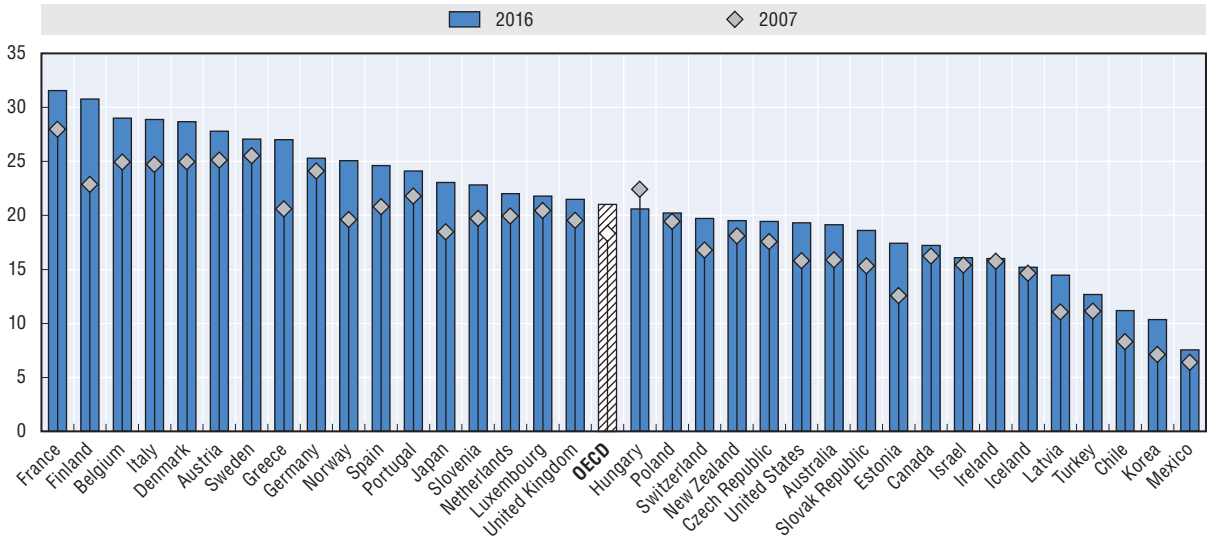
identifying the key stakeholders, designating responsible bodies for implementation, building networks and creating a common working platform among the relevant stakeholders (Froy and Giguère, 2010; OECD, 2012b).

Investing in education

If policies are to focus on empowering individuals, adequate investment needs to be made in social sectors like education. In 2016, public social spending was 21% of GDP on average across OECD countries (Figure 2.6.). Public social spending-to-GDP ratios are highest in France, at 32% of GDP, followed by Finland, at over 30% of GDP. While social spending-to-GDP ratios have fallen in a few countries, including Hungary, Luxembourg, Latvia and Ireland, these ratios have only slightly increased or remained stable in recent years in most OECD countries.

Figure 2.6. **Public social spending as a percentage of GDP**

Public social expenditure as a percentage of GDP (2007 and 2016)



Note: Data for Mexico refer to 2012, 2013 for Japan, 2014 for Turkey and 2015 for Canada, Chile and New Zealand.
Public social spending totals reflect detailed social expenditure programme data for 1980-2013/14; national aggregated for 2014-2015 and estimates for 2016. Estimated for 2016, on the basis of national sources for non-European OECD countries, and/or the OECD Economic Outlook 99 A, as of June 2016 and EC DG ECFIN (2016), the European Union's Annual Macro-economic database (AMECO) as of May 2016. For detail on the underlying methodology regarding estimates for recent years, and the detailed social expenditure programme data, see W. Adema, P. Fron and M. Ladaique (2011), "Is the European welfare state really more expensive? Indicators on social spending, 1980-2012 and a manual to the OECD Social Expenditure database (SOCX)", *OECD Social, Employment and Migration Working Papers*, No. 124 (*www.oecd.org/els/social/expenditure*).

Source: OECD (2016d), *Society at a Glance 2016: OECD Social Indicators*, http://dx.doi.org/10.1787/9789264261488-en.

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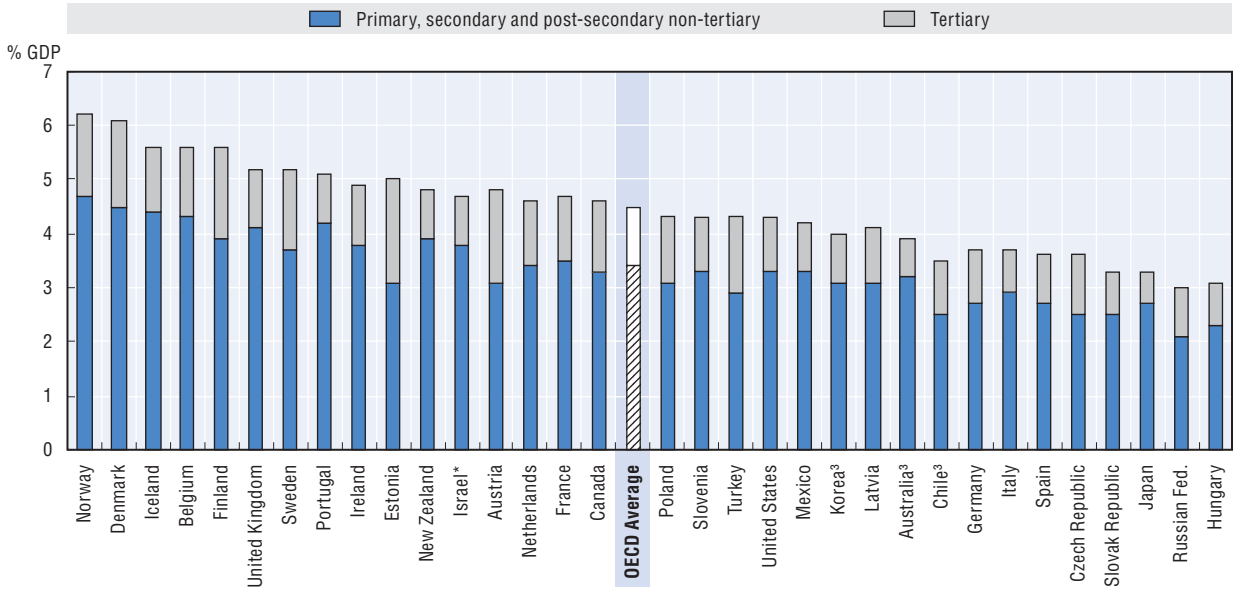
Most OECD countries spend far less on education as a percentage of GDP, especially post-secondary education, than on pensions or health care (Figure 2.7). On average across OECD countries for 2013, public expenditure on primary, secondary and post-secondary education as a percentage of GDP was 3.4%, while 14.2% is spent on pensions and health services. In addition, between 2010 and 2012, public spending as a percentage of GDP for all levels of education fell by 3% on average across OECD countries where data is available. Australia, Estonia, Hungary, Norway, Portugal and Spain lowered spending by more than 8% during this period (OECD, 2016d). Although public expenditure decisions depend on countries' priorities, investment in education, especially for children and disadvantaged individuals, need to be prioritised if countries wish to build equitable and inclusive societies.

Figure 2.7. **Expenditure on education as % of GDP, by level of education (2013)[1]**

Public expenditure[2] on primary, secondary, post-secondary non-tertiary and tertiary education as % of GDP



1. Data for Canada refer to 2012 and for Chile to 2014.
2. Public expenditure includes public subsidies to households attributable to educational institutions and direct expenditure on educational institutions from international sources. Private expenditure is presented net of public subsidies attributable to educational institutions.
3. Public does not include international sources.

Source: OECD (2016c), *Education at a Glance 2016: OECD Indicators*, Table B2.2, http://dx.doi.org/10.1787/888933397728.

StatLink http://dx.doi.org/10.1787/888933638201

When there is insufficient public spending in education and investment in education depends very much on individuals' ability to invest according to their income or wealth. Individuals with limited income are not likely to be able to afford quality education. As a result, inequality in learning opportunities and outcomes may widen economic and social disparities, creating a vicious trap for individuals from socio-economically disadvantaged backgrounds (OECD, 2015). Expenditure in education needs to be increased and primarily financed by public sources. Increased resources need to be spent on strengthening and improving the quality of the public education system, for example, investing in school leaders and teaching staff, and providing additional support to disadvantaged schools and students (OECD, 2016). This will ensure equitable educational opportunities for all students (for more information, see Chapter 4 of this report).

ANNEX 2.A2

Table 2.A2.1. **Key indicators relevant to equity in education (economic and early childhood indicator)**

	Economic Indicator	Early Childhood	
	Gini coefficient	Early childhood education experience among disadvantaged students[1]	
	(1)	(2)	
		%	S.E.
OECD average	**0.32**	**66.3**	(0.3)
Australia	0.34	42.7	(1.2)
Austria	0.28	80.7	(1.9)
Belgium	0.27	89.2	(0.9)
Canada	0.32	42.6	(1.1)
Chile	0.47	27.9	(1.3)
Czech Republic	0.26	84.4	(1.9)
Denmark	0.25	72.6	(1.1)
Estonia	0.36	76.7	(1.7)
Finland	0.26	51.4	(1.4)
France	0.29	87.5	(1.1)
Germany	0.29	79.2	(1.6)
Greece	0.34	59.9	(1.9)
Ireland	0.31	34.2	(1.6)
Israel*	0.36	73.0	(1.7)
Italy	0.33	84.2	(0.7)
Japan	0.33	95.8	(0.5)
Korea	0.30	79.8	(1.5)
Netherlands	0.28	92.7	(1.0)
New Zealand	0.33	60.3	(1.9)
Norway	0.25	78.0	(1.3)
Poland	0.30	28.4	(2.2)
Slovak Republic	0.27	63.9	(2.4)
Slovenia	0.26	61.4	(1.6)
Spain	0.35	80.1	(0.9)
Sweden	0.28	61.9	(1.5)
Turkey	0.39	1.7	(0.5)
United Kingdom	0.36	61.1	(1.6)
United States	0.39	61.1	(2.0)

1. Percentage of students from the bottom quarter of the socio-economic profile reporting more than a year of pre-primary education.

Sources: (1) OECD Income Distribution Database; (2) PISA 2012 Database; OECD (2013), *PISA 2012 Results: What Makes Schools Successful (Vol. IV): Resources, Policies and Practices*, http://dx.doi.org/10.1787/9789264201156-en, Table IV.3.34V.

StatLink http://dx.doi.org/10.1787/888933638030

Table 2.A2.2. **Key indicators relevant to equity in education (student learning outcomes)**

	Student learning outcomes							
	Score-point difference in science associated with one-unit increase in the index of ESCS[1] (PISA 2006)		Difference in science performance between students whose parents are highly and poorly educated[2] (PISA 2006)		Percentage of disadvantaged students performing below Level 2 in science (PISA 2006)		Percentage of resilient students[3] (PISA 2006)	
	(3)		(4)		(5)		(6)	
	Score dif.	S.E.	Score dif.	S.E.	%	S.E.	%	S.E.
OECD average	**40**	(0.4)	**79**	(1.4)	**48.0**	(0.4)	**27.7**	(0.3)
Australia	43	(1.5)	62	(3.5)	34.3	(1.4)	33.1	(1.1)
Austria	46	(3.1)	108	(14.8)	47.3	(3.5)	28.1	(2.4)
Belgium	48	(1.9)	98	(7.5)	47.3	(2.3)	25.8	(1.3)
Canada	33	(1.4)	71	(6.4)	25.8	(1.4)	38.0	(1.3)
Chile	38	(1.8)	93	(5.3)	85.4	(1.8)	15.0	(1.5)
Czech Republic	51	(2.6)	c	c	41.4	(2.5)	28.8	(2.0)
Denmark	39	(2.0)	86	(6.6)	48.7	(2.5)	19.6	(1.3)
Estonia	31	(2.0)	c	c	20.0	(2.0)	46.2	(2.3)
Finland	31	(1.6)	39	(5.9)	11.3	(1.4)	53.1	(1.6)
France	54	(2.5)	84	(6.8)	55.3	(2.4)	23.6	(1.6)
Germany	46	(2.1)	94	(6.0)	41.6	(3.0)	24.8	(1.8)
Greece	37	(2.2)	80	(5.5)	61.4	(2.3)	20.4	(1.8)
Ireland	39	(2.2)	66	(5.9)	40.1	(2.9)	29.2	(2.0)
Israel*	43	(2.7)	81	(7.6)	79.6	(2.4)	13.4	(1.6)
Italy	31	(1.6)	49	(4.0)	62.5	(1.7)	23.7	(1.1)
Japan	39	(2.7)	c	c	32.3	(2.6)	40.5	(2.4)
Korea	32	(3.1)	55	(8.1)	28.9	(3.1)	43.6	(2.2)
Netherlands	44	(2.2)	70	(6.4)	36.8	(3.0)	32.0	(2.0)
New Zealand	52	(1.8)	82	(5.6)	37.8	(2.2)	35.1	(1.8)
Norway	36	(2.5)	c	c	49.2	(2.2)	17.2	(1.2)
Poland	39	(1.8)	121	(6.2)	44.5	(2.2)	31.4	(2.0)
Slovak Republic	45	(2.6)	152	(18.9)	54.9	(2.2)	20.3	(1.7)
Slovenia	46	(1.6)	111	(7.4)	38.9	(2.1)	30.3	(1.3)
Spain	31	(1.3)	56	(3.6)	49.6	(1.8)	28.5	(1.3)
Sweden	38	(2.1)	59	(5.2)	42.0	(2.0)	24.0	(1.5)
Turkey	31	(3.2)	74	(10.8)	87.6	(2.0)	23.2	(2.0)
United Kingdom	48	(1.9)	87	(6.2)	42.6	(1.9)	30.5	(1.7)
United States	49	(2.5)	97	(7.1)	62.7	(2.7)	19.3	(1.6)

Note: "c" indicates there are too few observations to provide reliable estimates (i.e. there are fewer than 3% of students for this cell or too few schools for valid inferences).

1. ESCS refers to the PISA index of economic, social and cultural status.
2. Children whose parents are highly educated are children who have one or two parents with tertiary education (ISCED Level 5 and 6). Children with low-educated parents are children who have one or two parents for whom secondary education (ISCED level 2) is their highest level of education.
3. A student is classified as resilient if he or she is in the bottom quarter of the PISA index of economic, social and cultural status (ESCS) in the country or economy of assessment, and performs in the top quarter of students among all countries and economies, after accounting for socio-economic status.

Sources: (3) OECD PISA 2006 Database; OECD (2007), *PISA 2006: Science Competencies for Tomorrow's World: Vol. 1: Analysis*, http://dx.doi.org/10.1787/9789264040014-en, Table 4.4c; (4) OECD PISA 2006 Database, http://www.oecd.org/pisa/data/database-pisa2006.htm; OECD (2007), *PISA 2006: Science Competencies for Tomorrow's World: Volume 1: Analysis, OECD Publishing, Paris.* http://dx.doi.org/10.1787/9789264040014-en Table 4.7a; (5) OECD, PISA 2006 Database, http://www.oecd.org/pisa/data/database-pisa2006.htm; OECD (2016g), *PISA 2015 Results (Vol. I): Excellence and Equity in Education*, http://dx.doi.org/10.1787/9789264266490-en, Table I.2.2a; (6) OECD, PISA 2006 Database, http://www.oecd.org/pisa/data/database-pisa2006.htm; *PISA 2015 Results (Vol. I): Excellence and Equity in Education*, http://dx.doi.org/10.1787/9789264266490-en; Table I.6.17.

StatLink http://dx.doi.org/10.1787/888933638049

Table 2.A2.3. **Key indicators relevant to equity in education (adult skills and labour market outcomes)**

	Adult skills and labour market outcomes									
	Score-point difference between 20-29 year-old adults with highly and poorly educated parents[1]		Percentage of 20-29 year-olds with poorly educated parents[1] performing below Level 2 in numeracy		Proportion of 16-29 year-olds not in education, employment, or training (NEETs) with poorly educated parents[1]		Difference in employment rate between 30-65 year-olds with highly and poorly educated parents[1]		Difference in hourly earnings[2] between 30-65 year-olds with highly and poorly educated parents	
	(7)		(8)		(9)		(10)		(11)	
	Score dif.	S.E.	%	S.E.	%	S.E	% dif.	S.E	dif. in hourly wages	S.E.
OECD average	**46**	(1.1)	**34.6**	(0.0)	**19.5**	(0.5)	**15.7**	(0.0)	**4.8**	(0.1)
Australia	38	(4.7)	29.4	(0.0)	18.1	(1.9)	9.7	(0.0)	4.6	(0.5)
Austria	58	(5.9)	28.3	(0.0)	13.2	(2.6)	14.4	(0.0)	5.4	(0.8)
Flanders (Belgium)	56	(4.4)	27.9	(0.0)	9.2	(1.8)	22.4	(0.0)	3.7	(0.6)
Canada	36	(5.1)	33.8	(0.1)	16.8	(2.4)	14.0	(0.0)	3.6	(0.5)
Chile*	53	(6.8)	71.2	(0.0)	16.5	(2.1)	7.9	(0.0)	6.4	(1.1)
Czech Republic	56	(6.9)	34.6	(0.1)	23.1	(5.8)	18.0	(0.0)	4.6	(0.6)
Denmark	48	(5.1)	27.3	(0.1)	11.4	(2.1)	18.4	(0.0)	3.1	(0.5)
Estonia	37	(4.5)	25.4	(0.1)	17.8	(2.6)	18.4	(0.0)	3.6	(0.3)
Finland	50	(7.8)	22.0	(0.1)	7.7	(1.9)	14.4	(0.0)	3.1	(0.5)
France	50	(3.8)	28.4	(0.0)	21.0	(1.6)	16.9	(0.0)	4.5	(0.4)
Germany	47	(7.3)	34.4	(0.1)	13.5	(2.8)	15.4	(0.0)	6.1	(0.8)
Greece*	36	(7.1)	37.6	(0.1)	36.4	(2.3)	15.4	(0.0)	1.5	(0.9)
Ireland	36	(4.8)	31.0	(0.0)	20.5	(1.6)	16.8	(0.0)	6.1	(0.8)
Israel	61	(4.6)	52.1	(0.0)	25.8	(1.8)	19.6	(0.0)	2.8	(0.9)
Italy	36	(6.1)	34.3	(0.0)	25.3	(1.8)	22.1	(0.0)	7.6	(1.6)
Japan	27	(6.4)	16.2	(0.1)	17.5	(4.4)	3.6	(0.0)	4.1	(0.7)
Korea	23	(4.5)	12.0	(0.0)	17.3	(1.5)	-1.0	(0.0)	5.8	(1.2)
Netherlands	36	(4.9)	17.0	(0.0)	5.6	(1.1)	10.6	(0.0)	4.1	(0.6)
New Zealand*	44	(4.3)	30.0	(0.0)	12.9	(1.9)	3.3	(0.0)	3.7	(0.7)
Norway	48	(8.7)	43.4	(0.1)	7.7	(2.0)	12.2	(0.0)	4.0	(0.4)
Poland	55	(6.0)	34.6	(0.1)	26.3	(3.6)	30.4	(0.0)	5.4	(0.7)
Slovak Republic	80	(5.6)	53.3	(0.0)	58.3	(3.3)	31.1	(0.0)	4.8	(0.7)
Slovenia*	45	(7.2)	31.2	(0.0)	18.1	(2.8)	27.5	(0.0)	3.8	(0.3)
Spain	32	(3.4)	29.9	(0.0)	16.8	(1.2)	16.7	(0.0)	5.0	(0.8)
Sweden	39	(6.0)	19.3	(0.0)	12.6	(2.7)	11.7	(0.0)	1.8	(0.3)
Turkey*	42	(9.4)	45.3	(0.1)	33.6	(0.9)	21.2	(0.1)	6.1	(1.1)
Northern Ireland (UK)	56	(6.6)	45.3	(0.1)	27.3	(3.3)	20.3	(0.0)	5.4	(0.8)
England (UK)	65	(5.7)	58.5	(0.1)	29.0	(3.1)	15.4	(0.0)	8.2	(0.9)
United States	57	(6.2)	50.6	(0.1)	12.8	(2.6)	17.1	(0.0)	11.6	(1.2)

1. Children with highly educated parents are defined as children who have at least one parent with a tertiary education. Children with poorly educated parents are defined as children who have parents who have not obtained upper secondary education.
2. Hourly earnings include bonuses for wage and salary earners, PPP-corrected USD.
* Countries with asterisks took part in the Survey of Adult Skills between 2014 and 2015.

Sources: OECD (2016), Survey of Adult Skills (PIAAC) (Database 2012, 2015), *www.oecd.org/site/piaac/publicdataandanalysis.htm*.

StatLink http://dx.doi.org/10.1787/888933638068

Notes

1. "The United States Declaration of Independence", US National Archives, retrieved 5 June 2016.
2. The lottery of birth is a philosophical argument that holds that since individuals do not choose the circumstances into which they are born, they should not be held responsible for them (whether rich or poor, etc.). The concept was first explored by such philosophers as John Locke, Thomas Hobbes and Jean-Jacques Rousseau. Modern-day discussions of the principle include the work of political theorists such as John Rawls, in "A Theory of Justice".

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Chapter 3

Start by investing in education

This chapter highlights the importance of early childhood development, particularly for children from disadvantaged backgrounds. Early childhood is a critical development phase for individuals, and its outcomes have an impact on outcomes later in life. Children from disadvantaged backgrounds are less likely to benefit from high-quality home learning environments than their peers from more affluent families. Disadvantaged children are also less likely to receive high-quality early childhood education and care (ECEC) services. Therefore, public provision of high-quality ECEC services and additional family-based support need to mitigate these early learning deficits. This chapter addresses these issues in detail, and makes policy recommendations for how governments can help children from disadvantaged backgrounds obtain equal opportunities to develop human capital.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

The importance of early childhood education and care (ECEC)

Early childhood is a crucial period for human growth. The first three years of life require extensive attention, care and learning stimuli for physical, intellectual and socio-emotional development. Inadequate learning environments, both within a child's home and outside it, can impede various development stages that are necessary for children. Poor learning environments can also result in negative early childhood outcomes (see Box 3.1). In addition, an unfavourable start can have a lasting impact later in life. Children who do not receive adequate educational attention and care early on have a higher risk of grade repetition, incompletion of a school degree, unemployment and earning low wages (Barnett, 1995; Heckman, 1999; Leseman, 2002). Furthermore, research shows that early educational investments and interventions have a higher return than investments made at later stages in life (Carneiro and Heckman, 2003; OECD, 2006).

Children who experience poor-quality early learning environments are not necessarily destined for unsuccessful life outcomes. While these children begin life with significant challenges, they can overcome adversity and achieve successful life outcomes. This chapter seeks to emphasise that successful development in early childhood lays a strong foundation for the future, which is crucial, as initial equity gaps in early childhood tend to broaden as children advance through schools (Bradbury et al, 2015). As discussed in Chapter 12, James Heckman's human capital accumulation theory, the "dynamic complementary model", asserts that "skill and ability beget future skill and ability" (Carneiro and Heckman, 2003). This means that providing equal development opportunities for all children, regardless of their socio-economic and demographic background is essential to reducing inequalities in life outcomes at later stages.

Benefits of early enrolment in ECEC

Participation before the age of three in early childhood education helps children, especially the most disadvantaged, learn later. Disparities in learning development between children with high and low socio-economic family backgrounds become apparent by the age of two. Early enrolment of children in ECEC can help ameliorate these differences. Starting early childhood education at the age of two would allow children to experience up to three years of learning before starting school. Research has shown that, on average, children who attend quality ECEC programmes before the age of three benefits from additional months of learning progress compared to those who start a year later (Berlinski et al., 2009; Claessens and Carrett, 2014; Weiland and Yoshikawa, 2013).

Long-term gains from participation in ECEC for children with low socio-economic status

Extensive research, including longitudinal studies, find long-term and high returns to investment in early childhood education, especially for children from disadvantaged backgrounds (Lazzari and Vandenbroeck, 2013; McCabe and Smyth, 2000; Carneiro and Heckman, 2003; Heckman, 1999; Leseman, 2002; OECD, 2006d). The report, *No More Failures*

(OECD, 2007) points to studies from France, Sweden, the United States and the United Kingdom that quantify the high returns of early childhood education investment. Additionally, these studies illuminate how high-quality early childhood education has resulted in better school outcomes, positive socio-emotional skills development and school readiness, particularly for children from less privileged backgrounds. Research findings also highlight the positive correlation between extensive early childhood education systems (high enrolment and longer duration), and decreases in the effect of family background on eighth-grade students' school performance (Sylva et al. 2003; Ruhm and Waldfogel, 2012; Yoshikama et al., 2013).

School outcomes for children with ECEC experience

Participation in ECEC has a significant effect on high school performance. Results from the PISA study show that children who do not attend pre-school are more likely to score at the bottom in the mathematics portion of the assessment than children who receive a year or more of pre-school. This is true for all countries without exception. On average in OECD countries, some 41% of students without pre-primary education perform below the baseline proficiency level in mathematics. 30% of students with at least a year of pre-primary experience and 20% of students with more than one year of pre-primary education perform at the baseline level. In all countries except Albania, Estonia, Ireland and Latvia, having more than one year of pre-primary education had a statistically significant effect on each country's share of low performers (OECD, 2016). The gap is particularly large in OECD countries like Chile, Mexico, Israel, the Slovak Republic, Greece and France. Even after controlling for other student characteristics such as socio-economic status, gender, immigrant background, language spoken at home, family structure, location of student's school (rural area, town or city), grade repetition and programme orientation (vocational or general), the likelihood of low performance in mathematics for a student with no pre-primary education is almost double (1.9 times) that of a student who attended more than a year of pre-primary education (OECD, 2016). While the benefits of quality early childhood education need to be fairly distributed among children from all SES contexts, particular attention needs to be given to those from disadvantaged backgrounds.

Accessible and affordable ECEC and mothers' participation in the labour market

Affordable and quality ECEC with an adequate duration of services can contribute to increases in the participation of women in the labour force. Women are more likely to drop out of the labour market or work fewer hours in order to take up childcare duties, especially when their children are young. According to the European Union Labour Force Survey, the employment rate is much lower for women with children compared to those without, while the opposite is true for men. Hungary, the Slovak Republic, the Czech Republic and Estonia have particularly large differences in the employment rates for women with and without children under six (EU LFS).

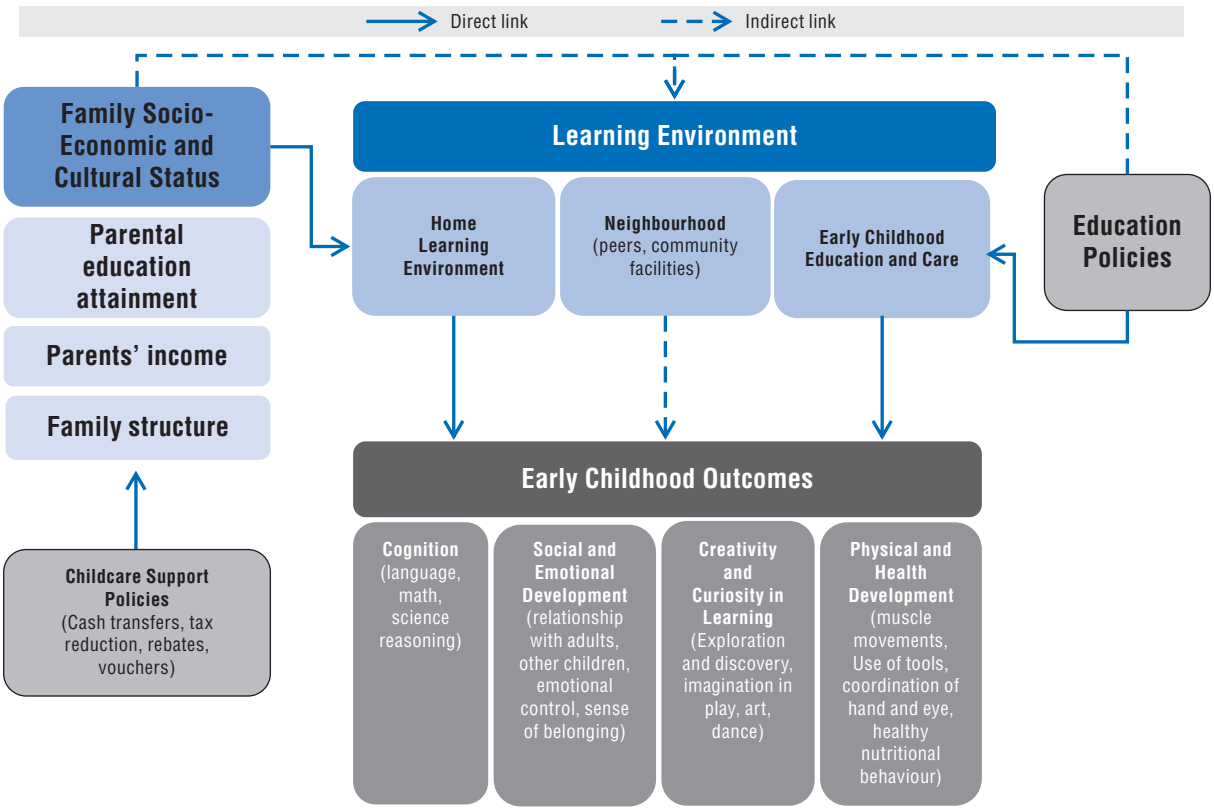
Gender inequality in the labour market can be explained, at least in part, by the availability, affordability and accessibility of ECEC services. In Europe, for instance, there is significant variation in enrolment in formal childcare and education services across countries, particularly for children below the age of three. More children enrol in formal ECEC services in countries where women's labour market participation is high. This is true in Nordic countries, where more than 70% of women aged 20-64 are employed, according to 2012 figures. In contrast, the ECEC enrolment rate for children under the age of three was less than 10% in the Czech Republic, the Slovak Republic, Poland and Hungary in 2012. In these countries, the employment rate among women aged 20-64 was below 60% that same year,

with the exception of the Czech Republic, where it was 63.8% (EU LFS).These figures may reflect a lack of good-quality, affordable and full-time ECEC for children under the age of three.

The cause of inequality in early childhood outcomes

Early child outcomes reflect children's learning environments, which depend both on the family context and state provision of early childhood services. As shown in Figure 3.1, learning environments such as a child's home, neighbourhood and early childhood education and care services have strong effects on early childhood outcomes. The quality of these learning environments varies widely depending on families' socio-economic and cultural statuses. Family SES not only influences the quality of home learning environments but also determines the neighbourhood in which families reside. In addition, the quality of ECEC is often contingent on the SES of the neighbourhood. Unless public policies ensure the quality of learning environments across the country – for instance through the provision of additional financial and human resources to low quality ECEC, impoverished neighbourhoods and poor families – early childhood outcomes will depend heavily on SES and diverge over time, creating a gap in early childhood outcomes.

Figure 3.1. **Early Childhood Outcomes**



Sources: Author's own work, based on Campbell, F. A., and Pungello, E. P. (2001), "The development of cognitive and academic abilities: growth curves from and early childhood educational experiment", *Developmental Psychology*, Vol. 37, pp. 231-242, http://dx.doi.org/10.1037/0012-1649.37.2.231; Carneiro, P., and Heckman, J. J. (2003), Carneiro, P., and Heckman, J. J. (2003), *Human capital policy*, National Bureau of Economic Research; Cohen, J., et al. (2005), Davis-Kean, P. E (2005), "The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment", *Journal of Family Psychology*, Vol 19/2, June 2005, pp 294-304. http://dx.doi.org/10.1037/0893-3200.19.2.29; OECD (2016b), *Enhancing Child Well-Being to Promote Inclusive Growth: Meeting of the Council at Ministerial Level, 1-2 June 2016*, Background document, DELSA/ELSA (2016)7/REV1; and OECD (2001), *Starting Strong: Early Childhood Education and Care*, http://dx.doi.org/10.1787/9789264

Socio-economic and demographic backgrounds at birth affect child outcomes

Everyone is born into different circumstances. At birth, an individual is endowed with demographic characteristics like ethnicity, sex and personality traits. He or she is also born with socio-economic and cultural capital. This capital includes his or her parents' levels of education, income, occupation, cultural acumen and social status. A child born into a low-income, single-parent family with a poorly educated parent will experience life very differently from a child born into a high-income, two-parent family with well-educated parents. Affluent families have more resources available for their children's educational, socio-emotional and physical development. Abundant resources enable children to receive extra support. This is particularly crucial when confronting adversities like accidents, severe illness and learning disabilities, as families with few means struggle to secure resources for their children's development.

Three main elements of SES affect children's development: parents' levels of education, income and marital status. Although these three aspects are closely correlated to each other, each plays a different role in the development of children. First of all, parental education levels have the greatest impact on children's early learning development. A great deal of research has shown the effect of parents' levels of education on children's outcomes (Duncan and Brooks-Gunn, 1997; Davis-Kean, 2005). During early childhood, children often spend time at home with caregivers who are likely to be mothers. The positive correlation between a mother's level of education and a child's achievement is well-established. For example, Duncan and Brooks-Gunn (1997) conclude that mothers' education levels are significantly linked to their children's learning outcomes, even after controlling for other SES factors. According to longitudinal studies conducted in the United States, the United Kingdom, Australia and Canada, parents with higher levels of education attainment are between 20 and 25% more likely to read to their children everyday than those with low levels of educational attainment (Bradbury et al, 2015; OECD, 2013). However, in countries like Canada, where parents' levels of education are generally high, the difference in children's learning outcomes is less visible. In regard to children's cognitive learning outcomes, parental education levels seem to play a stronger role compared to their incomes. This is because parents' levels of education are much more directly linked to their ability to create quality home learning environments (Davis-Kean and Pamela, 2005). This also suggests that parenting support can help reduce the gap in home learning environments across different socio-economic backgrounds. More detailed policy recommendations on parenting are described in the policy recommendations section of this chapter.

Education spending differs significantly by parents' level of income

Household resources for children under the age of compulsory education also have an impact on young children's learning opportunities. In some countries, the cost of ECEC services, especially for children under the age of three, ranges significantly depending on quality, and is borne mainly by families. Family expenditure on children differs extensively by household income and in the United States, high-income families spend 2.5 times more on average on children below the age of three than low-income families. Research shows similar patterns in other countries where data is available. Children in poor homes often experience a higher level of educational deprivation, resulting in poorer outcomes on average across OECD countries (Box 3.1. and 3.2.).

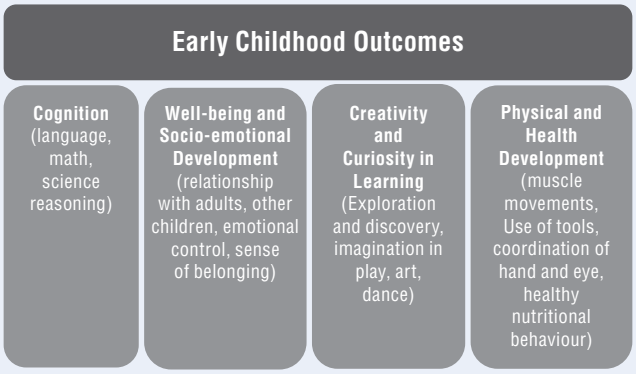
Providing sufficient home learning environments is particularly challenging in the modern family structure. Over the past decades, in virtually all OECD countries, there has been a rise in the number of children raised in lone-parent families. The proportion of single-parent families more than doubled over the last 30 years on average across the OECD

(OECD, 2014). In Chile, Hungary, New Zealand and the United States, more than one in five 15-year-olds grow up in lone-parent families. In some OECD partnering countries more than one in four students are raised in lone-parent families (OECD, 2016). This is true in Colombia (35%), Thailand (31%), Brazil (28%) and Costa Rica (25%).

Box 3.1. **What are early childhood outcomes?**

During early childhood, children develop various cognitive, socio-emotional and physical skills (see Figure 3.2.). Early childhood outcomes related to cognitive development include language skills, such as speech reproduction, vocabulary recognition and simple sentence construction, and math and science reasoning skills. In addition to cognitive development, socio-emotional skills develop in children during this stage, including both intrapersonal and interpersonal processes. Children acquire the ability to not only identify and understand their own feelings, but also to comprehend the emotional states of others. This then lays the groundwork for positive relationships with adults and peers (Cohen et al, 2005). Successful development of socio-emotional skills enables children to have high levels of self-regulation, which is demonstrated by the ability to pay attention during class and behave appropriately around others. Through fine art and physical activities such as theatre and sports, children develop physically and achieve higher degrees of creativity and curiosity in learning.

Figure 3.2. **Four types of early childhood outcomes**



Sources: Author's own work, based on Campbell, F. A., and Pungello, E. P. (2001), "The development of cognitive and academic abilities: growth curves from and early childhood educational experiment", *Developmental Psychology*, Vol. 37, pp. 231-242, http://dx.doi.org/10.1037/0012-1649.37.2.231; Carneiro, P., and Heckman, J. J. (2003), Carneiro, P., and Heckman, J. J. (2003), *Human capital policy*, National Bureau of Economic Research; Cohen, J., et al. (2005), Davis-Kean, P. E (2005), "The Influence of Parent Education and Family Income on Child Achievement: The Indirect Role of Parental Expectations and the Home Environment", *Journal of Family Psychology*, Vol 19/2, June 2005, pp 294-304. http://dx.doi.org/10.1037/0893-3200.19.2.29; OECD (2016b), *Enhancing Child Well-Being to Promote Inclusive Growth: Meeting of the Council at Ministerial Level, 1-2 June 2016*, Background document, DELSA/ELSA (2016)7/REV1; and OECD (2001), *Starting Strong: Early Childhood Education and Care*, http://dx.doi.org/10.1787/9789264

Modern family structures pose challenges to creating quality home learning environments

Single-parent families

Among single-parent families, more than 80% of children are raised in single-mother families. Seven in ten children living with single mothers belong to low-income families. This is mainly due to the fact that there are fewer potential earners in this family structure (OECD, 2009). Across OECD countries, an average of 61% of lone parents report that they are not working currently. In Israel, Greece, Chile, Italy, Portugal, Canada, the United States and

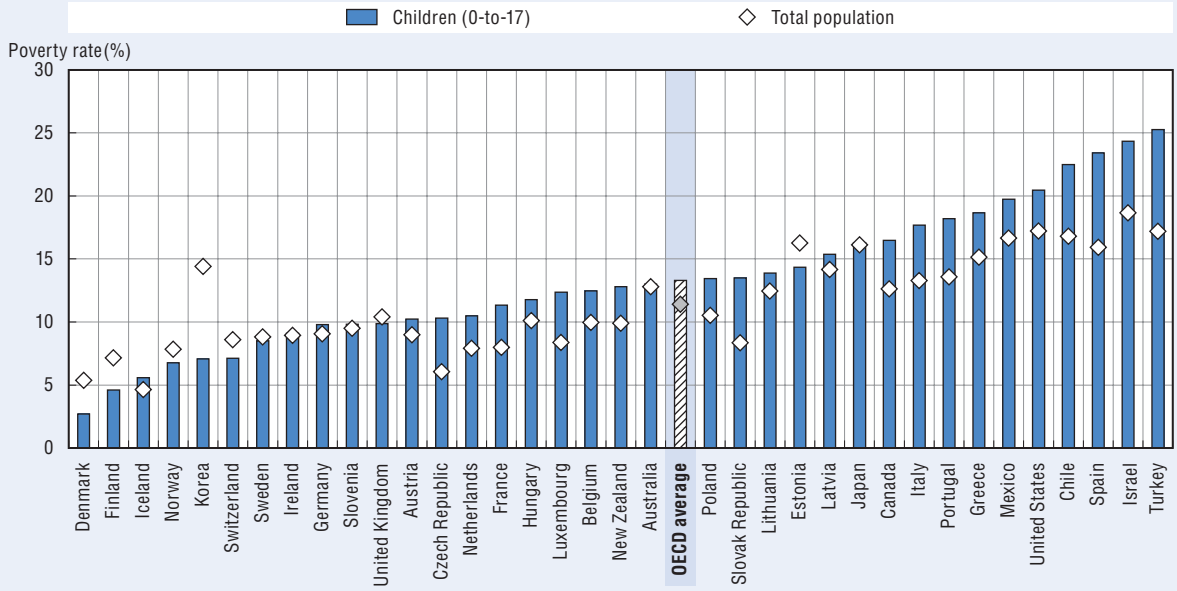
Estonia, more than 80% of lone parents reported their employment status as not working in 2008 (OECD, 2011). In addition, single-parent families face difficulty in receiving child support payments from absent partners. For example, in the United States, only 31% of single-mother families reported receiving child support payments in 2007 (Mather, 2010).

Box 3.2. **Child poverty**

In OECD countries, around 13% of children live in income poverty on average. In most OECD countries, children are more likely than the general population to live in income poverty (see Figure 3.3). Child poverty rates are particularly high in Turkey, Israel, Mexico, Greece, the United States, Spain, Portugal and Italy. In these countries, child poverty rates are higher than the poverty rates for the total population. On the other hand, child poverty rates are very low in Denmark, Finland and Norway. Each country has less than or around 5% of children living in poverty.

Figure 3.3. **Child income poverty rates, 2013 or nearest available year**[1]

Share (%) of the total population and of children (0-to-17) with an equivalised post-tax-and-transfer income of less than 50% of the national annual median equivalised post-tax and transfer income



1. Data for Japan and New Zealand refer to 2012, and for Australia, Hungary, Korea, and Mexico to 2014.

Sources: OECD Income Distribution Database, http://www.oecd.org/social/income-distribution-database.htm.

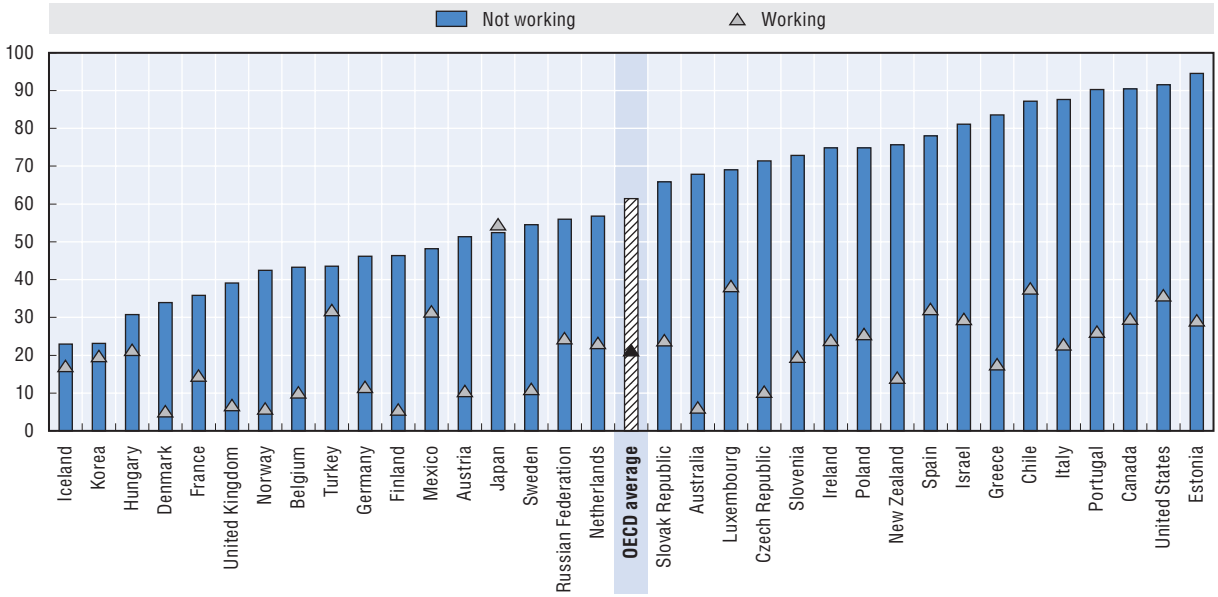
StatLink http://dx.doi.org/10.1787/888933638220

Certain groups of children are more vulnerable than others. In OECD countries, more than one-third of children with immigrant backgrounds were poor in 2012, compared to less than one-fifth of children in native-born households. Children with a lone parent or jobless parents also have particularly high levels of child poverty (OECD, 2016b).

Children growing up in poverty suffer from potential intergenerational transmission of poverty as they are less likely to perform well in school and develop necessary cognitive and non-cognitive skills. Children need these skills in order to acquire higher order skills. Poor children are also less likely to fully participate in society, or experience good health outcomes. Due to the high correlation between child poverty rates and jobless families, providing child assistance in the form of cash transfers might not be enough overcome the challenges poverty poses. Instead, parents need be given adequate support during unemployment. Governments can support poor families through family-based initiatives like tax relief, parenting programmes and community-based approaches. In turn, each of these initiatives can enhance children's learning environments.

Figure 3.4. **Children in single-parent families face a higher poverty risk, mid-late 2008[1]**

Poverty rates for children and for families by employment status, percentages



1. Data refers to 2008 for Germany, Israel, Italy, Korea, Mexico, Netherlands, New Zealand, Norway, Sweden and the United States; 2007 for Canada, Denmark and Hungary; 2006 for Chile, Estonia, Japan and Slovenia; 2005 for France, Ireland, Switzerland and the United Kingdom; 2004 for Australia, Austria, Belgium, Czech Republic, Finland, Greece, Iceland, Luxembourg, Poland, Portugal, the Slovak Republic, Spain and Turkey.

Note: Data for Canada, France and Germany are revised estimates with regard to the last round of updates of the OECD Income Distribution questionnaires as published in "Growing Unequal?". For both Canada and Germany the entire backdated income distribution data series have been revised. In the case of Germany this has led to increase in income, particularly for families and corresponding decrease in child income poverty estimates (for further information about the German revisions please see *www.diw.de/documents/vortragsdokumente/220/diw_01.c.364197.de/v_2010_frick_dealing_eam_dp991.pdf*).

Source: OECD (2011), *Doing Better for Families*, Table 1.3, *http://dx.doi.org/10.1787/9789264098732-en*

StatLink *http://dx.doi.org/10.1787/888933638239*

Childcare responsibilities alone can be a burden to any parent, especially when children are very young. The burden is much heavier on lone-parents if they are responsible for childcare as well as earning a living for their families. Without extensive support from other family members, neighbours or public authorities, the weight can be too heavy. Over a third of OECD countries, lone-parents with 50% of average earnings spend more of their family budgets on childcare relative to their income, even after accounting for childcare benefits, tax reductions and other benefits (OECD, 2011). The proportion of family income used to finance childcare cost is particularly high in Ireland (53%), Canada (48%), Switzerland (35%), Israel (23%) and the United States (23%).

Children of teenage mothers face higher risks

Teenage pregnancy is another obstacle to creating high-quality home learning environments. Teenage mothers often drop out of school to give birth, and struggle to provide childcare and financial support for their children. Teenage mothers also face stigmatization. For these reasons, there are higher proportions of teen mothers with low levels of education attainment. In the United States for instance, of children born to a teenage mother, one in five are born to a mother who will achieve only low levels of education while a mere 3% are born to mothers who will acquire a high level of education Bradbury et al., 2015) This means that they also have less capacity than others to provide quality home learning environments to their children.

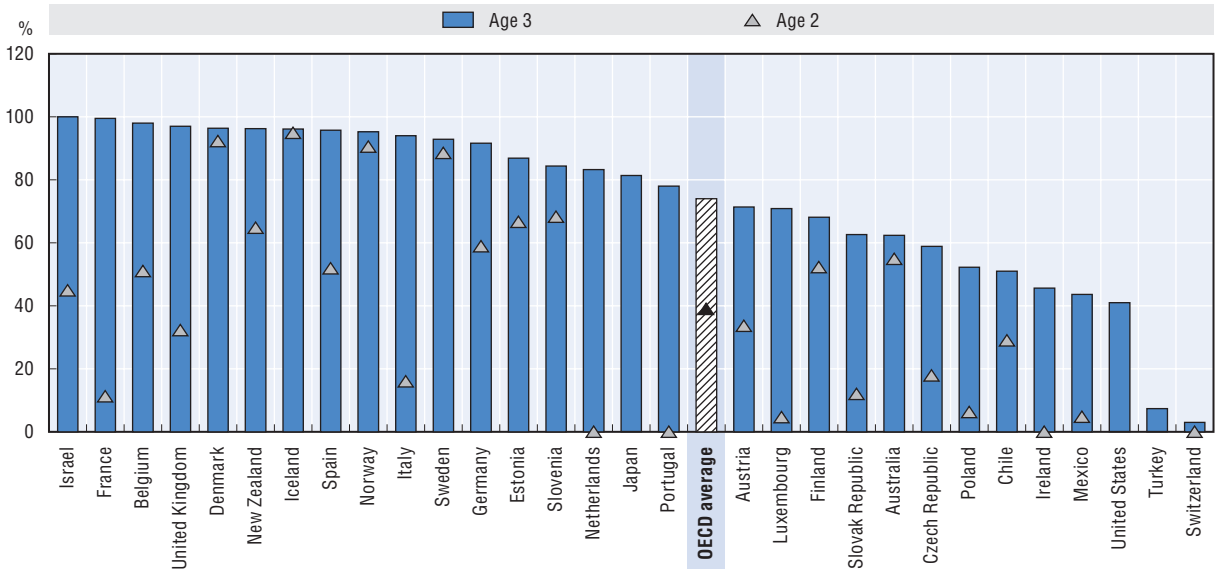
Teenage birth rates vary considerably[1]. On average across OECD countries, 16 births per 1,000 women are by adolescents aged 15 to 19. Teen birth is particularly high in Mexico (66), the United States (50) and Turkey (40). The Slovak Republic, Hungary, New Zealand and the United Kingdom also have adolescent births over 20 out of 1 000 women aged 16 to 19. In Japan, Korea, Switzerland and Netherlands, it is below 5. Several policy initiatives can help teenage mothers to complete their degrees and find jobs that accommodate their circumstances (Bradbury et al., 2015). Affordable early childhood education and care with adequate duration of services and financial aid packages can help a great deal.

Inequality in access to ECEC

Enrolment rates in ECEC vary considerably across countries

Although evidence strongly points to high, long-term gains from participation in quality ECEC before the age of three (Barnett, 2011; Blau & Currie, 2005; Boocock, 1995; Engle et al., 2007; Heckman and Masterov, 2007), enrolment rates in ECEC are quite low in most countries where data is available. On average in OECD countries, only 38% of children are enrolled in early childhood education by the age of two in 2014 (see Figure 3.5.). What is more, certain countries lower the OECD average, as less than 15% of two-year-olds living in these countries are enrolled in early childhood education. In Mexico, 5% of children are enrolled in ECEC by age two. In Poland that figure is 6%, while in France it is 12% and in the Slovak Republic it is 12%. On the other end of scale, Denmark has 93% ECEC enrolment by age two, 91% in Norway and 89% in Sweden. These countries have much higher enrolment rates than the OECD average.

Figure 3.5. **Enrolment rates in early childhood education, by age (2014)**



Source: OECD (2016), *Education at a Glance 2016: OECD Indicators*, http://dx.doi.org/10.1787/eag-2016-en

StatLink http://dx.doi.org/10.1787/888933638258

At age three, the ECEC enrolment rate rises to 73% on average across OECD countries in 2014. France has 100% enrolment rates at the age of three and a majority of countries reach above 80% enrolment. Belgium, Denmark, Israel, Spain and Norway all boast more than 95% ECEC enrolment by age three. That said, less than one in two children are enrolled in early

childhood education at the age of three in the United States (42%), Mexico (43%), Greece (44%) and Ireland (46%). In Switzerland (3%) and Turkey (8%), enrolment rates are less than 10% at the age of three.

Children from the bottom SES quarter often have lower attendance in ECEC than children in the top quarter

Unfortunately, internationally comparable data on educational attainment gaps between children from different socio-economic backgrounds is unavailable. That being said, some data indicates that children from higher socio-economic backgrounds might start schooling earlier than those from poorer backgrounds. For example, PISA results show that many students who reported no preschool experience were from disadvantaged backgrounds. Certain OECD countries have particularly low proportions of children from the bottom quarter of SES reporting pre-primary education experiences for more than a year. Only 1.7% of low-income children in Turkey said they had more than one year of pre-primary education. In Chile that figure is 27.9%, while in Poland it is 28.4% and in Ireland it is 34.2%. Among non-OECD partner countries, less than 30% of children from the bottom quarter of SES report pre-primary attendance for more than one year. In Kazakhstan, 9.6% of low-income children attend early childhood education programmes. In Tunisia that figure is 10.9%. Indonesia has 13.7% ECEC enrolment of low-income kids, while Jordan has 15.5%, Qatar has 15.8%, Montenegro has 22.6%, Colombia has 23.9% and Croatia has 27.4%. On the other end of the scale, more than 90% of children from the bottom quarter of SES in Japan, Hungary, the Netherlands and Iceland report attendance in pre-primary education for more than one year (OECD, 2016). In these countries, ECEC attendance rates for the bottom and top SES quartiles are only marginally different. Although the quality of the pre-primary education that children receive cannot be evaluated with PISA data, children in these countries seem to get equal ECEC opportunities. On the other hand, the attendance gap between children from the top and the bottom quarter of SES is above the OECD average of 14.8 percentage points in Poland, Portugal, the United States and the Slovak Republic (OECD, 2016). In these countries, participation in pre-primary education is skewed towards children from top SES quarter. In these countries, low-income children lag far behind in attending pre-primary education for more than a year.

In addition, PISA trend data shows that increasing participation in pre-primary education has been driven by children from high SES. Furthermore, participation in pre-primary education is much higher among students who attend advantaged schools than those who attend disadvantaged schools (OECD, 2013a).

Children from poor families experience more barriers to quality ECEC services

Quality ECEC services can compensate for part of the learning deficits disadvantaged children experience at home. High-quality ECEC affords families access to professionally trained teachers and institutions that understand children's early development issues. However, low-income families are more likely than other families to keep children at home until they reach school age. Low-income families, lone-parents and teenage mothers are more likely to rely on family support, rather than external ECEC services. These families choose not to send children to high-quality ECEC programmes because of costs, and proximity and availability of ECEC services. Sometimes, low-income families forgo ECEC services simply due to a lack of information, or because centres do not offer adequate hours (Foster and Verbist, 2013). These barriers should be removed in order to increase the participation of children from low SES in quality ECEC services.

Inequality in early childhood outcomes

Cognitive learning gaps among children with different SES emerge early

In some countries, differences in SES are found to have a stronger effect on children's early learning. This is mainly due to larger disparities in learning stimuli provided by families with varying degrees of SES. Insufficient learning stimulation can lead to deficiencies in brain development, such as abnormal cortex development at around age three. This deficiency is difficult to make up at a later stage. Unless sufficient levels of learning support are provided to compensate for inadequate home learning environments, early learning gaps between children from different SES will inevitably grow (Perry, 2002).

Children from low SES hear 30 million words less than their higher SES counterparts

By the age of three, children with high SES know many more words than children with low SES. Hart and Risley (1995) found that three-year-old children from low SES families may hear up to 30 million fewer words than their high SES counterparts. They also found that 86-98% of the words used by three-year-old children were derived from their parents' vocabularies. In addition, the average number of words the children used, the duration of conversations and speech patterns were almost identical to those of their parents. This finding is consistent in a number of other international studies (Natriello, McDill and Pallas, 1990; Huttenlocher et al., 1991; Jencks and Phillips, 1998; Levin and Belfield, 2002). These studies indicate that children from disadvantaged backgrounds are at a greater risk for developing poor vocabulary and speech. In the United States, for example, children with low-educated parents score 46 percentage points less on vocabulary and speech assessments than do their peers with high-educated parents. In the UK, Australia and Canada, these differences are also relatively high amounting to 38 percentage points, 33 percentage points and 26 percentage points respectively.

Children with poorly educated parents fall considerably behind in learning outcomes at the age of four or five

An early learning gap developed before the age of three is found to persist through the ages of four and five. In the United States, children with poorly educated (upper secondary education attainment or less) parents lag a full standard deviation behind in reading and mathematics in comparison to their peers with highly educated parents (tertiary education or higher). This difference appears at the age of four or five Longitudinal studies[2] show a similar pattern, though to a much lesser degree, in Australia, Canada and the United Kingdom (Bradbury et al, 2015).

Substantial learning gaps are also found between children from middle and high SES families

It is interesting to note that the substantial gap in children's learning outcomes is also found between children with high and medium SES within the four countries highlighted above. The gap is even larger in countries with a relatively high level of income inequality. In countries where the income distribution is highly skewed towards the top quantile, children from the highest SES families are more likely to benefit from abundant household resources. These children have highly educated parents, more resources and are provided with quality learning environments. Middle-class parents work longer hours. They also have relatively higher household expenditures since they are not always entitled to the government support and childcare services that low-income families might benefit from. As a result, middle-class children also struggle to be prepared for school. This suggests that

public policy attention needs to be given to children from the lowest SES families, but also to children from the middle SES families in order to prepare them for school entry.

Children from low SES also lag behind in non-cognitive early childhood outcomes

While indicators on cognitive performance are helpful in measuring successful outcomes for children, they are insufficient in encapsulating the holistic well-being of a child. Alongside cognitive abilities, non-cognitive early childhood outcomes such as socio-emotional skills and physical health matter greatly. Looking at multidimensional aspects of early childhood outcomes provides an interdisciplinary assessment of children's lives. This then enables a broad and multifaceted understanding of child well-being. Box 3.3 describes the OECD's efforts to identify indicators of child well-being, and the organisation's study of well-being outcomes. Previous discussions have highlighted large cognitive learning gaps between children from different SES. The following discussion highlights differences in non-cognitive outcomes by SES.

Studies show that children from high SES families receive far more words of praise from their parents than children from low SES families. Children hailing from low-income families are exposed to negative reinforcement statements more frequently than their privileged peers. What is more, children from high SES families experience, on average, six encouragements for every discouragement. Children from families with the lowest socio-economic statuses receive two discouragements for every encouragement. This in turn results in children from low SES families using more negative vocabulary words than those from higher SES families (Hart and Risley, 2003).

Box 3.3. **Child well-being indicators**

The report, *Doing Better for Children* (OECD, 2009), identifies 21 indicators of child well-being within six overarching dimensions. These dimensions are defined as the following:

1. **Material well-being**: Average disposable income, children in poor homes, educational deprivation
2. **Housing and the environment**: Overcrowding, poor environmental conditions
3. **Education**: Average mean literacy score, literacy inequality, youth neither in employment, education nor training (NEET) rates
4. **Health**: Low birth weight, infant motility, breastfeeding rates, vaccination rates for the measles, physical activity, youth mortality rates, youth suicide rates
5. **Risk behaviours**: Smoking, drunkenness, teen birth rate
6. **Quality of school life**: Bullying, liking school

While indicators on educational performance are helpful measures for determining the success of students, they cannot encapsulate the entire well-being of a child. Well-being indicators seek to provide a multidimensional assessment of children's lives, and to broaden the understanding of child well-being. Indicators on material well-being, housing and living environment represent external factors that affect outcomes like health, education performance, risky behaviours and quality of school life. These issues influence not only children's cognitive educational outcomes, but also the formation of children's characters and their livelihoods.

The report highlights the interconnectivity of well-being indicators. Iceland and Sweden achieved above-OECD-average performance in all six dimensions, except educational well-being where their scores were average. Denmark, Finland, the Netherlands and Norway performed above average in at least four of the six dimensions. Italy, Mexico, New Zealand, Poland, Turkey and the United States, on the other hand, had no well-being scores above the OECD average. Greece and Mexico were the weakest performers, with below-average scores in five of six dimensions (OECD, 2009: 23).

Box 3.3. **Child well-being indicators** *(cont.)*

The report found that some well-being indicators are more closely correlated than others. This suggests that investment in one area can ameliorate others. Such findings can help lawmakers understand which areas yield the greatest improvements for children. In turn, governments can increase investment in these domains. The three measures of material well-being – family income, child poverty and educational deprivation – were highly correlated with at least 10 other indicators. Among the three material well-being indicators, educational deprivation had particularly high correlation with other indicators. Educational deprivation is defined as having less than half of the eight basic items needed for educational stimulation at home. These items consist of "a desk [for] study, a quiet place to work, a computer for schoolwork, educational software, an internet connection, a calculator, a dictionary and school textbooks" (OECD, 2009: 35). Educational deprivation is correlated with issues such as overcrowding at home, average mean literacy score, youth NEET, poorer health (low birth weight, infant mortality and youth mortality rates), as well as teenage pregnancy, bullying, and children's enjoyment of school.

Mexico, Poland, Turkey and the United States had the highest proportion of children (at least 20%) experiencing educational deprivation. At least one fifth of children in these countries live in poverty. It may surprise some readers to learn that high-income countries like Japan and the United States suffer high levels of educational deprivation as well. This finding underscores an important point however. Like all countries, high-income countries choose where to allocate funds, and they may choose not to guarantee educational resources for children. On the whole, in terms of material well-being, Greece, Mexico, Poland, the Slovak Republic and Turkey also performed below the OECD average.

Doing Better for Children (OECD, 2009) also found migrant children have a lower well-being than native children on average. Italy and Greece have the most significant problems with overcrowding conditions at home, contributing to difficult learning environments. Furthermore, teen birth rates were found to be particularly high in Mexico, the United States and Turkey.

While there are many dimensions of well-being that require improvements in various OECD countries, some countries had high performance in certain indicators. For example, Finland, Korea and Canada have the highest literacy performances. Poland, Finland, Norway and the Netherlands have managed to maintain the lowest levels of NEETs. Non-native students in Belgium and Mexico have also achieved the highest literacy scores in comparison to other countries hosting migrants.

Further information about the OECD's work on child well-being can be found at the OECD Child Well-Being Portal - see *http://www.oecd.org/social/family/child-well-being/*.

During the infancy and toddler stages, children not only develop cognitive skills, but they also learn socio-emotional skills from their parents. These skills become the foundation for healthy social relationships with their peers and adults, such as teachers. A deficiency in socio-emotional support from parents can, in turn, result in poor socio-emotional skills development by the time children enter school. Hart and Risley (2003) found that a deficiency in early learning and exposure to negative reinforcements continued to impact these children later in life. Their research also demonstrated that performance at age three is a good predictor of performance in third grade. In addition, longitudinal studies conducted in Australia, Canada, the United Kingdom and the United States show that five-year-old children from low SES show higher levels of attention and behaviour problems compared to their peers from high SES (Bradbury et al, 2015).

What can be done to reduce inequalities in early childhood outcomes?

The most effective way to reduce inequalities in early childhood outcomes is to tackle each of the main causes of inequality, i.e. home learning environments, neighbourhoods and ECEC services (see Figure 2.1). Primary sources of inequality in childhood outcomes stem from SES differences across families. Inequality influences not only home learning environments

for children, but also important choices made for children are learning environments. In this regard, family choices consist of, but are not limited to, choosing which neighbourhood to live in, choosing to send children to ECEC and determining which service provider, choosing children's entry age, and length of participation. Quality, affordable and accessible ECEC services for very young children (below age three) are therefore crucial for lone parents with low incomes. Since the time and resources required for raising young children are considerably limited for lone parents, their children may only have access to less supportive home learning environments. ECEC at affordable prices can relieve lone parent's childcare responsibilities, and allow more time for them to find work.

To compensate for the differences in family SES, and to level the playing field for all children, the following three interconnected policies can be considered: Remove barriers of access to ECEC, including costs, ensure quality provision of ECEC and provide family-based support.

Remove barriers of access to ECEC

The main obstacle that prevents children from low-income families from attending ECEC is affordability. In most countries, ECEC services for children under three are financed by both parents and public authorities (OECD, 2006). In 2012, 78% of total expenditure on early childhood education was financed by public sources on average across OECD countries. In Finland, Iceland and Norway, more than 85% of the costs are paid by public sources. In Australia that figure is only 4% (OECD, 2015). On average, parents contribute 25-30% of the costs for ECEC, though more data is needed regarding fee waiver policies, particularly for non-EU countries.

Care hours and proximity of services affect the choices low-income parents make regarding ECEC enrolment for their children. Providing support in financing and extra care hours – especially for lone-parents – can help to remove barriers in accessing ECEC.

Ensure the quality of ECEC services

Quality in ECEC services for all children must be a cornerstone of policies for early childhood education. The quality of ECEC is a crucial element in children's learning outcomes and in the development of their socio-emotional skills, and also influences parents' decision whether to use such services. Various studies have found that ECEC programmes of low quality can either fail to have a positive effect on learning outcomes or may even have a marginally negative effect (Barnett, 2008b; Herbst and Tekin, 2010; US Department of Health and Human Services, 2010; Vandell et al., 2010; Gupta and Simonsen, 2011; Sylva et al., 2011). Unsatisfactory ECEC that does not have strong regulations on health, safety and other elements affecting quality can have negative and severe consequences on children's physical and socio-emotional development, as well as on their learning outcomes. Children from disadvantaged backgrounds are generally at higher risk of not being able to obtain quality ECEC services (OECD, 2006; OECD, 2011). For low-income families, the quality of ECEC can be a cause for concern. Geographical location is closely correlated with social and economic status (SES), and ECEC services of poor quality tend to be concentrated in regions where disadvantaged people live. Attracting high-quality ECEC teachers to impoverished areas is difficult and constructing and improving ECEC facilities can be challenging if funding is not forthcoming. To improve the quality of ECEC services, quality standards need to be clearly established, regulated, monitored and evaluated.

Set high standards for ECEC staff credentials and improve working conditions and salaries

OECD research on ECEC (OECD, 2006; OECD, 2001) has found that low staff-child ratios and small group sizes must be maintained to ensure the safety and quality of ECEC services. Although all OECD countries impose a health and safety check on ECEC services, the extent of regulation differs widely from country to country and from region to region. Appropriate regulation not only helps to define and enforce health, environmental and programme standards but can ensure some degree of equity for parents and children in poorer neighbourhoods (OECD, 2001 and 2006). Work on early childhood education from the OECD also recommends maintaining low staff-child ratios and small group sizes to ensure safety and quality. Standards need to be set for the qualifications of ECEC staff, and for their experience and training in teaching and caring for young children. To attract high-quality teachers into the sector, ECEC staff salaries should be adjusted accordingly, and working conditions, including working hours and job security, guaranteed. National ECEC curricula, manuals and guides for professional staff members also play a crucial role in ensuring the quality of ECEC services. The curriculum should cover age-appropriate learning that takes the children's developmental stage into consideration. The physical environment where the children are taken care of and learn also has an impact on their development. Standards for the design, layout, space and hygiene of ECEC facilities need to be set. Regulating such criteria can help ensure that all children are learning and being cared for in a safe and creative environment that enhances interaction with their peers and teachers and increases their opportunities to learn.

Provide early literacy and numeracy programmes

Early numeracy programmes can have a positive impact on learning overall. One study found that the benefit of early numeracy programmes on children's outcomes in mathematics was equivalent to about five to eight months of learning again (EEF, 2012). Early numeracy programmes are designed to develop young children's numeracy skills and knowledge of mathematical concepts. Research shows that child-centred instruction, in combination with direct teaching, is most effective at improving children's numeracy skills (Malofeeva, 2005). Programmes using techniques such as controlling task difficulty, intentionally sequencing activities, providing additional explanations on concepts taught and group games had a greater impact on mathematics literacy than programmes that did not include them. Additional equipment, such as counting, measuring and using money prompts were also found to be beneficial.

The benefits of early numeracy programmes are evident for all children, but particularly for children from socio-economically disadvantaged families. Studies indicate that the gap in mathematics performance among children from different backgrounds appears at as early as 3 years old (Case and Griffin, 1990; Jordan, Huttenlocher and Levine, 1992). Evidence shows that children from disadvantaged backgrounds can keep pace with their peers if they receive targeted intervention early on numeracy (Ramani et al., 2012). ECEC services should thus also include early numeracy programmes for children from socio-economically disadvantaged backgrounds, and addressing the gap in mathematics outcomes between high- and low-income children must be made a priority. These programmes should pay extra attention to low SES children who are more likely to have less enriching home learning environments (Clements, 2004). Formative assessments can be used to identify children who are falling behind, and to assist teachers in making informed intervention (OECD, 2012).

Overall, the additional cost of providing early numeracy programmes is low, since they can be easily integrated into regular ECEC programmes. However, professional development at ECEC centres should incorporate coursework on early numeracy pedagogical approaches and activities. Early numeracy teaching techniques that are proven to have the strongest effect on mathematics outcomes should be the focus of such professional development sessions. Finally, staff should be encouraged to use these techniques in their everyday classes.

Provide family-based support

Learning not only happens in ECEC programmes, but also at home (see Figure 2.1). Young children spend a majority of their time at home with either parents or caregivers. Home learning environments therefore have a direct impact on children's early childhood outcomes. In some families, this may pose a particular challenge. Lone-parent and low-income families with very low levels of educational attainment tend to have limited resources, abilities and time. In addition, many immigrants, young parents and low-educated families do not have access to information on available ECEC services in their communities. Evidence-based parenting programmes, home visits for troubled families and subsidies to boost income can help these families improve the learning environments they provide for their children (Haskins and Margolis, 2014). Some countries have also designed home visits, community outreach and parenting training initiatives to foster greater social cohesion, community development and improved outcomes for children (OECD, 2012).

Home visit programmes are found to have some benefits

In some countries, home visits are provided by ECEC professionals and social workers. Home visits from professionals help parents gain knowledge of child development and awareness of available social services in their neighbourhoods. Meeting with ECEC professionals at home can also help parents engage with their children at home. Studies show that children who receive home visits experience greater engagement in literacy activities, and are also more likely to participate in group activities (Halgunseth and Peterson, 2009).

The US-based High Scope Perry Preschool programme[3] mentioned earlier provides home visits to disadvantaged children between two- and three-years-old. The programme provides weekly home visits by ECEC professionals, as well as ECEC programmes. It was found that female participants had strong early results with strong later results for males; however, the effect of home visits alone was not measured (Heckman et al., 2010).

The report, *Starting Strong III* (OECD, 2012d), identifies a number of programmes that provide outreach services to disadvantaged groups. In one German programme, outreach workers visit families at home and in neighbourhoods to inform parents and communities about locally available social services. These workers fulfil a function similar to that of social workers. Their visits can be conducted in several languages. Therefore, they cater to non-native German-speaking residents and native-speakers alike. A programme in Korea sends kindergarten teachers along with social workers on home visits in order to inform families about parental, developmental and childcare practices. Through this practice, teachers also learn about the home environment of each student in their class. The Netherlands and the Slovak Republic have also introduced some home-based ECEC programmes. In both countries, professionals conduct regular visits and concentrate on augmenting family

learning environments. Programmes in Canada and the United States also focus on at-risk groups, attempting to prevent further marginalisation. A New Zealand's Manukau Literacy Family Programme, which ended in 2009 emphasises literacy acquisition. It offers services to children of a wide range of ages, from babies to six-year-olds. Finally, a programme in Australia sends tutors to disadvantaged homes to further support out-of-school learning (OECD, 2012d: 260-265).

Informal education for parents can help parents provide better home learning environments for their children

Some programmes seek to bridge equity gaps by offering informal training to parents. Several of these programmes address issues such as parenting skills, child development, family and financial planning, and literacy education for children and parents. These programmes support intergenerational social mobility in an intrinsic way, as they invest in parents and children simultaneously. A Canadian programme, for example, uses musical techniques to encourage literacy learning for both parents and children by teaching songs and phonetics (see Box 3.4.). One goal of these programmes is to get parents who do not already recognise their own roles in their children's education to do so. To address this issue, one programme in Australia helps parents to imagine themselves in the role of the teacher. Parents are, after all, the first figures to educate their children and contribute to their development (OECD, 2012d: 260-265). Helping parents see this helps them take on the task of fostering learning at home.

Early literacy engagements at home, such as reading stories, increase children's reading development

Another well-known parental engagement technique is reading stories to children at an early age. This activity has been proven to positively affect children's reading development (Nord et al., 1999; Keating and Taylorson, 1996; OECD, 2012d). The Progress in International Reading Literacy Study (PIRLS)[4] study has demonstrated a positive relationship between early literacy activities at home and reading performance at the age of ten. The study found that children whose parents read, sang and played with alphabet toys with them on a daily basis had much higher reading performances than their peers who had minimum parental engagement in reading (Mullis et al., 2003; OECD, 2007). One targeted home visit programme focusing on these techniques is the internationally administered Home Interaction Programme for Parents and Youngsters (HIPPY)[5]. HIPPY is a home-based programme that trains parents to provide pre-literacy and numeracy programmes for their children for two years in New Zealand. Children who have participated in HIPPY have higher literacy and numeracy performances than their peers. They also integrate faster, and more actively participate in school (BarHava-Monteith et al., 1999).

Community-based approaches can improve family support

Community-based family support can strengthen connections between families and local services. In turn, this can help families to benefit from more direct services and support. Several OECD countries target disadvantaged communities requiring additional support in order to overcome education inequalities. In the United States, one such programme created a coalition of families, teachers, NGOs and governmental services to create a safe community for children to experience healthy development and the educational stimuli they need. The coalition was founded in part because of the fact that marginalised students often come

from areas with high levels of violence and substance abuse (OECD, 2012d: 228). In Belgium, a programme called "baby bus" offers temporary mobile ECEC service in disadvantaged areas where ECEC services are not available (see Box 3.4.).

Box 3.4. **Examples of inclusive ECEC policies**

In an effort to promote social cohesion, some governments have implemented inclusive ECEC policies that cater to disadvantaged children, parents and communities. The 2012 OECD report, *Starting Strong III: A Quality Toolbox for Early Childhood Education and Care*, gives examples of such programmes that have been successfully designed and implemented. These programmes aim to increase the quality and the amount of education children receive, while also remaining affordable, accessible and equitable. *Starting Strong III* highlights programmes that aid a range of vulnerable groups. These groups include young parents, parents with low levels of education, low-income parents and communities, migrants, infants, and indigenous people.

Germany's best practices in ECEC are innovative and diverse

Germany has implemented a range of programmes to support families, strengthen parenting skills and better child outcomes. A Rheinland-Pfalz programme called "In the beginning, it matters! – A course for young parents" seeks to assist parents with financial, family and parental guidance. The programme targets young, often low-income parents and families. It received funding for five years. Another German programme geared towards parents of young children (ages zero to three) seeks to foster better relationships between children and parents and help parents develop better parenting skills. The programme, held in Bayern and North-Rhine Westphalia, provides courses on parenting and childhood development stimuli.

The German state of Baden-Württemberg hosts several ECEC programmes as well. One programme, called *STÄRKE* (POWER), was initiated in 2008. It focuses on families who have difficulty obtaining ECEC, like single, very young, or immigrant parents. This initiative helps parents prepare for and deal with specific circumstances. It also gives parents advice on family life and care. The main goal of the programme is to generate parental interest and give parents positive support as their children grow up. To encourage participation, all families receive a EUR 40 credit towards training courses in the first year of their child's life. An additional programme in Berlin uses groups of people called "family visitors" or "welcome visitors" to convey information about ECEC and social services in each local community. The visitors, who work on a voluntary and paid-basis, travel to individual homes to have conversations with families, and they are able to communicate in languages other than German. The programme aims to stimulate family involvement and to enhance parental knowledge of early childhood development.

Norway and Belgium identify methods to assist migrant families

Norway, the French Community of Belgium and Flanders try to assist migrant children with assimilation by offering Norwegian, French and Dutch language classes. In addition, the French Community of Belgium operates a "baby bus" in areas where there is an ECEC deficiency. The bus acts as a temporary care facility. Each bus is set up by two childcare professionals within local facilities in disadvantaged communities. The mobile nursery provides appropriate learning, play and care materials for children in the community. In the region of Wallonia, lawmakers have allocated EUR 1.5 million to governmental facilities and local partners in order to incorporate 10 more baby buses by 2015.

Mexico's inclusive policies aim to improve ECEC for indigenous groups

The Ministry of Education in Mexico commissioned a study to determine the effectiveness of its ECEC programme for indigenous groups. Participating families and caretakers were required to attend a meeting which helped them to contemplate and analyse their nurturing interactions with children. This meeting helped participants learn how to self-diagnose and solve education and childcare issues. Study participants experienced increases in "autonomy, communication, and social development" in comparison to individuals who did not participate (OECD, 2012).

Box 3.4. **Examples of inclusive ECEC policies** *(cont.)*

Skills targeting has been a successful initiative for vulnerable families in New Zealand and Canada

Programmes in both Canada and New Zealand have sought to target particular skills that disadvantaged families and children struggle with. The Parent-Child Mother Goose programmes in British Columbia provide a safe place for families and children to develop socio-emotional skills, literacy, and language support. The Early Reading Together programme in New Zealand also supports literacy and language development through home-based learning for children ages zero to six. This project specifically targets parents from "diverse language/literacy, cultural, educational and socio-economic backgrounds" (OECD, 2012). The programme relies on volunteer professionals, and has been proven to increase parental reading comprehension and literacy. In turn, these gains enable parents to read and explore language more frequently with their children at home.

Notes

1. Indicator SF2.3: Age of mothers at childbirth and age-specific fertility in the OECD Family Database, See OECD, 2012c.
2. Child Cohort studies in the United States (Early Childhood Longitudinal Study: Kindergarten Class of 1998–99 (ECLS-K) of the cohort born in 1992 to 1993), the United Kingdom (Millennium Cohort Study (MCS) of the cohort born in 2000-2002), Australia (Longitudinal Study of Australian Children: Kindergarten Cohort (LSAC-K) of the cohort born in 1999–2000), National Longitudinal Study of Children and Youth (NLSCY), of the cohort born in 1991–1994).
3. The High Scope Perry Preschool approach has its own curriculum (High/Scope curriculum) and is used in both public and private half- and full-day preschools, nursery schools, Head Start programmes, day care centres, home-based day care programmes, and programmes for children with special needs. Originally designed for low-income, "at-risk" children, the High Scope Perry preschool approach is now used for the full range of children and has been successfully implemented in both urban and rural settings both in the United States and overseas.
4. The Progress in International Reading Literacy Study (PIRLS) is an international study of fourth graders' reading achievement. It is conducted by the International Association for the Evaluation of Educational Achievement (IEA). The study records the following parent-child activities: reading books, telling stories, singing songs, playing with alphabet toys (e.g., blocks with letters of the alphabet), playing word games and reading aloud signs and labels. For more information, visit the following website http://pirls.org.
5. HIPPY is the Home Interaction Programme for Parents and Youngsters which originated in Israel in the late 1960s and has been implemented with positive results in a number of countries. More details are available at: www.hippy.org.il/.

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Chapter 4

Support low performers and disadvantaged schools

The chapter examines and discusses the importance of school years and the role of educational institutions, teachers, school leaders and parents in ensuring equitable educational opportunities and outcomes. The findings suggest that early identification of low performers and targeted support needs to be provided to those students at risk of falling behind or dropping out of school entirely. Additional support needs to be provided to disadvantaged schools through the adequate allocation of resources, to ensure that all students receive the high-quality education and training needed to fully participate in society. School budgets need to be prioritised in recruiting and maintaining well-qualified human resources, such as school leaders and teachers, who play a critical role in reducing educational inequalities in their schools.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Access to school and its outcomes

If educational investments made during early childhood are to be productive, continued support throughout schooling is crucial. This is particularly true for those disadvantaged students who have had little to no preschool experience. The transition from early childhood to school entrance age (typically at 6 to 7 years old) is a key stage in life at which it is possible to compensate for initial disadvantages. All students can be raised to an equal footing at a relatively low cost and with fewer challenges, by comparison with the efforts that are needed at a later stage in life. Compulsory schooling years, when all students are required to attend public or state-accredited private schools (with a few exceptions, such as home schooling), make it possible to reach a wide range of students. At this age, students can expand their social network, learn how to interact with others, communicate with their peers and learn how to follow social cues (OECD, 2017).

Out of school students

Considering the importance of the school years, the situation of students who are not in school is a cause for concern. Such students are unlikely to have access to the educational opportunities they need to acquire the skills to thrive and are likely, ultimately, to work in low-paying occupations. Although enrolment in primary and secondary education is almost universal in most OECD countries, many countries around the world have much work to do to make education accessible to all (OECD, 2016a).

According to 2014 data from the Institute of Statistics of the United Nations Educational, Scientific and Cultural Organization (UNESCO),[1] 16% on average of students of lower secondary school age across the world did not attend school. While in OECD countries, only 1.6% of adolescents are out of school, in sub-Saharan African countries, according to a Brookings special report, only 28% of adolescents are enrolled in secondary school, leaving over 90 million out of school.[2] The report also reveals a significant gap in enrolment rates between students from high- and low-income families. For example, students from the richest 20% of households in Ghana have on average six more years in school than their peers at the bottom of the income distribution. The latest PISA report (OECD, 2016a) also acknowledges the variation in school enrolment rates among the participating countries. In 20 countries participating in PISA 2015, fewer than 80% of 15-year-olds are enrolled in school and eligible to participate, suggesting that PISA results for these countries are not fully representative of their population of 15-year-olds. Due to the lack of data on students who are out of school, this report focuses on those who are receiving instruction. However, it acknowledges the importance of drawing attention to the challenges faced by this population group and addressing these issues through concrete policy actions.

Learning outcomes by socio-economic status

As important as access to education is, in terms of providing equitable learning opportunities, learning outcomes, which show what students can do and the quality of learning they are receiving in school, matter even more. PISA results have consistently demonstrated significant performance gaps between students of different socio-economic

backgrounds in most participating countries. In this section, indicators that are relevant to understanding the equity status of 15-year-olds from PISA will be examined in detail (Table 4.1). According to the latest PISA 2015 results, students' socio-economic backgrounds have a varying degree of influence on their performance in science, reading and mathematics. In such countries as Austria, Chile, Belgium, France, Germany, Singapore and Switzerland, socio-economic backgrounds exercise a particularly strong influence on students' performance, since students from disadvantaged backgrounds in these countries are very likely to not perform as well in PISA assessments as their peers from advantaged backgrounds. On the other hand, in Macao (China), Hong Kong (China), Japan, Finland, Estonia, Korea and Canada, the socio-economic background of students has a much weaker influence on their performance. For example, in Macao (China) and Viet Nam, students from the bottom decile of the distribution of the economic, social and cultural status (ESCS) index have a mean score significantly above that of the OECD in science in PISA 2015. The differing rates of progress in providing education and skills to the disadvantaged suggest that education policies and educational institutions and actors play a central role in mitigating the gap between socio-economically advantaged and disadvantaged students.

Table 4.1. **Equity-relevant indicators on student learning outcomes from PISA 2015**

	Percentage of variation in science performance explained by students' socio-economic status		Score-point difference in science associated with an one-unit increase in ESCS[1] (slope of the socio-economic gradient)		Difference in science performance between students in the top quarter and students in the bottom quarter of ESCS[1]		Percentage of low performers in science (below Level 2) of students in the bottom quarter of ESCS[1]		Percentage of resilient[3] students among disadvantaged students	
	%	S.E.	Score dif.	S.E.	Score dif.	S.E.	%	S.E.	%	S.E.
OECD average	**12.9**	(0.2)	**38**	(0.3)	**88**	(0.8)	**34.0**	(0.3)	**29.2**	(0.3)
Australia	**11.7**	(0.8)	**44**	(1.5)	**92**	(3.4)	**29.2**	(1.3)	**32.9**	(1.2)
Austria	**15.9**	(1.3)	**45**	(2.0)	**97**	(5.4)	**35.1**	(1.8)	**25.9**	(1.6)
Belgium	**19.3**	(1.3)	**48**	(1.8)	**111**	(4.9)	**35.2**	(1.9)	**27.2**	(1.4)
Canada	**8.8**	(0.7)	**34**	(1.5)	**71**	(3.4)	**18.6**	(1.0)	**38.7**	(1.4)
Chile	**16.9**	(1.3)	**32**	(1.4)	**95**	(4.7)	**56.2**	(2.1)	**14.6**	(1.2)
Czech Republic	**18.8**	(1.2)	**52**	(2.1)	**107**	(4.9)	**36.5**	(2.4)	**24.9**	(1.7)
Denmark	**10.4**	(1.0)	**34**	(1.7)	**76**	(4.4)	**25.3**	(1.4)	**27.5**	(1.6)
Estonia	**7.8**	(0.9)	**32**	(1.8)	**69**	(4.2)	**13.5**	(1.3)	**48.3**	(1.8)
Finland	**10.0**	(1.0)	**40**	(2.3)	**78**	(4.9)	**19.7**	(1.5)	**42.8**	(1.9)
France	**20.3**	(1.3)	**57**	(2.0)	**118**	(5.0)	**39.9**	(1.9)	**26.6**	(1.3)
Germany	**15.8**	(1.2)	**42**	(1.9)	**103**	(5.1)	**27.9**	(2.1)	**33.5**	(1.8)
Greece	**12.5**	(1.3)	**34**	(2.1)	**88**	(5.6)	**49.8**	(2.9)	**18.1**	(1.6)
Ireland	**12.7**	(1.0)	**38**	(1.6)	**80**	(3.8)	**26.4**	(1.7)	**29.6**	(1.8)
Israel	**11.2**	(1.3)	**42**	(2.3)	**94**	(6.1)	**48.2**	(2.5)	**15.7**	(1.3)
Italy	**9.6**	(1.0)	**30**	(1.7)	**76**	(5.0)	**36.9**	(1.9)	**26.6**	(1.7)
Japan	**10.1**	(1.0)	**42**	(2.2)	**80**	(4.6)	**17.2**	(1.4)	**48.8**	(1.9)
Korea	**10.1**	(1.3)	**44**	(2.7)	**76**	(5.5)	**23.2**	(1.7)	**40.4**	(1.9)
Netherlands	**12.5**	(1.3)	**47**	(2.6)	**95**	(5.7)	**30.2**	(1.9)	**30.7**	(1.7)
New Zealand	**13.6**	(1.2)	**49**	(2.6)	**101**	(5.6)	**29.7**	(2.2)	**30.4**	(1.9)
Norway	**8.2**	(0.9)	**37**	(2.2)	**72**	(4.1)	**28.5**	(1.5)	**26.5**	(1.4)
Poland	**13.4**	(1.3)	**40**	(2.0)	**86**	(4.8)	**27.8**	(1.8)	**34.6**	(1.9)
Slovak Republic	**16.0**	(1.4)	**41**	(2.3)	**101**	(6.3)	**49.9**	(2.3)	**17.5**	(1.4)
Slovenia	**13.5**	(0.9)	**43**	(1.5)	**88**	(3.8)	**25.1**	(1.4)	**34.6**	(1.5)
Spain	**13.4**	(1.1)	**27**	(1.1)	**82**	(4.0)	**31.6**	(1.8)	**39.2**	(1.4)
Sweden	**12.2**	(1.1)	**44**	(2.2)	**94**	(5.0)	**33.6**	(1.6)	**24.7**	(1.5)
Turkey	**9.0**	(1.9)	**20**	(2.1)	**59**	(7.9)	**57.8**	(3.0)	**21.8**	(2.5)
United Kingdom	**10.5**	(1.0)	**37**	(1.9)	**84**	(4.4)	**25.7**	(1.3)	**35.4**	(1.5)
United States	**11.4**	(1.1)	**33**	(1.8)	**90**	(5.6)	**32.0**	(2.1)	**31.6**	(1.9)

1. ESCS refers to the PISA index of economic, social and cultural status.

Source: OECD (2016a), *PISA 2015 Results (Vol. I): Excellence and Equity in Education*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264266490-en. Tables I.6.3a, I.6.6a, I.6.7, I.6.12a and I.6.17.

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Variation in performance explained by socio-economic status

Students' performance varies for many different reasons. Among those variables, how much does socio-economic status explain the variation in performance? On average across OECD countries, 13% of the variation in science, 12% of the variation in reading and 13% of the variation in mathematics performance is associated with socio-economic status, according to PISA 2015 results (Table 4.1.). This variation is more than 20% in the Ciudad Autónoma de Buenos Aires (Argentina) (hereafter "CABA (Argentina)"), France, Hungary, Luxembourg and Peru. At the other end of the scale, students' socio-economic status explains less than 10% of the variation in Canada, Estonia, Iceland, Italy, Latvia, Norway and Turkey, suggesting that the socio-economic background is not a crucial factor in explaining the variation in student performance in these countries.

Score-point difference in science associated with a one-unit increase in the index of economic, social and cultural status (ESCS)

As shown in Table 4.1., a one-unit increase on the PISA index of economic, social and cultural status is associated with an increase of 38 score points in the PISA 2015 science assessment (a 30 score-point difference is the equivalent of one year of schooling) on average across OECD countries. In the Czech Republic and France, a one-unit increase in socio-economic status is associated with a more than 50 score- point increase in science performance. In these countries, the slope of the socio-economic gradient is very steep, signalling that a small change in socio-economic status can have a major impact on students' performance. On the other hand, the associated change in performance is less than 25 score points in 13 countries and economies such as Macao (China), Viet Nam, Hong Kong (China), Turkey, Thailand, Costa Rica and Algeria. In these countries, an improvement or decline in socio-economic status does not have a large impact on students' performance (OECD, 2016a).

Students performing below baseline in science

According to the latest PISA report (OECD, 2016b), 28% of students scored below the baseline level of proficiency[3] in at least one of the three core subjects that PISA assesses (reading, mathematics and science). The share of low performers is greater in mathematics (23%) than in reading or science (18% in each) on average across OECD countries. In OECD countries, the performance of almost 4 million 15-year-old students in mathematics and almost 3 million 15-year-old students in reading and science is low. For the 64 countries and economies that participated in PISA 2015, the figures include 11.5 million 15-year-old students in mathematics, 8.5 million in reading, and 9 million in science who are low performers (OECD, 2016c). In particular, more than 70% of students in Indonesia, Peru and Colombia performed below the baseline in mathematics. In Qatar, Jordan, Brazil, Tunisia, Argentina, Albania and Costa Rica, more than 60% of students performed below the baseline in mathematics. The majority of students in these countries have not been able to reach the baseline achievement level, even though these students go to school, which calls into question of the quality of learning they are receiving at school.

Percentage of disadvantaged students performing below baseline in science

In the latest PISA 2015 assessment, a higher proportion of students from disadvantaged backgrounds (see Box 4.1) scored below baseline proficiency than students from more advantaged backgrounds. On average across OECD countries, 21.2% of 15-year-olds scored below proficiency Level 2 in science in PISA 2015 (Table 3.1). However, 34.0% of students in the bottom quarter of the PISA ESCS index scored below Level 2, compared to 9.3% of

students in the top quarter of the index on average across OECD countries. In Chile, Mexico, the Slovak Republic and Turkey, more than 1 out of 2 students from the bottom quarter of the ESCS index scored below Level 2 in science. In these countries, it is extremely rare to see students from the bottom quarter of the ESCS index scoring at Level 5 or above. In Chile and Turkey, only 0.1% of students from the bottom quarter were top performers, while in Mexico, the rate is 0%. On average across OECD countries, the figure is 2.5%. However, in Canada, Estonia and Japan, fewer than 1 in 5 students from the lowest quarter of ESCS scored below Level 2 in science. In Canada, Estonia, Finland and Japan, more than 5% of students from the least privileged backgrounds performed at the top of the PISA scale in science in 2015.

The latest PISA report (OECD, 2016a) also demonstrated that students from the bottom quarter of the distribution of the PISA index of ESCS are likely to perform below Level 2 in science, compared to their peers of average or high socio-economic status. Disadvantaged students are 2.8 times more likely not to attain the baseline level of proficiency in science than more advantaged students on average across OECD countries. In Dominican Republic, CABA (Argentina) and Peru, students from disadvantaged backgrounds are at or over 6 times more likely to perform below Level 2 compared to those from non-disadvantaged backgrounds. In Belgium, Chile, the Czech Republic, France, Germany, Hungary, Luxembourg, New Zealand, the Slovak Republic, Switzerland, students from the bottom quarter of the ESCS index are more than three times more likely to be low performers than their peers from more privileged backgrounds. Among the partnering countries, disadvantaged students in B-S-J-G (China), Bulgaria and Chinese Taipei had around 3 times likelihood and Singapore had four times more likelihood of performing below Level 2 compared to their peers from non-disadvantaged backgrounds.

Difference in science performance between students whose parents are highly and poorly educated

Of the many aspects of socio-economic background, the parents' level of education is one of the strongest predictors of students' academic achievement and behaviour (Davis-Kean, 2005; Dearing, McCartney and Taylor, 2002; Duncan, Brooks-Gunn and Klebanov, 1994; Haveman and Wolfe, 1995; Nagin and Tremblay, 2001; Smith, Brooks-Gunn and Klebanov, 1997). In particular, the mother's level of education plays a significant role in children's cognitive outcomes, even after taking other socio-economic factors such as family income into account (Duncan and Brooks-Gunn, 1997). In general, parents with a high level of educational attainment are more likely to create environments that stimulate learning (Williams, 1980; Teachman, 1987) and to pay attention to their children's performance in school (Steinberg et al., 1992; Useem, 1992). They may also influence behaviour that reinforces academic success and achievement-oriented attitudes, which children may adopt either through direct teaching or observing and picking up on their parents' behaviour and expectations (Anderson and Huesmann, 2003; Huesmann, 1998; Eccles, Vida and Barber, 2004; Frome and Eccles, 1998). On the other hand, students from disadvantaged socio-economic backgrounds may also achieve academic success (Jacobs and Harvey, 2005; OECD, 2016a) and students from advantaged backgrounds may perform poorly (Jacobs and Harvey, 2005).

According to the latest PISA 2015 results in science, parents' education levels account for 44% of the variation in mean performance between countries/economies, and for 29% of the variation among OECD countries. In Canada, Israel Korea, Luxemburg and the Russian Federation, more than half of the variation in mean performance is explained by parents' levels of education. Given this strong correlation between parents' levels of educational

attainment and students' PISA performances, it is not surprising to observe achievement gaps between students from advantaged and disadvantaged backgrounds. On average across OECD countries, 97% of socio-economically advantaged students have parents who attained tertiary education; 94% of these parents work in a skilled and white-collar occupation. In contrast, of parents of disadvantaged students across OECD countries, only 12% attained tertiary education, 55% attained some post-secondary non-tertiary education and 33% attained lower secondary education or less.

The latest PISA results show that in OECD countries, the average score difference in science between students with highly educated parents (tertiary level) and poorly educated parents (lower secondary education) is 84 score points. Since a difference of about 30 score points is equivalent to one year of schooling, students with poorly educated parents are on average 2.8 school years behind their peers with highly educated parents. In addition, given that the performance gap between students at the top and bottom of the ESCS index was 38 score points, the influence of parents' educational attainment is exceptionally strong on students' learning outcomes. The score-point difference between students with highly and poorly educated parents is above 100 in Austria, Belgium, Hungary, Korea, the Slovak Republic, Slovenia and Sweden.[4]

Resilient students

Some students from the most disadvantaged backgrounds succeed in demonstrating high levels of performance. The latest OECD PISA results show that on average across OECD countries, 29.2% of disadvantaged students beat the socio-economic odds and scored in the top quarter of students in all participating countries, after taking socio-economic status into account (Table 4.1). Resilient students represent that high equity and high performance can be achieved simultaneously when socio-economic differences are well-mitigated by education systems, community and parents. These students are considered to be resilient, and make up over 40% of disadvantaged students in Beijing, Shanghai, Jiangsu and Guangdong, or B-S-J-G (China), Estonia, Finland, Hong Kong (China), Japan, Korea, Macao (China), Singapore, Chinese Taipei and Viet Nam. At the other end of the scale, less than 1 in 5 disadvantaged students in Mexico, Chile, Israel, Iceland, the Slovak Republic, Greece and Hungary are considered to be resilient. In addition, more than half of all disadvantaged immigrant students are resilient in Hong Kong (China), Macao (China) and Singapore and more than one in three disadvantaged immigrant students in Australia, Canada, Estonia, Ireland and the United Kingdom (OECD, 2016a).

Differences in schools by socio-economic status

During compulsory schooling, students spend an increasing proportion of their time at school and are expected to develop their cognitive and non-cognitive skills. Education institutions (such as formal schools and non-formal institutions) and agents (such as school leaders and teaching staff) play a more central role in students' overall development than at an earlier stage, when the home learning environment and parents play a bigger role. However, according to the PISA results, the school the students attend can help to determine their performance.

Students attending advantaged schools have a mean performance of 546 points in science, while students in disadvantaged schools have a mean performance of 442 points on average (see Box 4.1). This implies an average difference across OECD countries of 104 score points in science between students attending the two types of schools. This difference is larger than 160 score points in Bulgaria, Hungary and the Netherlands, and ranges between 140 and 160 score points in Belgium, B-S-J-G (China), Germany, Malta, the Slovak Republic, and Trinidad and Tobago. In 18 countries and economies, however, differences of less than 70 score points were

found in mean performance of students attending advantaged and disadvantaged schools. Although the difference is considerably less in those countries, considering that about 30 score points is equivalent to one year of schooling, the gap is still quite substantial.

Box 4.1. **Definition of socio-economic status in PISA**

The OECD PISA data has rich information on 15-year-olds' socio-demographics, home backgrounds and performance. Using students' background information, PISA created an index of economic, social and cultural status (ESCS) of students. This allows for a comparison between students and schools with different socio-economic backgrounds and is composed of the following variables relating to the family background of a student: parents' occupations, parents' education levels, the number of educational resources (such as books) at home, and various possessions at home that serve as stand-ins for material wealth. Students who rank in the top quarter of values on the ESCS index in their country or economy are considered socio-economically advantaged. Students whose values are in the bottom quarter of the index in a country or economy are classified as socio-economically disadvantaged, and those students who fall in between the remaining 50% of values on the ESCS index in their country or economy are classified as having an average socio-economic status.

Schools are sorted into one of these three socio-economic categories based on their student's mean values on the ESCS index. Analyses at the school level also consider the relationship between the average socio-economic status of 15-year-old students in the school and the scores of the 15-year-olds attending that school. Schools can be in three categories: advantaged, average and disadvantaged schools. The categories are distinguished by whether the average 15-year-old student at a particular school has a statistically higher socio-economic status (SES), the same or lower than the average 15-year-old's SES in the entire school system. The average SES is measured through a PISA ESCS.

In order to assess how school principals perceive the adequacy of the supply of teachers in their schools, they are asked to report on the extent to which they think instruction in their school is being hindered by a lack of qualified teachers and staff in key areas in a school questionnaire from PISA. This information was combined to create a composite index of teacher shortages, such that the index has an average of 0 and a standard deviation of 1 for OECD countries. Higher values on the index indicate that principals believe there are problems with instruction due to teacher shortages. Caution is required in interpreting these results: school principals across countries and economies, and even within countries and economies, may have different expectations and benchmarks to determine whether there is a lack of qualified teachers. Nonetheless, these reports provide valuable information that can be used to assess whether schools or school systems are providing their students with adequate human resources.

For more information on socio-economic status and the ESCS index, see Box I.6.1 "Definition of socio-economic status in PISA" in OECD (2016a), *PISA 2015 Results (Volume I): Excellence and Equity in Education*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264266490-en.

In more than 30 of the countries or economies that participated in PISA 2015, students in advantaged schools have access to better material and staff resources than their peers in disadvantaged schools, according to school principals (Table 3.2). In addition, on average across OECD countries, the percentage of advantaged students who attend at least one science lesson per week is 3.4 percentage points higher than that among disadvantaged students. In Austria, Belgium, Croatia and the Former Yugoslav Republic of Macedonia (FYROM), the difference ranges between 10 and 20 percentage points. In another 15 countries and economies, it ranges between 5 and 10 percentage points (Table 3.2). In addition,

advantaged students spend about 35 minutes more per week in regular science lessons at school, more than 20 additional hours of science lessons a year than disadvantaged students (Table 4.2.).

Table 4.2. **Indicators related to schools' socio-economic background from PISA 2015**

	Mean performance in science of students						Difference between advantaged and disadvantaged schools on the index[4] of shortage of educational staff[5]		Difference in average time per week in regular science lessons between advantaged and disadvantaged students	
	Attending socio-economically disadvantaged schools[1]		Attending socio-economically average schools[2]		Attending socio-economically advantaged schools[3]					
	Mean score	S.E.	Mean score	S.E.	Mean score	S.E.	Dif.	S.E.	Dif.	S.E.
OECD average	442	(0.9)	492	(0.6)	546	(0.8)	**-0.34**	(0.03)	**0.6**	(0.0)
Australia	464	(3.0)	507	(2.4)	564	(3.4)	**-1.06**	(0.11)	**0.4**	(0.1)
Austria	423	(4.9)	499	(4.2)	559	(4.0)	0.12	(0.22)	**0.6**	(0.2)
Belgium	425	(4.7)	503	(4.3)	578	(4.0)	-0.20	(0.16)	**1.2**	(0.1)
Canada	493	(3.6)	528	(2.2)	562	(4.5)	**-0.36**	(0.18)	**0.5**	(0.1)
Chile	397	(4.5)	442	(4.0)	506	(5.9)	**-0.48**	(0.19)	**1.3**	(0.2)
Czech Republic	431	(4.7)	486	(3.4)	569	(6.2)	**-0.56**	(0.18)	**1.2**	(0.1)
Denmark	473	(3.9)	500	(3.2)	534	(4.4)	**-0.55**	(0.21)	**0.2**	(0.1)
Estonia	509	(4.2)	527	(2.9)	573	(4.1)	0.11	(0.16)	0.1	(0.1)
Finland	511	(5.0)	528	(3.3)	556	(4.7)	-0.04	(0.19)	**0.5**	(0.1)
France	w	w	w	w	w	w	w	w	**1.5**	(0.1)
Germany	437	(5.1)	510	(4.4)	581	(3.9)	-0.25	(0.15)	**1.4**	(0.1)
Greece	391	(9.4)	462	(4.3)	503	(6.1)	-0.17	(0.24)	**0.7**	(0.1)
Hungary	391	(4.2)	480	(3.9)	557	(4.2)	**-0.39**	(0.15)	-0.2	(0.1)
Iceland	460	(3.5)	473	(2.5)	487	(3.4)	-0.02	(0.01)	0.0	(0.1)
Ireland	468	(5.8)	503	(3.1)	536	(4.4)	-0.21	(0.25)	**0.3**	(0.1)
Israel	401	(8.8)	467	(5.4)	532	(6.9)	-0.59	(0.35)	**0.5**	(0.2)
Italy	416	(6.1)	488	(3.8)	532	(5.1)	-0.23	(0.20)	0.1	(0.1)
Japan	477	(4.9)	537	(5.2)	603	(5.8)	-0.13	(0.13)	**0.7**	(0.1)
Korea	465	(5.5)	517	(3.6)	563	(7.3)	0.24	(0.18)	**0.5**	(0.1)
Latvia	458	(4.1)	487	(2.3)	528	(3.9)	0.01	(0.16)	**0.4**	(0.1)
Luxembourg	421	(2.2)	476	(1.4)	560	(2.1)	**-0.40**	(0.01)	**0.5**	(0.1)
Mexico	380	(4.3)	412	(2.6)	459	(5.0)	**-0.79**	(0.18)	0.2	(0.1)
Netherlands	424	(5.4)	510	(3.9)	591	(3.6)	-0.37	(0.26)	**0.7**	(0.1)
New Zealand	461	(5.9)	514	(3.5)	564	(3.7)	**-0.64**	(0.21)	**0.7**	(0.1)
Norway	479	(4.4)	499	(3.3)	519	(4.2)	**-0.43**	(0.16)	0.0	(0.0)
Poland	480	(3.7)	493	(3.8)	540	(5.3)	-0.03	(0.19)	**0.2**	(0.1)
Portugal	454	(4.9)	502	(4.0)	547	(4.6)	**-0.35**	(0.14)	**1.7**	(0.2)
Slovak Republic	392	(5.7)	459	(3.4)	535	(6.1)	**-0.38**	(0.18)	**1.2**	(0.1)
Slovenia	441	(2.4)	513	(1.7)	584	(2.8)	**-0.12**	(0.04)	**1.0**	(0.1)
Spain	459	(4.7)	493	(3.0)	526	(3.7)	**-0.84**	(0.17)	**0.7**	(0.1)
Sweden	452	(4.8)	489	(4.1)	543	(6.9)	**-0.75**	(0.24)	**0.2**	(0.1)
Switzerland	457	(5.9)	496	(5.3)	573	(5.3)	-0.26	(0.19)	**0.7**	(0.1)
Turkey	376	(5.6)	423	(6.8)	480	(9.1)	**-0.83**	(0.23)	**0.5**	(0.1)
United Kingdom	463	(4.3)	503	(3.9)	568	(4.9)	**-0.36**	(0.16)	**0.4**	(0.1)
United States	447	(6.7)	500	(4.6)	538	(5.1)	**-0.84**	(0.22)	**0.9**	(0.1)

1. A socio-economically disadvantaged school is a school in the bottom quarter of the distribution of the school-level PISA index of economic, social and cultural status (ESCS) within each country/economy.
2. A socio-economically average school is a school in the second and third quarters of the distribution of the school-level PISA index of ESCS within each country/economy.
3. A socio-economically advantaged school is a school in the top quarter of the distribution of the school-level PISA index of ESCS within each country/economy.
4. The index of shortage of educational staff is measured by an index summarising school principals' agreement with four statements as to whether the school's capacity to provide instruction is hindered by a lack of and/or inadequate qualifications of the school staff.
'w' denotes data have been withdrawn or have not been collected at the request of the country concerned.

Source: OECD (2016a), *PISA 2015 Results (Vol. I): Excellence and Equity in Education*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264266490-en
Tables I.6.11, I.6.13 and I.6.15.

StatLink http://dx.doi.org/10.1787/888933638315

What are the most effective ways to address inequality in performance?

The latest PISA 2015 analysis report conducted a multilevel regression to examine which factors are positively or negatively associated with science performance. Among many factors, students' and schools' socio-economic profiles, the use of adaptive and teacher-directed instruction, the requirement to attend at least one science course per week, the index of disciplinary climate in science lessons, having a non-immigrant background and the number of students in language of instruction in class and a high score on the index of science-specific resources have significant positive association with science scores. On the other hand, students' experiences of repeating a grade at least once had a strong negative association with science scores.

Tackling inequality in performance will require providing extra learning and language support to socio-economic and culturally disadvantaged students and immigrant students, creating disciplined learning environments, providing extra financial, material and especially human resources to disadvantaged schools, and avoiding grade repetition. Preventing grade repetition means tackling low performance and preventing school dropout early on. Considering that disadvantaged schools tend to have a disproportionately high number of students who are considered to be low performers and at risk of dropping out, tackling low performance ultimately mean providing extra support to disadvantaged schools. This report, therefore, focuses on policies that support *i)* low performers and *ii)* disadvantaged schools.

If low performers are to receive effective support, they need to be identified early on. This allows teachers and parents to provide early, regular and timely support to those who are at risk of falling behind. Targeted support for low performers, such as customised lessons, language classes for immigrant students, subject-specific extra classes and additional teachers in classes to help those who have trouble catching up need to be provided. Sorting and segregation mechanisms such as academic tracking and ability grouping can perpetuate educational inequality in schools, and these practices need to be delayed and avoided entirely to encourage greater equity. Instead, high academic commitment, attitude and behaviour should be expected from all students, regardless of their socio-economic and cultural background, as well as their academic outcomes. In addition, involving parents throughout the school year, especially parents of students who are falling behind, can help improve students' learning outcomes.

The allocation of adequate resources to disadvantaged schools is essential in ensuring that all students receive the high-quality education and training needed to fully participate in society (OECD, 2016f). Providing these schools with additional financial and human resources is essential. School budgets should prioritise spending and investing in high-quality human resources, such as school leaders and teachers who play a critical role in reducing educational inequalities. Monetary or professional incentives can also be used to attract high-quality school leaders and teachers to disadvantaged schools. Targeted support should be given to school leaders and teachers in disadvantaged schools, with efforts to connect them to other school leaders and teachers, allowing them to share knowledge and support (OECD, 2012; OECD, 2016d).

Tackling low performance

Identify low performers early through formative assessment

In order to identify low performers, diagnostic assessments need to be conducted, especially at the beginning of the school year, so that appropriate support can be provided

to the students who need it. These evaluations can assess what students know and can do, as well as which subject areas and knowledge they lack, which provides a baseline against which to assess their progress. To track their progress towards learning goals, however, the assessments need to be carried out throughout the academic year. The information on students' performance should then be used to set actionable next steps and to identify the areas that need special attention (Harlen, 2006; OECD, 2012; OECD 2007). These assessment methods are also known as formative assessments, which have been proven to be effective in helping underachieving students to achieve their learning goals successfully (OECD, 2007; Black and William, 1998).

The role and objective of formative assessments are different from summative assessments. Summative assessments are used to measure what students have learnt, usually towards the end of programmes. They can assess whether students have met the required learning objectives and can progress into the next level, for students to obtain completion certificates, or as a method for selecting students for entry into further education (OECD, 2005). Formative assessments have a very different objective, and are used to identify learning gaps and how to provide adequate teaching that the students require throughout the school year.

According to the 2005 OECD report on formative assessment in secondary education (OECD, 2005), six elements of classroom practice of formative assessment are commonly identified in the literature and in classroom case studies. First, the classroom culture encourages interaction and the use of assessment tools. The assessment approaches vary, learning goals are set and individual students' progress is monitored towards goals. Various instruction methods are used to meet the needs of different students. Lastly, feedback is provided and instruction is adapted to meet identified needs and to involve students actively in learning. The report stresses the teacher's role, suggesting how teachers might use formative assessments and provide adaptive support for their students. Given that students learn at different paces and have diverse needs, formative assessment results are useful for teachers to adapt the lessons taught in class, as well as to find out who needs extra attention. Queensland, for example, has a variety of in-service workshops and professional development opportunities on using assessments. Workshops and seminars are conducted to assist teachers in implementing assessment in the subjects they teach. Teacher practice is supported by strong professional networks, and teachers are encouraged to reflect on their assessment practice and consider how it can be improved (OECD, 2005).

Various country-specific classroom practices identified in case studies and literature reviews on formative assessments were introduced in the OECD report on formative assessment (OECD, 2005). This section draws on some of the examples related to equity. At the Tikkakoski School in Finland, teachers track students depending on their progress and provide extra help for students who are falling behind. Students who are struggling get additional help in separate classes on specific subjects. At the Italian Testoni Fioravanti School in Bologna, students who progress from primary to lower secondary school are required to take diagnostic tests in a range of subjects. Teachers use test results as well as information on students' prior scholastic success, attitudes, aspirations and habits to help understand students' needs and academic level, which is also used to create mixed classes by ability and personality. In New Zealand, the Maori Mainstream Programme responds to the needs of Maori students, who perform less well even in affluent schools. The programme encourages teachers to understand their own cultural prejudices and to create learning

environments in which students can feel comfortable with their culture. As the teachers have a better understanding of Maori students' culture and learning gaps, the students have been found to relate better to the teachers and to adapt better in classes.

Provide targeted support

Once the students who are falling behind have been identified, adequate levels of support need to be provided (OECD, 2016c). Students from the bottom quarter of the distribution of the PISA index of ESCS are 2.8 times more likely to perform below Level 2 in science than their peers with average or high socio-economic status on average across OECD countries. Providing support for low performers is thus likely to help those from disadvantaged backgrounds. Some countries provide extra tutoring or special classes depending on students' need. Singaporean schools offer a programme called *Learning Support for Maths* (LSM), for students who do not have the basic numeracy skills and knowledge needed to follow the mathematics curriculum at school (OECD, 2011). Selected students who are identified through a diagnostic test at the beginning of the first grade have extra classes with a specialist teacher for four to eight sessions per week. LSM teachers receive additional training and teaching resources. In 2013, Singapore expanded the scope of this programme to cover students in second grade, to provide continuous support. In 2003, the *Student Success/Learning to 18 Strategy* was implemented by the Ontario Ministry of Education to improve graduation rates and ensure that all Ontario students obtain adequate learning outcomes of secondary education. This programme created a team known as the *Student Success Teacher*, to provide support to students at risk of leaving school early. It also tracks and addresses the needs of students who are disengaged and struggling in classes (OECD, 2015).

A potentially highly effective, low-cost teaching method is to systematically establish peer tutoring or peer-assisted learning. Peer tutoring generally involves either pairs or groups of students providing explicit support to one another. The common characteristic is that learners take on responsibility for aspects of teaching and for evaluating their success. Peer tutoring can supplement classroom learning, since students learn by explaining what they know to their peers. Students who are having difficulty fully understanding the subject matter can learn a great deal from their peers. Peer tutoring has been found to be particularly effective among low-performing or disadvantaged students, who often show the greatest gains from participating in these programmes. Peer tutoring is particularly effective when the quality of peer interaction is ensured with a pre-set frame, such as questioning guidelines (Bowman-Perrott et al., 2013; Rohrbeck et al., 2003).

Support immigrant students

Immigrant students[5] often face multiple challenges in school. These include language barriers, socio-economic hardship, cultural differences and often lack of support from their parents in adjusting to a new education system, since their parents themselves may also be having difficulty adjusting to the new country. Across OECD countries, 39.1% of first-generation immigrant students and 29.5% of second-generation immigrant students scored at below proficiency Level 2 on the 2015 PISA science assessment, compared to 18.9% of students who were not from an immigrant background. On average across OECD countries, immigrant students scored 447 points on the science assessment, 53 points (the equivalent of 18 months schooling) lower than the mean performance of their non-immigrant peers (OECD, 2016a).

Among the factors affecting the PISA performance of immigrant students, their socio-economic status and language skills can prevent them from obtaining high learning outcomes. On average across the OECD, immigrant students are almost three times more likely to perform below Level 2 in science than their non-immigrant peers, however even after accounting for socio-economic status, immigrant students are still over twice as likely to score below Level 2 in science. Before socio-economic status was accounted for, immigrant students across the OECD scored 43 points lower in science, 37 points lower in mathematics and 40 points lower in reading than their non-immigrant peers. After taking socio-economic status into account, however, these discrepancies fall to 31 points, 26 points and 29 points respectively (OECD, 2016a). These gaps are particularly wide in countries with relatively large immigrant student populations, such as Austria, Belgium, Denmark, Germany, Slovenia, Sweden and Switzerland. As for language barriers, 2 out of 3 first-generation students and 1 out of 2 second-generation students took the PISA 2015 assessment in a language other than the one they spoke at home. On average, students who speak another language at home scored 448 points in science, which is 54 points lower than non-immigrant students who scored on average 502 points in science (OECD, 2016a).

Since immigrant students are more likely to be low performers, support programmes that help them improve their language skills, enhance their historical and cultural understanding of their host country and improve their learning outcomes are an important tool (OECD, 2016a). Such programmes should be taught by language specialists and be designed around a common curriculum that focuses not only on language acquisition but on teaching that can improve their learning outcomes. To facilitate learning, language and classroom teachers should be encouraged to collaborate in delivering academic content, a practice that has shown promising results in countries such as Canada, Sweden and Australia (OECD, 2016b).

A large proportion of immigrant parents have a lower level of educational attainment than native-born parents (only 57% of first-generation immigrant parents have at least one parent who has attained a level of education equivalent to the average parent in the host country). This makes the role of teachers and schools even more important in mitigating the learning gap between immigrant and non-immigrant students (OECD, 2016b). Teachers may, for example, be offered extra training to improve their pedagogical methods and better engage students from immigrant backgrounds or to support students struggling with the language of the host country. Schools with a large population of disadvantaged immigrant students could consider hiring high-quality teachers who have experience in teaching immigrant students, and also teachers from ethnic minority or immigrant backgrounds. Students may relate better to teachers of comparable ethnic backgrounds, similar culture or sometime teachers from their countries of origin who speak the language the students speak at home.

Avoid system-level policies that can exacerbate education inequality

Grade repetition, early tracking and ability grouping can perpetuate educational inequality in schools. Such practices are often costly and ineffective in raising educational outcomes. Since various OECD reports have explained the effect of stratification in great detail (OECD, 2007; OECD, 2012; OECD, 2016b), this section will highlight the findings from the latest PISA 2015 results and the main concerns of various stratification policies in relation to equity. According to the latest PISA results on the use of stratification policies (OECD, 2016b), however, 11.3% of students reported having repeated a grade at least once in primary to upper secondary school. The age of selection into different programmes was 14.3 years old. In addition, 38.4% of principals reported that students' academic performance is

always considered for school admission, and 7.8% of students on average in OECD countries reported that they attend schools that group them by ability for all subjects.

Table 4.3. **Grade repetition and enrolment in vocational tracks, by socio-economic status**

Results based on self-reporting by students

	Percentage of students having repeated a grade				Likelihood of disadvantaged students having repeated a grade, relative to advantaged students				Percentage of students enrolled in a vocational track				Likelihood of disadvantaged students being enrolled in a vocational track, relative to advantaged students			
	Disadvantaged students[1]		Advantaged students[2]		Before accounting for performance in science and reading		After accounting for performance in science and reading		Disadvantaged students[1]		Advantaged students[2]		Before accounting for performance in science		After accounting for performance in science	
	%	S.E.	%	S.E.	Odds ratio	S.E.	Odds ratio	S.E.	%	S.E.	%	S.E.	Odds ratio	S.E.	Odds ratio	S.E.
OECD	18.7	(0.2)	6.1	(0.1)	**4.1**	(0.2)	**1.8**	(0.1)	19.6	(0.3)	7.6	(0.2)	**4.3**	(0.4)	**2.9**	(0.5)
Australia	9.2	(0.6)	5.9	(0.6)	**1.5**	(0.2)	1.0	(0.1)	17.3	(1.3)	8.9	(1.0)	**1.9**	(0.2)	**1.5**	(0.2)
Austria	20.6	(1.7)	10.8	(1.0)	**2.1**	(0.3)	1.0	(0.2)	84.9	(1.9)	46.1	(1.8)	**6.3**	(1.0)	**3.9**	(0.5)
Belgium	53.3	(1.5)	15.7	(1.1)	**5.3**	(0.5)	**2.1**	(0.2)	60.0	(2.4)	20.3	(1.4)	**4.9**	(0.6)	**2.5**	(0.3)
Canada	10.6	(0.8)	2.6	(0.3)	**4.3**	(0.6)	**2.3**	(0.3)	0.0	c	0.0	c	m	m	m	m
Chile	33.9	(1.9)	16.0	(1.2)	**2.6**	(0.3)	0.9	(0.1)	0.9	(0.3)	0.1	(0.1)	**7.0**	(6.8)	**9.1**	(9.0)
Czech Republic	10.0	(1.1)	1.2	(0.3)	**6.7**	(1.8)	**1.8**	(0.5)	35.7	(2.1)	24.4	(1.9)	**1.7**	(0.2)	**1.3**	(0.2)
Denmark	5.3	(0.6)	2.0	(0.4)	**2.7**	(0.5)	1.4	(0.3)	0.0	c	0.0	c	m	m	m	m
Estonia	7.2	(0.9)	2.5	(0.6)	**3.1**	(0.7)	1.5	(0.4)	0.7	(0.3)	0.2	(0.2)	3.6	(4.8)	3.9	(4.4)
Finland	4.6	(0.6)	1.8	(0.3)	**2.4**	(0.6)	1.0	(0.3)	0.0	c	0.0	c	m	m	m	m
France	38.1	(1.6)	7.3	(1.0)	**6.2**	(0.9)	**2.0**	(0.3)	35.0	(2.0)	4.0	(0.7)	**7.2**	(1.3)	**3.5**	(0.6)
Germany	24.4	(1.7)	12.2	(1.1)	**1.9**	(0.2)	1.1	(0.1)	3.5	(1.3)	1.2	(0.5)	1.1	(0.5)	0.8	(0.4)
Greece	9.4	(1.6)	1.7	(0.5)	**5.4**	(1.8)	2.0	(0.8)	27.5	(4.3)	4.1	(0.9)	**7.1**	(1.3)	**3.3**	(0.7)
Hungary	17.1	(1.6)	3.3	(0.7)	**5.6**	(1.6)	1.8	(0.5)	31.6	(1.6)	3.5	(0.5)	**9.6**	(1.6)	**4.0**	(0.8)
Iceland	1.7	(0.4)	1.0	(0.4)	1.4	(0.9)	0.9	(0.7)	0.0	c	0.0	c	m	m	m	m
Ireland	11.0	(1.0)	3.9	(0.9)	**2.9**	(0.4)	**1.7**	(0.2)	1.7	(0.7)	0.4	(0.2)	**3.9**	(1.5)	1.2	(0.5)
Israel	16.4	(1.3)	4.8	(0.6)	**3.5**	(0.6)	**1.9**	(0.3)	0.0	c	0.0	c	m	m	m	m
Italy	24.2	(1.3)	7.5	(0.8)	**3.8**	(0.5)	**2.0**	(0.3)	70.5	(2.0)	26.0	(1.7)	**5.7**	(0.7)	**4.1**	(0.5)
Japan	m	m	m	m	m	m	m	m	38.6	(2.1)	11.9	(1.1)	**4.2**	(0.6)	**3.4**	(0.5)
Korea	4.5	(0.6)	5.2	(0.6)	0.8	(0.1)	**0.7**	(0.1)	27.8	(1.9)	6.3	(1.2)	**5.5**	(1.3)	**3.5**	(0.8)
Latvia	9.1	(1.1)	2.1	(0.6)	**4.3**	(1.2)	**1.9**	(0.6)	0.8	(0.6)	0.9	(0.5)	0.9	(0.7)	1.0	(0.8)
Luxembourg	44.0	(1.2)	13.1	(0.9)	**4.4**	(0.3)	**1.6**	(0.2)	17.6	(0.9)	8.6	(0.6)	**2.3**	(0.2)	**2.7**	(0.4)
Mexico	23.5	(2.2)	9.6	(1.0)	**2.9**	(0.5)	1.4	(0.3)	18.5	(2.3)	21.4	(2.0)	0.8	(0.2)	1.1	(0.2)
Netherlands	25.9	(1.4)	16.0	(1.0)	**1.8**	(0.2)	1.2	(0.1)	42.9	(1.8)	9.2	(1.1)	**6.1**	(0.9)	**2.6**	(0.4)
New Zealand	5.9	(0.7)	3.9	(0.6)	1.5	(0.3)	1.0	(0.2)	0.0	c	0.0	c	m	m	m	m
Norway	m	m	m	m	m	m	m	m	0.0	c	0.0	c	m	m	m	m
Poland	10.3	(1.2)	1.5	(0.4)	**5.2**	(1.3)	**1.9**	(0.6)	0.1	(0.1)	0.1	(0.1)	1.0	(2.2)	2.1	(5.6)
Portugal	52.2	(2.2)	8.7	(1.0)	**10.7**	(1.7)	**3.8**	(0.7)	21.9	(1.4)	4.6	(1.7)	**5.1**	(1.9)	**3.1**	(1.0)
Slovak Republic	16.3	(1.8)	1.4	(0.3)	**12.0**	(2.6)	**4.7**	(1.2)	10.7	(1.3)	1.6	(0.4)	**6.0**	(1.3)	**3.0**	(0.8)
Slovenia	3.4	(0.7)	0.8	(0.3)	**4.3**	(2.2)	1.9	(1.1)	79.2	(1.5)	27.5	(1.0)	**9.4**	(1.0)	**5.7**	(0.7)
Spain	53.5	(1.7)	8.7	(1.1)	**10.9**	(1.2)	**5.6**	(0.7)	1.5	(0.3)	0.2	(0.1)	**5.2**	(3.4)	2.4	(2.0)
Sweden	6.9	(0.8)	2.4	(0.4)	**2.4**	(0.5)	1.2	(0.2)	0.0	c	0.0	c	m	m	m	m
Switzerland	28.7	(2.0)	13.5	(1.4)	**2.4**	(0.3)	1.2	(0.2)	9.7	(2.0)	4.8	(0.7)	**2.1**	(0.4)	**4.3**	(1.2)
Turkey	13.2	(1.1)	6.8	(0.9)	**2.1**	(0.3)	1.0	(0.2)	45.9	(3.3)	27.4	(3.4)	**2.2**	(0.4)	1.4	(0.3)
United Kingdom	4.0	(0.5)	2.0	(0.4)	**1.8**	(0.3)	1.0	(0.2)	0.7	(0.2)	0.8	(0.4)	0.9	(0.4)	0.8	(0.3)
United States	17.4	(1.6)	4.0	(0.7)	**4.7**	(0.8)	**2.3**	(0.5)	0.0	c	0.0	c	m	m	m	m

1. A socio-economically disadvantaged student is a student in the bottom quarter of the distribution of the PISA index of economic, social and cultural status (ESCS) within his or her country/economy.
2. A socio-economically advantaged student is a student in the top quarter of the distribution of the PISA index of ESCS within his or her country/economy.

Note: Values that are statistically significant are indicated in bold.

Source: OECD (2016a), *PISA 2015 Results (Vol. I): Excellence and Equity in Education*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264266490-en. Tables I.6.14 and I.6.16.

StatLink http://dx.doi.org/10.1787/888933638334

Reduce grade repetition

The latest PISA results find that grade repetition is correlated closely with low performance. Even after accounting for socio-economic status, it is found that a student who has repeated a grade in primary school is 6.4 times more likely to be a low performer than a peer who has never repeated a grade (OECD, 2016a). At the same time, disadvantaged students are almost twice as likely to have repeated a grade at least once during their formal schooling, even after taking their science performance into account. The rate is particularly high in Spain, where students from disadvantaged backgrounds are nearly six times more likely to repeat a grade. In the Slovak Republic, CABA (Argentina) and Portugal, disadvantaged students are around four times more likely to repeat a grade. In 12 OECD countries, a statistically significantly higher proportion of students reported having repeated a grade at least once compared to the OECD average. In Belgium and Spain, more than 1 in 3 students have repeated a grade. Portugal and Luxembourg followed at 31.3%, 31.2% and 30.9% respectively. In Chile, France, the Netherlands and Switzerland, more than 1 in 5 students reported repeating a grade at least once in their formal schooling years.

Grade repetition is often a result of a failure to identify low performers early, or to a lack of additional support that the low performers need, to achieve good learning outcomes corresponding to their grade level. Grade repetition is expensive, delays students' progress into the next level and ultimately, into the labour market and does not necessarily improve students' learning outcome. It should thus be avoided as far as possible (OECD, 2013a; OECD, 2013b). Instead, countries with a high proportion of students who report having repeated a grade need to re-evaluate how students' performance and behaviour are monitored throughout the school year, and what kind of intervention is provided to support those who are struggling, especially among students from disadvantaged backgrounds.

Between 2009 and 2015, however, the proportion of students responding that they repeated a grade at least once fell in 30 countries that participated in PISA. The percentages dropped by at least 10 percentage points in Costa Rica, France, Latvia, Macao (China), Malta, Mexico and Tunisia (PISA, 2016). France, for example, has reduced the proportion of students reporting to have repeated a grade at least once, by 16 percentage points. Reducing the practice of grade repetition and replacing it with measures that support and encourage struggling students can improve academic outcomes for all students, but especially those from disadvantaged backgrounds.

Alternative strategies to grade repetition

As discussed earlier, the first alternative strategy for avoiding grade repetition is the implementation of preventive measures designed to identify low-performing students, through assessment at the beginning of or during the school year. It is important these struggling students be detected as early as possible, rather than at the end of the academic year, when nothing can be done to improve their performance. They can then be offered the specialised support needed to help them catch up with their classmates. If this strategy is to be successful, a number of factors must be addressed. Firstly, schools must better prepare teachers on how to instruct diverse classrooms and should even hire teachers or professionals specifically trained in assisting low-performing students. Schools can also encourage the use of diverse learning and pedagogical methods and should strive to present students with as many learning opportunities as possible. For example, remedial classes before and after school, or special summer programmes, can be offered to students who require the extra academic attention. Finally, evidence suggests that strengthening the

metacognitive skills of students, that is, skills related to motivation, discipline, tenacity, self-esteem, confidence and patience, is an effective way to improve academic engagement and performance in students (OECD, 2012). Developing such emotional skills should be combined with encouraging a positive school climate.

In Finland, where only 2% of students reported having repeated a grade, individualised learning supports responsive to students' needs are often provided. Additional and personalised academic help is made readily available to all students, and pupils' personality, character and emotional needs are taken into account in building a positive school environment and choosing the most effective pedagogical methods. Upper secondary schools have no single curriculum for each grade, and a module approach allows students to build their own academic schedule from a variety of classes offered. Curricula are thus tailored to students' personal level of learning, performance and interests. If students fail to pass one or more of these courses, they are required simply to repeat these subjects, rather than an entire grade level. This system offers one example of engaging students and ensuring that none are left behind (Schleicher, 2014).

Change the culture of grade repetition

In many countries, grade repetition is deeply embedded in the academic culture. The adverse effects of the practice need to be shared and understood by school leaders, teachers and parents, so they can discuss ways to deal with low performance with at an earlier stage. Financial incentives can be offered to schools that make progress in reducing their rate of grade repetition. Alternatively, a system can be set up to hold a school accountable for the number of students it holds back and how effective it is in reaching and supporting the lowest-achieving students (Schleicher, 2014). France serves as a particularly good example of an education system that used to rely heavily on grade repetition and has since reformed its academic culture to reduce the practice. The French Ministry of Education has set national targets that hold schools accountable for holding high numbers of students back and has implemented a reform that ensures individualised support two hours per week to those students who need it. This has also created various opportunities for students who have been lagging behind their classmates to catch up in the last two years of primary school. In 2014, an amendment to France's school reform law declared that grade repetition should only be considered for exceptional cases (OECD, 2015a).

Delay academic tracking

As students reach the end of lower secondary education or the beginning of upper secondary education, they are often separated into different educational tracks by academic ability. This is known as academic tracking or streaming. Some countries have comprehensive systems that provide the same educational programmes to all students up to the end of primary or lower secondary education. Other countries separate students into several tracks that have a different focus in preparing students, which involves providing different curricula, levels of academic intensity and learning experiences. Broadly speaking, the selection is divided into academic and vocational education that typically prepares students to pursue higher education, while vocational education often prepares students to join the labour market upon completion of secondary school. Some students may pursue vocational tertiary education. Depending on students' academic ability, choice and need, they follow a specific path in all OECD countries; however, the timing and selection criteria differ considerably across OECD countries. On average across OECD countries, the age of selection into different

programmes was at 14 years old, according to PISA 2015 results (OECD, 2016b). Although the most common selection age is 16 in 15 OECD countries, in Austria and Germany, the age at selection is 10. In the Czech Republic, Hungary, the Slovak Republic and Turkey, academic tracking begins at the age of 11; in Belgium, the Netherlands and Switzerland, the selection process begins at the age of 12. There are some advantages in academic tracking, since it can create more homogeneous classes and teaching and learning can be more adaptable to the end outcomes and students' need. However, it can aggravate socio-economic disparities and increase inequalities in education (Oakes, 2005; Hanushek and Woessmann, 2006; Maaz et al., 2008; OECD 2012).

Students from disadvantaged backgrounds are more likely to be enrolled in pre-vocational and vocational programmes. On average across OECD countries, 24% of students from disadvantaged schools are enrolled in pre-vocational or vocational programmes, compared to 3% of students in advantaged schools. This difference is largest in Austria, Croatia, Italy and the Netherlands. Considering that students from disadvantaged backgrounds are 2.8 times more likely perform below the baseline in science than more advantaged students on average across OECD countries, disadvantaged students are more likely to be tracked into a vocational trajectory. When the tracking process begins as early as 10 years old, however, students from the disadvantaged backgrounds are much more likely to be tracked into a vocational track, because they have not had sufficient time to develop their academic capacity during schooling before this important decision is made in their lives. In addition, students in general programmes score 22 points higher on PISA 2015 science than students in pre-vocational or vocational programmes, on average across OECD countries, after accounting for socio-economic background. This gap is as large as 97 and 91 score points in Ireland and the Netherlands, which corresponds to 3 years of schooling. Unless vocational programmes ensure high-quality academic teaching as well as vocational training, as is the case in Switzerland, where students from the vocational track have higher science scores than their peers in the general programme, early tracking can deprive low-performing students of the opportunity to improve their cognitive outcomes and pursue an academic track later. This perpetuates unequal educational opportunities and learning outcomes, as well as labour market outcomes when they join the labour market.

For these reasons, OECD has consistently recommended delaying the age at which the tracking decision is made, at least until the end of lower secondary school. Delayed tracking allows students to remain in comprehensive education and continue to build their academic competencies for longer. Poland, for instance, increased the tracking age from 15 to 16 in 1999. Follow-up research suggests that this delay may account for major improvements in Poland's international assessment performance (OECD, 2012). In addition, tracking should be as flexible as possible, allowing students to change from one pathway to another. In Austria and Switzerland, students can receive dual diplomas that combine vocational qualifications and qualifications that allow access to tertiary education, which makes the transition from vocational track to tertiary education a viable option (OECD, 2015b).

Maintain high expectations for all

Low achievers tend to attribute their unsuccessful learning outcome to a low level of ability rather than to a lack of effort. Such ideas are often developed early in life through interaction between parents, teachers and peers (Black and William, 1998). According to the latest PISA report on students' well-being (OECD, 2017), 44% of students reported that they expect to complete tertiary education on average across OECD countries. However, a much

lower proportion of students from disadvantaged backgrounds reported that they expect to complete tertiary level of education. Only 26% of students in the bottom quarter of PISA ESCS index reported that they expect to complete university, as compared with 66% of students from the top ESCS index on average across OECD countries. In Germany, the Netherlands, Slovenia, less than 10% of students reported that they expect to attain a university degree. Expectation of graduating from university increases as the size of residence area increases. On average across OECD countries, 31% of students whose school is in a rural area or a village with fewer than 3 000 people, 42% of students in schools located in towns with up to 100 000 people, and 50% of students in cities with over 100 000 people expect to complete a university education. The difference in expectations between urban and rural students was particularly large (over 40 percentage points) in Hungary and Turkey.

Parents' expectations, attitudes and perspectives can influence their children's attitude towards learning and academic outcomes. This plays a crucial role in setting students' expectations and their ambition to achieve academic goals (Anderson and Huesmann, 2003; Huesmann, 1998; Eccles, Vida and Barber, 2004; Frome and Eccles, 1998). Various studies also find that parental expectations increase as socio-economic status rises (Ang and Huan, 2006; Xiao, 2013). The latest PISA 2015 results also confirm this equation, since socio-economic status is found to be related to students' ambition (OECD, 2017). On average across OECD countries, disadvantaged students were 11 percentage points less likely than advantaged students to report that they want to be among the best students in the class, and 13 percentage points less likely to see themselves as an ambitious person. In Canada, Iceland, Korea, Lithuania and Portugal, disadvantaged students fall more than half a standard deviation below their advantaged peers on the index of achievement motivation.

School leaders and teachers also play a significant role in motivating students' ambitions and expectations about their academic achievement. Students of the most disadvantaged backgrounds can achieve a high level of performance if they are presented with ambitious academic goals and encouraged to beat the odds, given the opportunity and adequate support. PISA 2015 results find that resilient students, who perform in the top quarter of students even though they fall within the bottom quarter of the PISA ESCS index, have significantly higher levels of motivation than other disadvantaged students. Schools in disadvantaged communities in rural areas and vocational schools play a crucial role in motivating and encouraging their students (OECD, 2017).

Involve parents throughout the school year

Parents have an important role to play both directly and indirectly. Directly, they can encourage their children to work hard in school, help them with homework, read to their younger children and take time to talk with their older children about their daily activities. Indirectly, they can become involved in their children's school and be aware of and interested in additional education opportunities for their children, such as free after-school tutoring programmes. School reforms introduced in Japan encourage parents and community members to assume some responsibility for managing schools and providing individualised instruction to students during lessons when necessary (OECD, 2011). These initiatives seem to be having a positive impact, and students in Japan reported a stronger sense of belonging, lower rates of tardiness and better attitudes towards school in 2012 than in 2003.

Schools can reach out to parents who appear to be disengaged from their children's education and provide them with clear guidelines on how they can support the children and participate in the school community. The Netherlands' *Platform for Ethnic Minority Parents*

focuses on involving immigrant parents in their children's schooling. Activities include language courses for immigrant parents and home visits by teachers, which give teachers a better idea of their students' living and learning environment (Schleicher, 2014). Ireland's Home School Community Liaison programme is targeted to children in disadvantaged areas who are at risk because of family-related issues. Under this plan, liaison co-ordinators visit students' homes regularly to promote good relations between parents and schools, and to identify and provide for the basic needs of parents. The underlying concept is that when parents are more self-confident, they have a more positive impact on their child's education (Irish Department of Education and Skills, 2014). Many initiatives to assist low-performing students come from the communities and local actors willing to volunteer or donate resources. For example, in Japan's *School Support Regional Headquarters Project*, people in local communities provide after-school remedial support for students in need, in consultation with schools (OECD, 2011). Mentoring programmes that connect students with working adults as their mentors can also help to motivate students. Manitoba province in Canada provides a range of school-based, developmental mentoring programmes, including the *Big Brother, Big Sister* programme, which engages older students or peers as mentors of struggling and low-performing students.

Engaging parents early on and keeping them involved and informed throughout the school year is important. This is especially true for students from disadvantaged or low SES backgrounds. High-achieving students from disadvantaged schools are more likely to benefit from greater levels of parental involvement in their education at home than their lower-performing peers (OECD, 2012). Unfortunately, increasing the parental involvement of disadvantaged students and schools can be challenging. Parents of low SES are often less involved in their children's schooling, due to both economic and social factors. These include long or inflexible working hours, being a sole parent, in addition to language barriers, since parents of immigrant or migrant families may not be fluent in the school's language of instruction or have little formal education themselves (OECD, 2012). An extra effort must therefore be made, both by schools and through government reforms or programmes, to reach out and encourage increased participation by parents, particularly those of low socio-economic backgrounds.

Involve parents in formal management of schools or volunteering activities

Parents can be involved more formally in the management of schools. "Horizontal" accountability, which encourages them to participate in the management of schools through formal channels such as school boards, is one effective way to increase involvement. School reforms in Japan, for example, encourage parents to participate in managing schools, or to provide individualised instruction to students when needed. Other ways for parents to become more involved in daily school life is to work as volunteers in school libraries or media centres, as teacher's assistants or to help with school fundraising campaigns (OECD, 2012). Parents who are more frequently involved with such in-school activities are more likely to understand their children's school and learning environment, have better communication with the school and teachers, and be more aware of what sort of extracurricular options are available for the children.

Teacher's home visit programmes

One way of increasing parental involvement is home visit programmes, which can benefit both students and their parents, since they are tailored to the needs of both. The Netherlands' *Platform for Ethnic Minority Parents* aims to help immigrant parents become

more involved in their children's schooling. It provides language courses for parents and teacher home visits. Parents can thus keep abreast of their children's progress in school while offering teachers greater understanding of their pupils' home environment. Ireland has a similar home visit-based programme in which co-ordinators regularly visit students' homes to encourage positive relations between parents and schools, and to recognise and address the basic needs of the parents (OECD, 2016c). These programmes also promote greater awareness for parents as to what is going on in their children's educational environment and opens up an important line of communication between parents and schools.

Enhance learning at home by training parents

In addition to home visits, government subsidies to fund training programmes for parents can also play an important role in increasing their involvement. Programmes can focus on issues such as parenting skills, child development and financial and family planning, or provide literacy and language lessons. Such programmes raise awareness among parents about the importance of their own role in children's education, as well as offering the skills and knowledge needed for parents to create an optimal home environment for learning. Romania's *National Parenting Education Programme in Preschool Education*, launched in 2001, for example, has trained preschool and primary school teachers to tutor their own students' parents. Using manuals, videos and other learning material on early childhood development, they offer suggestions on how best to encourage and support their children throughout their academic lives (OECD, 2012).

Parental training can encourage parents to support students' school work at home. At home, parents can provide direct encouragement by imparting a positive attitude towards education, reinforcing their children's academic achievements, giving assistance with homework and studying, and discussing daily activities (OECD, 2016b). Reading stories to younger children has been shown to encourage and improve literacy development. Fifteen-year-olds who reported their experience in daily interacting with their parents through reading, singing or playing word games when they were of pre-primary school age scored higher on the PISA reading test on average across OECD countries than their peers who did not have such experiences (OECD, 2012). Schools can encourage parents to be more involved in their children's education, especially parents of low socio-economic backgrounds.

Supporting disadvantaged schools

Provide additional resources and support to disadvantaged schools

One would expect that disadvantaged schools[6] would receive more financial, educational material and human resources than their counterparts who have more advantages. However, it seems that even receiving an equal level of resources have been challenging for disadvantaged schools even though schools serving disadvantaged populations have greater needs (OECD, 2016a). According to the PISA 2015 results, major discrepancies in the distribution of educational resources between advantaged and disadvantaged schools were reported by school leaders in most OECD countries. Many school principals in disadvantaged schools reported that access to and quality of educational resources, including teaching staff, reduces the quality of instruction provided to their students. Substantial differences have been found in the mean values of the indices

of shortages of educational material (such as textbooks, information technology equipment, laboratory material or physical infrastructure) and educational staff (including both teaching and assisting staff) between socio-economically advantaged and disadvantaged schools across countries and economies. Principals in disadvantaged schools reported that the amount and/or quality of resources in their schools negatively affect the schools' capacity to provide quality instruction to a greater extent than did principals in advantaged schools. The positive differences imply that the perception that inadequate resources are an obstacle to school instruction is more common among principals of advantaged schools.

A majority of countries and economies (58 out of 68) had negative differences in the indices for access to and quality of educational resources, while among OECD countries, according to PISA 2015 (OECD, 2016a). Mexico had the greatest negative differences, indicating that it has the largest proportion of principals of disadvantaged schools who believe that a lack of educational material and teaching resources is holding back instruction in their schools. Turkey, Spain, Australia and the United States also all had large negative differences in the indices for access to well-qualified educators. Among non-OECD countries and economies, CABA (Argentina), the United Arab Emirates, Peru and Macao (China) reported the largest negative differences in access to educational materials and staff between advantaged and disadvantaged schools. By contrast, positive differences were found in Latvia, the United Kingdom, Costa Rica, Iceland, Estonia and Lithuania, suggesting that in these countries, a higher proportion of principals of advantaged schools reported that a lack of educational resources is an impediment to instruction than principals of disadvantaged schools. In terms of indices related to access to well-qualified staff, Poland, Korea and Costa Rica all had positive differences.

Distribute resources equitably and efficiently

Regardless how many resources schools have, school budgets must be well-spent to ensure that they improve students' learning outcomes, especially those of disadvantaged backgrounds. PISA analyses show that increased resources alone are not enough to improve students' performance. The critical question is how well the resources are spent (OECD, 2016a; OECD, 2016b). Resources invested in school leaders and teachers are found to have high returns (Chetty et al., 2014; Rivkin et al., 2005; OECD, 2013b). Any additional resources allocated to disadvantaged schools should be prioritised and spent on human resources in schools (Leithwood et al., 2006; Pont et al., 2008; Barber, Whelan and Clark, 2010; OECD, 2016b). This is particularly true since an increasing number of schools in OECD countries have extensive autonomy. The role of key actors in schools therefore is more important than ever (Schleicher, 2014). Policy makers can help disadvantaged schools by developing strategies and practical guidelines for schools to follow. They should also make good use of a set of indicators to monitor and evaluate the progress made on equity measures. To date, apart from PISA results from principals' self-reported questionnaire, the OECD lacks administrative data on the extent of resources distributed to disadvantaged schools, to evaluate and monitor whether resources are distributed equitably.

Attract effective school leaders

School leaders can play a critical role in reducing educational inequalities in their schools. "The most effective schools are led by individuals who set and communicate clear goals and define plans of action according to those goals, including specific tasks

for teachers and all actors in the school community" (OECD 2016, p. 141). Together with the quality of the teachers, effective school leadership is identified as a crucial factor that influences students' outcomes (Augustine et al., 2009; OECD, 2012). School leadership is particularly important for disadvantaged schools, as their leaders play an important role in supporting and developing teaching quality, setting academic goals and managing financial and human resources, as well as maintaining relationships between parents and the school (Pont et al., 2008).

However, disadvantaged schools are simply less attractive to highly competent and experienced school leaders (Harris and Chapman, 2004; OECD, 2012). Additional resources can be used to attract and retain high-quality school leaders to disadvantaged schools, and various support mechanisms can be set up to support their work and allow them to develop the skills mentioned above (Pont et al., 2008; OECD, 2008; Schleicher, 2012; OECD, 2012).

Incentives, whether monetary, professional or a combination of both, are a key tool for getting strong leaders into disadvantaged schools. In the United Kingdom, *the Future Leaders Programme*, which is funded by the UK charity the Future Leaders Trust, recruits top principals, placing them in "challenging" schools that normally have trouble attracting high-quality staff. In return, participants in the programme receive special mentoring and training, a grant of GBP 50 000 for the school and up to GBP 15 000 for personal relocation cost[7]. Another financial approach to attracting school leaders to more disadvantaged areas is by either offering flexible salary schemes, or salaries linked to school-related factors. In Sweden, flexible salaries allow principals to negotiate their pay at an individual level with local authorities and so are not beholden to a national uniform pay scale that eliminates the possibility of higher salaries for leaders in disadvantaged schools (Mercer, 2013).

In many countries, incentives that encourage professional growth and development are a popular way to encourage school leaders to work in less advantaged schools. In the education systems of Shanghai or Singapore, in order to advance up the career ladder, school leaders are encouraged or even required to spend a certain amount of time in a disadvantaged or low-performing school. In the case of Shanghai, every school leader is expected to work in a rural or disadvantaged school for at least a few years, and this is viewed as an important step in a leader's career development. In Singapore, school leaders are carefully selected from the best teachers and go through intensive leadership training programmes. They are then matched to schools based on needs of the school and their own abilities, allowing them to practice and fine-tune their strongest leadership skills in the schools that need them most. The most high-quality leaders are often paired with the worst-performing schools (NCEE, 2016).

Once a strong school leader is working in a disadvantaged school, it is important to provide them the appropriate support, so that they are likely to remain there. According to the OECD TALIS 2013 Survey, school leaders cited a heavy workload as the most common cause of job dissatisfaction. Many leaders, particularly those in disadvantaged schools, feel that their efforts are being spread too thinly over an onerous amount of responsibilities (OECD, 2014). The majority of the average OECD school leaders' time is focused on administrative and leadership tasks, preventing heads of schools from spending more time on other important aspects of their job, such as observing or participating in the classroom, or interacting with students and their families. Distributed leadership can help lighten the

load of school leaders by transferring some of their supervisory tasks to other management positions, such as vice or deputy principals or to teachers. In France, the school head is supported by a management team including at least one deputy principal, an administrative manager and one or more education counsellors. In Korea, teachers designated as "chief teachers" are responsible for much of the mid-level managerial duties of schools (Schleicher, 2012). Distributed leadership also encourages greater co-operation and understanding among administrators and teachers, which often leads to a culture of respect and a more positive school climate, two very important factors in guaranteeing the job satisfaction of school leaders (OECD, 2014).

In addition to distributed leadership, a variety of other measures may assist school leaders. Providing additional training that focuses particularly on the characteristics of disadvantaged schools can better prepare school leaders to handle the unique challenges they may face. Mentoring programmes are another strategy to strengthen skills and introduce new methods that can improve capacity for leading low-performing or struggling schools (OECD, 2012). In Shanghai, successful school principals from high-performing schools are paired with failing schools in order to help turn around the school's performance (OECD, 2011). Finally, building networks that can be developed though formal or informal mechanisms allows school leaders to consult with one another easily for advice or assistance, acting as a kind of group support system. Heads of schools in Scotland can access *Heads Together*, a nationwide online community where school leaders can discuss experiences, practices and ideas, and provide encouragement and guidance (OECD, 2013b).

Granting greater autonomy at the school level can impact school leadership positively. The question of whether to grant greater autonomy to schools is currently a hot-button issue in many education systems and can have a major impact on school leadership. Most countries and jurisdictions are moving towards allowing greater autonomy at the school level. If implemented correctly, this could allow school leaders to better respond to local problems, more effectively distribute resources and formulate curricula that better engage students. New Zealand, which has the most highly devolved and self-governing education system among the OECD countries, provides school principals with almost total autonomy over such matters. This serves as a big draw for school leaders, since it allows them to put into practice almost immediately the skills and new ideas they develop through leadership training or initiatives (OECD, 2008). At the same time, all New Zealand state and state-integrated schools have a board of trustees that are responsible for the governance and control of the management of the schools. Granting greater autonomy can give school leaders working in disadvantaged schools the sense that they can have a more meaningful and direct impact in improving their school's performance. Granting autonomy is certainly not a "one size fits all" approach. Whether an education system should increase autonomy at the school level depends on its current governance system and whether the mechanisms are in place to guarantee a highly effective system of monitoring and accountability (OECD, 2013b).

Attract experienced and highly qualified teachers

Teachers have the primary responsibility for providing education to students and are best positioned to provide adequate support, since they know their students and their circumstances. Researchers and policy makers agree that teachers play an important role in student attainment and that having high-quality teachers in disadvantaged schools is crucial for their success (Santiago, 2002; Schacter and Thum, 2004; and Eide, Goldhaber and

Brewer, 2004). Evidence shows that disadvantaged schools, however, especially schools in rural and remote areas, are more likely to have teacher shortages (OECD, 2012). In some countries, disadvantaged schools have a smaller proportion of qualified teachers with a university degree than advantaged schools. The gap between disadvantaged and advantaged schools in the distribution of qualified teachers is particularly large in Austria, Belgium, the Netherlands and Switzerland. It is quite surprising to find that fewer than 20% of teachers in disadvantaged schools in the Netherlands and Austria have a university degree. At the same time, Portugal, Spain, Poland, Israel and Ireland have a higher proportion of teachers with a university degree than disadvantaged schools.

The shortage of qualified teachers in disadvantaged schools is of particular concern, since it has a high correlation with low performance. Especially wide gaps between advantaged and disadvantaged schools in this respect are seen in Chinese Taipei, Australia, New Zealand, Brazil, Sweden, the Slovak Republic, Shanghai-China, Uruguay, Indonesia, Mexico, Turkey, Serbia, the Czech Republic, Chile, the United States, Ireland, Viet Nam and Peru. On average across OECD countries, rural areas experienced the most shortages and urban areas the fewest. Across countries, school principals reported that teacher shortages were negatively affecting their school's capacity to provide adequate instruction (OECD, 2016a).

Teachers and school leaders need to be encouraged and incentivised to reduce the number of low performers and prevent dropouts, through quality teaching and by offering extra student support, such as counselling and additional after-school classes. There is a risk that education systems may reinforce inequalities by leaving learning achievements up to the students, and by failing to posit equity as an explicit goal or to promote it as a priority. Education policies and school practices together can tackle inequality in education and provide the additional support and resources socio-economically disadvantaged and low-performing students and schools need.

To attract and retain high-quality teachers in disadvantaged schools, financial and career incentives may need to be provided. The incentives need to be large enough to make a difference, and several studies have estimated how much pay would have to increase to attract or retain quality teachers. The level varies depending on the earnings of other professions (Chevalier, Dolton and McIntosh, 2005). Most OECD countries offer such incentives, for instance, additional yearly or one-time bonuses for teaching in a disadvantaged and/or remote area. Financial incentives alone might not be enough to attract high-quality teachers. Together with career advancement incentives, working conditions in disadvantaged schools need to be improved. Teachers with more than five years of experience in most OECD countries that participated in TALIS reported that they work in less challenging schools (OECD, 2014). The difference in the proportion of teachers with more than five years of teaching experience who work in more challenging schools and those who do not is largest in Flanders (Belgium), followed by Sweden, Alberta (Canada), Romania, Israel and England (United Kingdom). On the other hand, a higher proportion of teachers with more than five years of experience in Brazil, Korea, Croatia and the Netherlands reported that they work in more challenging schools.

Improve school climate in disadvantaged schools

Students' sense of belonging at school is found to be correlated to academic achievement (OECD, 2017). On average across OECD countries, PISA 2015 results show students who reported that they feel like an outsider at school score 22 points lower on average in science

compared to their peers who reported that they do not feel like an outsider. Students in OECD countries who reported that they feel like outsiders at school were three times more likely to report that they are not satisfied with their life than those who did not feel like outsiders at school. On average across countries, disadvantaged students were 7.7 percentage points less likely than advantaged students to report that they feel that they belonged at school. First-generation immigrant students were also 4.6 percentage points less likely than native students to feel a sense of belonging at school. On average, and in 29 countries and economies, a higher proportion of students without an immigrant background reported a stronger sense of belonging than immigrant students, even when socio-economic status was taken into account.

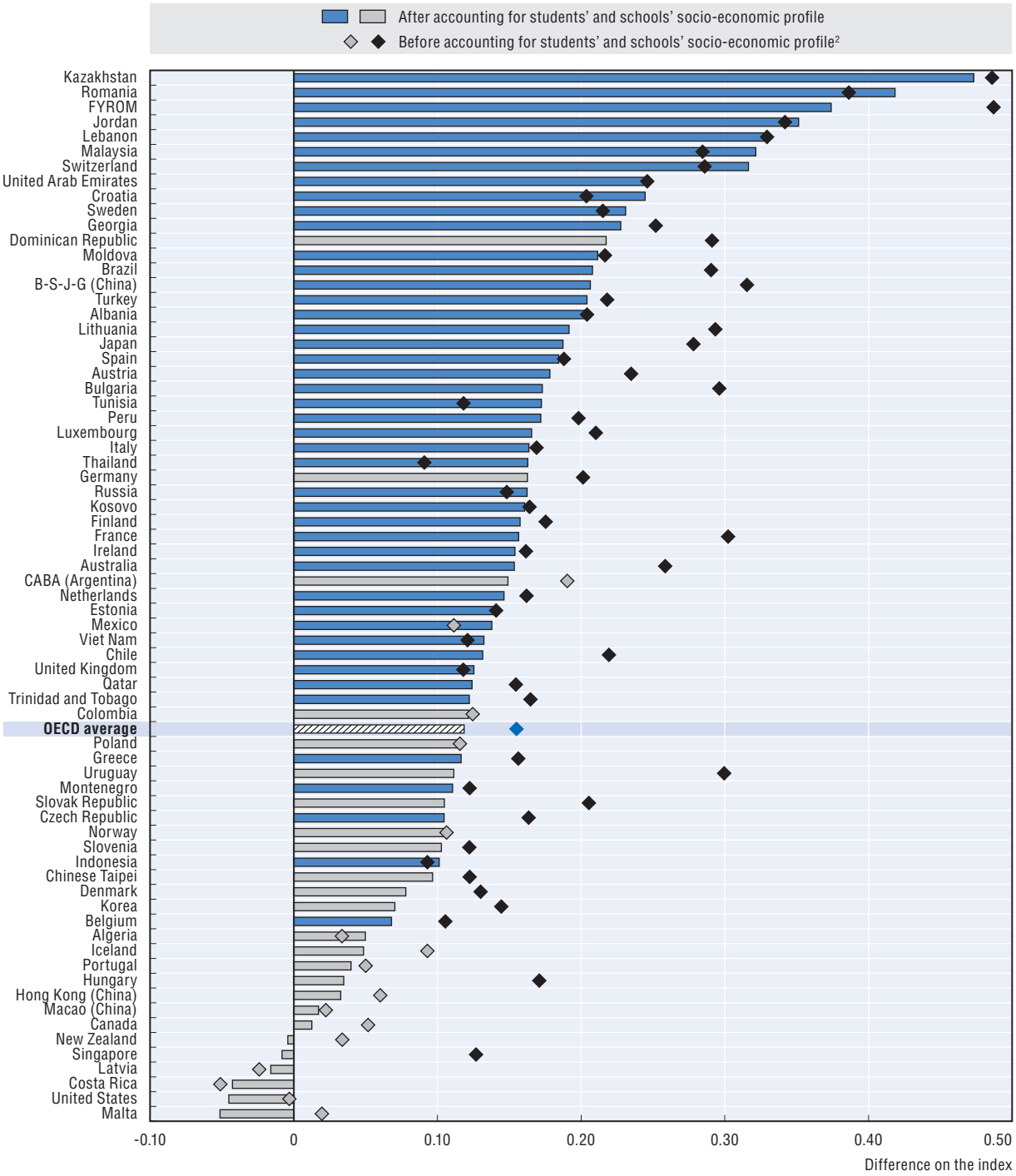
A school's disciplinary climate is found to be a good predictor for students' sense of belonging at school (OECD, 2017). Other studies, highlighted in the latest PISA report on well-being, also confirm that students who have a stronger sense of belonging and connection with their school are less likely to engage in risky and antisocial behaviour (Catalano et al., 2004; Hawkins and Weis, 1985), perform better academically and be more motivated in school (Battistich et al., 1997; Goodenow, 1993). They are also less likely to drop out of school early (Lee and Burkam, 2003) or to engage in substance abuse and truancy (Schulenberg et al., 1994). As shown in Figure 4.1, a positive disciplinary climate[8] has a positive influence on students' sense of belonging at school. The results suggest that students who reported being in a positive school climate have stronger sense of belonging at school than those in a negative disciplinary climate. In addition, students who feel that their teachers support them and are invested in their academic success are more likely to have fewer disciplinary problems and achieve better results (OECD, 2017).

Improving school and classroom climate, teacher-student relationship and peer-to-peer relationships is therefore important in improving students' sense of belonging, which has a positive impact on their achievements and well-being. Considering that socio-economic background of students and schools have a strong correlation with disciplinary climates and sense of belonging, efforts should be made to develop positive teacher-student and peer relationships; provide adequate student counselling, mentoring to support students and avoiding harsh punishments, naming and shaming, expulsion and suspension, which can create a violent disciplinary school climate that can led to aggravated attitudes and behaviour. Students respond much more positively to teachers who use constructive management practices rather than punitive measures (OECD, 2013c).

In addition schools must be aware of and take into account the background or home life of their student, since many "behavioural" issues may not be related to behaviour at all. For instance, since students from low-income areas are more likely to rely on public transport to get to school, this may account for their increased rates of tardiness. They may also live in neighbourhoods that are not well-served by public transportation and their families may not have private means of transport. The parents of such students may have to work long hours and may not be able to pay close attention to their children's homework or school attendance (OECD, 2013b). Understanding these students' circumstances and problems early on and providing additional support to help them meet their learning goals is crucial.

Figure 4.1. **'Sense of belonging' and disciplinary climate in school**

Difference on the index of sense of belonging between students who attend schools with a positive disciplinary climate[1] and those who attend schools with a negative disciplinary climate



1. Schools with a positive (negative) disciplinary climate are those whose average index of disciplinary climate is statistically higher (lower) than the average level in the country/economy.

2. The socio-economic profile is measured by the PISA index of economic, social and cultural status (ESCS).

Note: Statistically significant values are marked in a darker shade.

Countries and economies are ranked in descending order of the difference in sense of belonging between students in schools with a positive disciplinary climate and those in schools with a negative disciplinary climate, after accounting for students' and schools' socio-economic profile.

Source: OECD, PISA 2015 Database, Table III.7.14 http://www.oecd.org/pisa/data/2015database/.

StatLink http://dx.doi.org/10.1787/888933638277

Foster school networks and peer learning to improve low-performing schools

One final valuable resource that may be overlooked is the wealth of knowledge and experiences that schools, teachers and school leaders have accumulated. It is important to create networks and partnerships between schools, so that disadvantaged schools and their staff can tap into this vast source of knowledge. In particular, this can help schools that are geographically isolated or facing especially challenging situations (OECD, 2012). Shanghai-China has a unique and effective system in which the administration of a strong, higher-performing school is paired with a low-performing or failing school. The school leaders and teaching staff of the successful school are therefore able to transfer their knowledge, managerial expertise and teaching methods to the low-performing school, to help get it back on track. In addition to this partnership, programme consortiums are created comprised of different types of schools such as new and old schools or advantaged and disadvantaged ones. At the centre of each of these clusters is a high-performing school that can disseminate best practices and advice to the rest of the schools in its group (OECD, 2011).

Notes

1. See UNESCO Institute of Statistics database
2. The Brookings Institution (2013)
3. Level 2 can be considered the baseline level of proficiency at which students begin to demonstrate the reading skills that will enable them to participate effectively and productively in life in PISA.
4. See OECD (2015b)
5. In PISA 2015, an "immigrant student" is defined as a student "whose mother and father were both born in a country/economy other than that where the student sat the PISA test." Among immigrant students, a distinction can be made among first-generation immigrant students who are "foreign-born students whose parents are also both foreign-born" and second-generation immigrant students, who are "students born in the country/economy where they sat the PISA test and whose parents are both foreign-born".
6. According to the OECD report *PISA 2012 Results: What Makes Schools Successful?* (2012, p. 98), schools in a given system can be classified within a socio-economic context into three categories: advantaged, average and disadvantaged. The categories are distinguished by determining whether the average 15-year-old student at the particular school is of a socio-economic status that is statistically higher, the same or lower than the average 15-year-old in the entire school system. The average socio-economic status is measured according to a PISA ESCS index.
7. Future Leaders Trust (2016)
8. PISA 2015 measures disciplinary climate by an index based on students' reports of the frequency with which interruptions occur in science classes.

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Chapter 5

Provide second learning chances for adults

Failed interventions and investments in early childhood and schooling can result in serious consequences that are harder to resolve in adulthood. Individuals who have left the education system are harder to reach, and adult learning and training is generally much less available and less generously funded than formal education for young children and students. This chapter discusses inequality in outcomes in education, skills and labour market participation during adulthood, as well as the gaps between various groups of the population in participation in formal and non-formal adult education and training. It also discusses policy interventions that can mitigate inequality in learning and labour market outcomes between adults from socio-economically advantaged and disadvantaged backgrounds. First of all, learning should be focused on improving the employability of adults, through a combination of education and training and practical job training. Targeted support needs to be provided to adults with a low level of educational attainment and without basic literacy and numeracy skills. Particular attention should be paid to young adults who are not in employment or in education (NEETs), single mothers and women who have had to leave the labour market due to child care responsibilities, as well as the immigrant population. Barriers to participation in adult education need to be removed through financing mechanisms such as co-financing, tax credit and allowances. To tackle situational and time constraints, delivery methods need to be more innovative and flexible.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Consequences of failed interventions in early years

If learning gaps between students of different socio-economic, cultural and demographic backgrounds are not addressed before students leave school, the economic and social consequences are severe at the individual, society and national level. This is particularly true in countries where a significant gap exists, and where the number of individuals with low performance and without baseline proficiency in foundational skills is large. When disadvantages are left to accumulate over time for certain individuals, they will face major economic and social challenges in their adult life. In addition, at the level of society as a whole, these differences are likely to reduce overall inclusive growth, lower tax revenues, increase social and welfare burdens and decrease social cohesion and stability (OECD, 2015a; OECD, 2015b; OECD, 2015c).

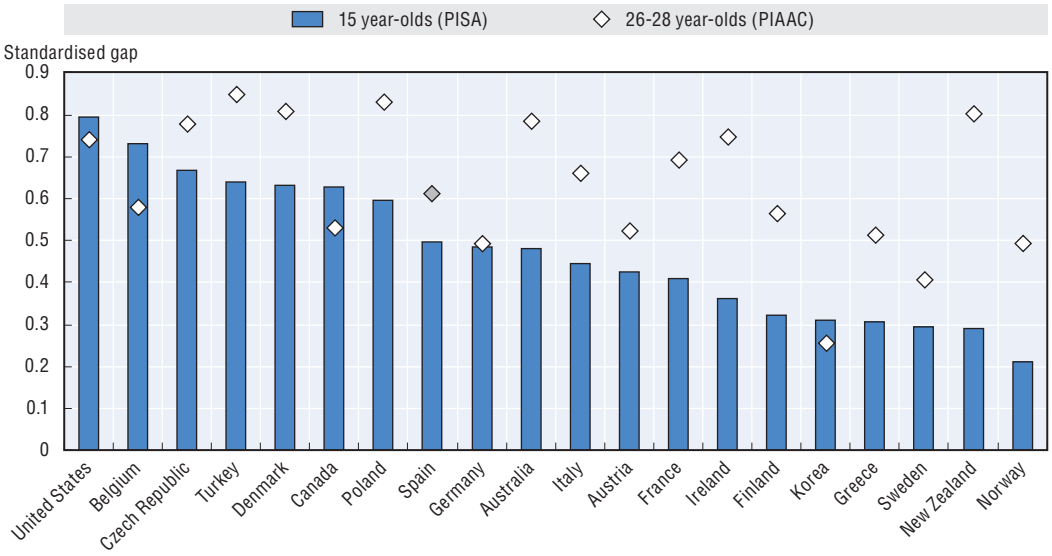
A sustained effort on the part of the government can help to improve individuals' educational achievement, skills acquisition and labour market outcomes. Government policies and employers need to provide opportunities to maintain and upgrade existing skills, and to remove barriers to training in the adult population. Nevertheless, tackling inequality in skills, labour market and social outcomes in the diverse adult population is a daunting task. By adulthood and after they join the workforce, most individuals have no further engagement in formal education. Given such challenges, it is all the more important to take a whole-of-government approach in tackling issues related to equity for adults. According to the OECD population database,[1] in 2012 on average across OECD countries, 66% of the population was of working age; in Korea, the Slovak Republic and Poland, the figure was more than 70% of the population. In comparison, the school age population under the age of 15 accounts for 18% of the population on average across OECD countries. Given the size of the working-age population, and the significant role they play in economies and society, it is too important to leave adults to their own devices in upgrading and maintaining their existing skills and acquiring new skills for the jobs they have now and in the future. This can only exacerbate inequality in skills distribution in society, since those with more resources are likely to invest more in lifelong learning than those without adequate resources.

Educational outcomes by parents' level of education

Failure at one stage carries on to the next, and the negative effects tend to be compounded over time. As discussed in Chapter 2 of this report, a large learning gap and a substantial proportion of low performers persist in many OECD countries, and the gap widens as students transition into adulthood. On average, learning gaps for those at the age of 15 have become even more acute by the time they reach the age of 27, according to the latest report on youth transition (Figure 5.1.). In addition, this study also finds that this gap increases more for low performers than high achievers. The set of 12 indicators presented in Chapter 2 also demonstrates that the gap in learning outcomes at the age of 15 carries on to young adults of ages 20 to 29. These findings are in line with Heckman's argument on reinforcing the characteristics of skills accumulation. He argues that the experience of a high level of learning in early life leads to better learning outcomes later, since learning begets learning (Carneiro and Heckman, 2003).

Figure 5.1. **Disparities in literacy between individuals with and without tertiary-educated parents, at the age of 15 and for 26-28 year-olds**

PISA 2000 (15-year-olds) and PIAAC 2012 or 2015 (26-28 year-olds)



Note: The standardised gap refers to the difference in the mean scores of individuals with at least one parent educated at the tertiary level and individuals without tertiary-educated parents, divided by the average standard deviation of countries participating in the study. Countries are ranked in descending order of the gap in PISA. Diamonds highlighted in a darker shade, as in Spain, represent groups for which the gap is statistically insignificant at the 5% level. For Greece, New Zealand and Turkey, the year of reference is 2015 for the 26-28 year-olds and 2003 for the 15-year-olds.

Source: OECD (2017b), *OECD Skills Outlook 2017: Skills and Global Value Chains*, http://dx.doi.org/10.1787/9789264273351-en

StatLink http://dx.doi.org/10.1787/888933638353

Educational attainment

According to the latest *Education at a Glance* report (OECD, 2016a), 1 in 5 adults has less than an upper secondary level of education (high school degree) on average across OECD countries. In Mexico (64%), Turkey (63%) and Portugal (55%), more than half of 25-64 year-olds reported that they have not attained an upper secondary level of education. Some of these adults have a lower secondary degree at most; others have no formal education degree or even a primary education. On average across the OECD, adults with poorly educated parents have a 15% chance of attaining tertiary education, according to calculations based on the *Survey of Adult Skills* (OECD, 2016b). By contrast, adults with highly educated parents are four times more likely (63%) to obtain a tertiary degree. Adults with highly educated parents are also six times less likely to have dropped out at lower secondary level or earlier, compared those with poorly educated parents. The level of educational attainment is strongly related to labour market outcomes in most OECD countries, and adults with a low level of educational attainment are much more likely to face challenges in finding jobs.

Gaps in learning outcomes

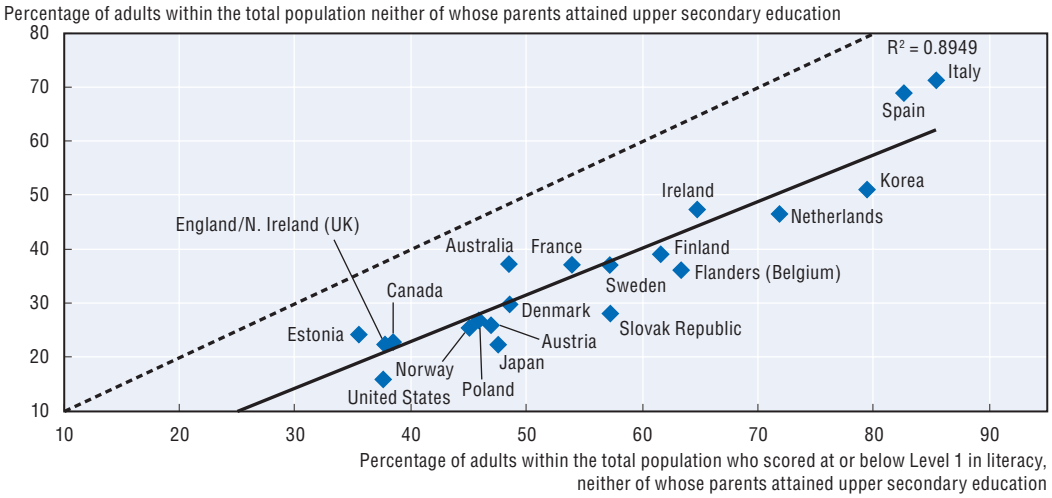
The *Survey of Adult Skills* results show that adults with poorly educated parents (neither of whose parent has attained an upper secondary education) are more likely to perform below the baseline (Level 1 or below) in literacy and numeracy assessment. On average, almost 30% of adults with poorly educated parents scored at or below Level 1 in the literacy assessment, and only 5% of these adults scored at or below Level 1. Among adults with highly educated

parents (that is, with at least one tertiary-educated parent), 20% scored at the top two levels, and only 8% scored below the baseline proficiency (OECD, 2016a).

As shown in Figure 5.2, there is a strong relationship between performance and socio-economic background among adults who participated in the *Survey of Adult Skills*. The strength of the relationship is remarkably similar across countries. On average, an almost 40-point difference in literacy proficiency separates adults of highly educated parents from those whose parents have the lowest levels of education. On average, the likelihood of being a low performer is about 25 percentage points lower for adults with at least one tertiary-educated parent, compared with adults whose parents have an upper secondary education. Adults whose literacy is rated at Level 1 and below predominantly have poorly educated parents. On average, more than half of adults (52.2%) below the baseline in literacy proficiency had parents who had not completed an upper-secondary education. This compares with 33% in the general adult population and only 16% among highly literate adults. Italy (85.4%) and Spain (82.6%) have an exceptionally high proportion of adults who scored at or below Level 1 in literacy and who have poorly educated parents (Grotlüschen et al., 2016). Adults with low performance in the *Survey of Adult Skills* are likely to have poorly educated parents, and adults with poorly educated parents are more likely to be low performers. Considering that these two variables explain almost 90% of the variation across countries, it is reasonable to assume that parents' level of education is a strong predictor for learning outcomes for adults aged 16 to 65.

Figure 5.2. **Adults with low literacy proficiency, neither of whose parents attained upper secondary education**

Percentage of adults within the total population neither of whose parents attained upper secondary education, and percentage of adults who scored at or below Level 1 in literacy, neither of whose parents attained upper secondary education



Source: OECD (2016e), Survey of Adult Skills (PIAAC) (Database 2012, 2015), *www.oecd.org/site/piaac/publicdataandanalysis.htm*.

StatLink http://dx.doi.org/10.1787/888933638372

Labour market outcomes

In today's globalised, knowledge-intensive and technology-rich economies and volatile labour markets, acquiring market-relevant skills and obtaining recognised educational qualifications are the major determinants of labour market outcomes. In other words, it is much harder today to find jobs and achieve a decent level of wages without skills that are

appreciated in the labour market. In the context of the increase in the wage gap between high- and low-skilled workers, adults without a baseline proficiency in foundational skills, or in skills such as literacy, numeracy and problem-solving, as well as basic in information technology and communications (ICT) are highly likely to be penalised in the labour market (Sill, 2002; Card and Di Nardo, 2002; Autor and Acemoglu, 2011).

Finding quality jobs and earning a decent salary are crucial in life. However, jobs are not only a way to make a living, they provide opportunities for integrating into society. Employment allows individuals to interact with others, gain valuable experience and knowledge, discover their potential and contribute to society. Education and skills formation alone cannot solve all the issues related to jobs. However, as will be discussed in the following sections, research findings suggest that adult education and job-related training, which can help improve adult skills in general, are all the more important for disadvantaged individuals with low level of education attainment and skills. It is therefore critical for policy makers to help adults improve the skills and educational qualifications they need in the job market. This includes helping them find jobs, for example through career guidance and mentoring, and also motivating employers to invest in their workforce, and especially in the disadvantaged population.

Adults with a low level of educational attainment struggle in the labour market

The *Survey of Adult Skills* shows that the number of years spent in education and the level of literacy/numeracy skills have a positive relationship with labour market outcomes (OECD, 2016b). Adults with a higher level of education have a higher chance of being employed and earning higher wages. The increase in wages associated with a one standard deviation rise in years of education, that is, around 3.4 years for the working population, is 15% on average. It ranges from less than 7% in Sweden to more than 20% in Chile, Jakarta (Indonesia), Slovenia, Turkey and the United States, and to more than 30% in Singapore.

The *Survey of Adult Skills* also shows that returns to literacy skills on wages have varying degrees of returns across countries. However, in most countries, educational attainment is a better predictor of wages, since educational attainment is more easily recognised in the labour market.[2] This is a matter of some debate, since other studies suggest that field of study and the name value of higher education also play a significant part (Britton et al, 2016; Kirkeboen et al., 2016). The literature also demonstrates that a higher level of educational attainment not only benefits individuals but has a positive impact on overall economic growth, through increased productivity and innovation (Barro, 1997). Training offered in the workplace is also found to have a positive effect on productivity and wages. The marginal product of a trained worker is on average 23% higher than that of an untrained worker, with an increase in wages of 12% (Konings and Vanormelingen, 2009). Dearden, Reed and Van Reenen (2006) analyse the link between training, wages and productivity at the sector level in the United Kingdom and conclude that a one-percentage point increase in the proportion of trained workers results in a 0.6% rise in their value to the industry, and in wage increases of 0.3%. The close correlation between educational attainment and labour market outcomes suggests that adults with a low level of education are at a real disadvantage in terms of employment and life chances.

Inequality in labour market outcomes by socio-economic backgrounds

In the *Survey of Adult Skills*, a 15.7 percentage-point difference on average was found in employment outcomes between 30-65 year-olds with highly and poorly educated parents (see Table 2.A2.3 in Chapter 2). This gap is as high as 31.1% in the Slovak Republic,

30.4% in Poland, 22.4% in Flanders (Belgium) and 22.1% in Italy. Most of these countries also have a high level of educational inequality among students and young adults. At the other end of the scale, for adults in Japan and Korea, parents' level of education has only a weak correlation with securing a job.

On average across OECD countries, the difference in hourly earnings between adults who have highly educated parents and those who have poorly educated parents is of a multiple of 4.8. In the United States the figure is as high as 11.6, followed by England (8.2), Italy (7.6), Chile (6.4) and Germany (6.1). On the other hand, parents' level of education is not a strong predictor for wages in Greece (1.5), Sweden (1.8) and Israel (2.8).

Low-skilled, non-standard and temporary jobs

There have been major structural and working conditional changes in employment patterns since the 1980s across OECD countries. Non-standard work, such as part-time work, casual work and work on temporary contracts, has steadily been increasing, and employment protection legislation (EPL) has become less strict (OECD, 2011). In addition, the growth in services and knowledge-intensive jobs and fast-paced just-in-time delivery jobs made possible by digital technology has changed the employment structure and working conditions (OECD, 2015a). Findings from the OECD (2015a), show that non-standard work tends to lower wages at the bottom of the earnings distribution, contributing to increased earnings inequality. Working conditions for non-standard workers on temporary contracts tend to be lower than workers in standard jobs. They tend to receive less training, experience more job strain and have less job security. Compared with permanent workers, temporary workers face substantial wage penalties, earnings instability and slower wage growth. In addition, the report finds that in about 60% of working poor households, the main source of earnings is non-standard work.

Non-standard employment, which includes temporary, part-time and self-employment, accounts for 33% of total employment on average across the OECD countries (OECD, 2015b). One-quarter of men and 40% of women are in non-standard employment, mainly stemming from gender imbalances in part-time work. Women often work part-time, since this facilitates combining work and family responsibilities, but this frequently comes at a cost to their long-term career and earning prospects (OECD, 2012). Youth and workers with a lower level of education are over-represented among the non-standard employed adults. Close to half of temporary workers are under 30 years of age, and the incidence of temporary employment is 30% higher for those with lower levels of education than for those with medium levels (OECD, 2015a). Differences between working hours arrangements are greater, with part-time workers using their skills significantly less than their full-time counterparts (OECD, 2016b). In Italy, Spain and Ireland, roughly every tenth employee is an involuntary part-time worker. Among youth, these rates are twice as high. Young women in particular are likely to work shorter hours than they would prefer: for example, around a quarter of young women aged 15-29 in Spain and Italy, and also in Australia. These rates are lower for young men, but still considerable, at around 15%.

Adults with a low level of educational attainment and skills tend to have low-skilled occupations and often non-standard and temporary employment. According to the results from the *Survey of Adult Skills* (Grotlüschen et al., 2016), among adults with low literacy and numeracy proficiency, half were employed in semi-skilled blue-collar or elementary occupations on average across OECD countries. By contrast, of adults who scored at the highest levels of literacy or numeracy, only 12.3% were in semi-skilled blue-collar or elementary occupations.

The effect of non-standard employment: the working poor

Across OECD countries, 60% of working-age individuals who currently live in poverty are considered "working poor". Working poor can be defined as individuals with an income below the poverty line and who are living in households whose head is of working age (15 to 64 years old) (OECD, 2015b). The working poor often hold non-standard jobs, which typically pay less than traditional permanent work. Temporary workers in particular face many adverse economic consequences, such as wage penalties, earnings instability and slower wage growth compared to permanent workers (OECD, 2015b). The excessive wage penalties associated with temporary jobs may only serve to contribute to wider inequality. Furthermore, full-time temporary workers are 20% less likely – and part-time workers 40% less likely – than standard workers to receive training and skills development, which can lead to further wage inequality.

There are significant risks in many countries that those who are in work may nevertheless fall below the poverty line. The poverty rates of non-standard workers can be as high as 30% in such countries as Canada, Greece, Portugal, Estonia and Spain, as compared with around 12% or below in Belgium and Ireland. Welfare states may also experience the financial burden of supporting individuals who are constantly cycling in and out of low-paid work. Such costs to the state can be related to unemployment benefits and other out of work cash transfers and any in-work cash transfers intended to supplement the income of low-paid workers from low-income households (Thompson, 2015). To reduce the number of working poor, as well as to cut down on public expenditure costs in the long run, governments should look towards policy solutions that improve job security and increase the wages of low-paid-workers (Europa, 2013).

Participation in formal and non-formal adult education and training

OECD research finds that skills may deteriorate over time if they are not used and maintained (OECD, 2016b; Paccagnella, 2016). According to a working paper on the relationship between age and skills using data from the *Survey of Adult Skills* (Paccagnella, 2016), a negative relationship between literacy and age exists. Literacy declines with age, especially after age 45. In Denmark, Ireland, Norway and Sweden, literacy proficiency falls substantially with age. Adults aged 55 to 64 have 18% to 23% lower literacy proficiency than 25-34 year-olds, even after various socio-economic and demographic factors are taken into account. In Australia, Belgium, Canada, Finland, the Netherlands and the United States, however, the drop in literacy skills is less pronounced. Adults of ages 55 to 64 had 8% to 11% lower literacy proficiency than those aged 25-34, controlling for other influences on skills.

Lifelong learning is essential for everyone. For adults who leave the education system early and do not have baseline proficiency, it is even more critical. As this report demonstrates, the labour market consequences of not having the skills and educational qualifications are high. However, participation rates in formal and non-formal adult education and training are generally low in many countries. In France, Italy, Poland and the Slovak Republic, for example, less than 40% participated in formal or non-formal adult education and training, according to the *Survey of Adult Skills* (OECD, 2013, p. 208).

In addition, there are significant inequalities in participation in adult learning. Participation rates of those with tertiary education are often five or ten times as high as those of the low-skilled. Participation rates for the unemployed and those who are out of the labour force are significantly lower than those who are employed (Figure 5.3). Older

individuals tend to participate much less in adult learning than their younger counterparts. Workers in small and medium-sized enterprises in Hungary, Poland, Portugal and Spain are particularly under-represented in continuing training (OECD, 2005).

The 'low-skilled trap'

In all countries without exception, adults with top literacy or numeracy skills in the *Survey of Adult Skills* reported most active participation in formal and non-formal adult education. On average among the 22 OECD countries in PIAAC 2012 (Figure 5.3), only 30% of adults aged 25-65 at Level 1 and below in literacy had participated in some form of adult education and training in the previous 12 months, compared to 51% among the rest of the population. Although over 40% of adults with a low level of literacy proficiency in Norway, Sweden, Denmark and the Netherlands reported participation in adult education, the figures are still below that of the overall population. In the Slovak Republic, Italy, the Russian Federation and Poland, less than 20% of low-skilled adults reported participation in any form of adult education. The gap in participation rates between adults with low and high literacy proficiency is on average 44 percentage points (30% compared to 74% respectively). In the case of formal education, this difference is 12 percentage points (6% compared to 18%). In relative terms, however, the difference in rates is even greater in the case of formal education, where highly proficient adults are three times more likely to participate than adults with low proficiency. In non-formal learning, that is, open or distance learning, on-the-job learning, seminars and workshops, and private lessons, adults with low literacy proficiency are substantially less likely to participate. Similar results are found when comparing adults with low (Level 1 and below) and high (Level 4/5) numeracy proficiencies (Grotlüschen et al., 2016).

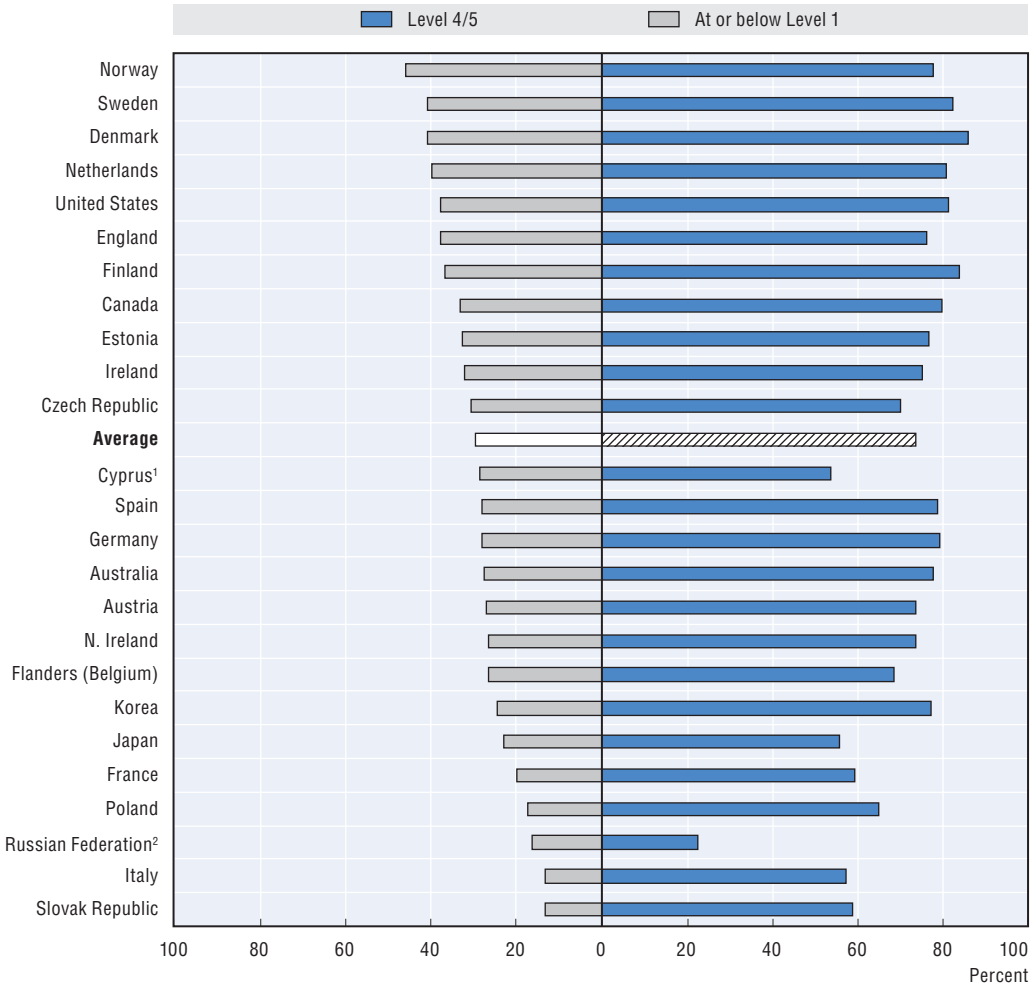
Although adults with a low level of literacy and numeracy skills most need participation in adult education and training, they participate least in these activities. Considering that cognitive capacity is likely to deteriorate with age if it is not well-maintained, adults without baseline literacy and numeracy skills are more likely to experience a "low-skilled trap". This term was used by Burdett and Smith (2002) to suggest that low numeracy and literacy levels can result in a less favourable starting position in the labour market, which in turn may lead to unemployment or low-level positions in organisations with low salaries and consequently fewer development possibilities and career prospects, creating a vicious cycle. In addition, as this report has shown, this can contribute to lower socio-economic mobility, since parents' level of education and learning outcomes can influence their children's learning and labour market outcomes.

Among various population subgroups, immigrants are less likely to receive training from their employers, although they seek training opportunities from their employers as often as their non-immigrant peers. Workers who have involuntary part-time and temporary contracts are also less likely to receive training compared to full-time and permanent staff, despite the fact that they seek more training opportunities from their employers than their counterparts. Adults in low-skilled occupations also get less training opportunities from their employers than those in higher-skilled occupations.

The costs of having a high level of low-skilled adults and little support for providing quality programmes can outweigh the cost of providing quality programmes for the adult population. Countries with lower skill levels risk losing competitiveness as the world economy becomes more dependent on skills (Windisch, 2012; Grotlüschen, A. et al. 2016),).

Figure 5.3. **Participation rates in adult education and training, by literacy proficiency**

Percentage of adults of 25-65 years-old at Level 1 and below and at Level 4/5 in literacy, involved in formal or non-formal adult education training



Countries are ranked in descending order of the percentage of adults at Level 1 or below that participate in adult education training.

1. Note by Turkey: The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

2. Readers should note that the sample for the Russian Federation does not include the population of the Moscow municipal area. The data published thus do not represent Russia's entire resident population aged 16-65, but the population excluding those residing in the Moscow municipal area.

Source: Grotlüschen, A. et al. (2016), "Adults with Low Proficiency in Literacy or Numeracy", *OECD Education Working Papers*, No. 131, http://dx.doi.org/10.1787/5jm0v44bnmnx-en.

StatLink http://dx.doi.org/10.1787/888933638391

Barriers to participation for adults with a low level of proficiency

A low level of participation among adults with low literacy proficiency may be due to the lack of targeted programmes for adults with a low level of literacy or numeracy proficiency. In the *Survey of Adult Skills*, respondents are asked to identify the main reasons

for their participation and non-participation in adult education and training. Information gathered from these questions can help policy makers and programme designers identify the barriers or motivation for participation in adult learning activities. Among adults with low proficiency in literacy, 15.7%, on average, wanted to participate in a formal or non-formal learning activity, but had not done so in the previous 12 months. Adults below the baseline literacy proficiency who wanted to but did not participate in formal or non-formal adult learning programmes reported most frequently that work, family and numerous unspecified reasons had stopped them from participating. Other reasons cited were financial constraints, structural barriers, not having the required prerequisites, and unforeseen circumstances. Most of the reasons for not participating in adult education are quite common among adults with higher proficiency levels. However, a significantly higher proportion of adults without the baseline of literacy proficiency reported that their reason for not participating was not having the prerequisites to participate, by comparison with those with a high level of literacy proficiency (Grotlüschen et al., 2016).

Other research findings identified and synthesised barriers to adult education and training as follows: situational, institutional, dispositional, informational, financial, and lack of interest (Windisch, 2015; Cedefop, 2003; European Commission/ECEA/Eurydice, 2015a). Situational barriers are often due to circumstantial reasons, such as family or work obligations that prevent adults from participating in adult learning programmes or a lack of available courses in the neighbourhood. Institutional barriers include the lack of appropriate provision, participation fees and entrance requirements. Dispositional or psychological barriers include negative attitudes to learning due to negative schooling experiences, and informational barriers are related to the lack of appropriate information or awareness of the benefits that such learning can offer. Among those who were interested in adult education in general, the most common barriers to participation appear to be situational (such as time constraints due to family obligations), followed by institutional barriers (such as lack of appropriate classes and inflexible course schedules) (Windisch, 2015). The 2003 Cedefop survey on lifelong learning also found that time constraints were the top reason for not participating in adult education, followed by financial constraints, insufficient employer support and course availability (Cedefop, 2003). The Cedefop data suggests that under-investment in adult learning is due more to demand-side reasons than to supply constraints (OECD, 2005).

Lack of interest is also a common reason for non-participation among adults with a low level of education (Windisch, 2015), possibly reflecting a lack of information and incentives. According to the *Survey of Adult Skills*, more than 80% of those surveyed who had not participated in adult education in the 12 preceding months stated that they were not interested. In most countries (Ireland was the only exception), the lack of interest was more perceptible among adults with an educational attainment level below tertiary education (OECD, 2016b). One explanation might be that some adults are not sufficiently aware of the need for training or convinced of its effectiveness, returns and incentives to go out of their way and make the time to participate in learning programmes.

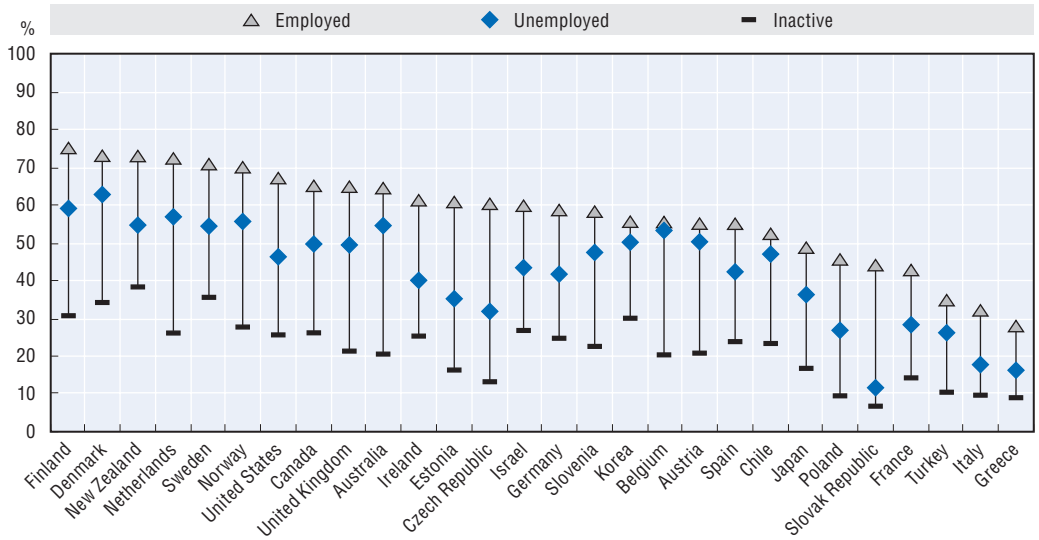
Difference in participation in adult education by employment status and firm size

Adults who are employed are more likely to have opportunities for adult learning. As Figure 5.4. shows, participation rates for the employed are higher than for the unemployed and for adults who are not in the labour force. In Poland, the Slovak Republic, Italy and Greece,

adults who are not in the labour market have the lowest participation rates (less than 10%) in adult education and training. Unemployed adults also have the lowest participation rates in adult education and training in these countries. In France and Turkey and in Japan, fewer than half of the adults who are employed participate in adult education and training. On the other hand, Nordic countries (Finland, Denmark, Norway and Sweden), the Netherlands and New Zealand have the highest participation in adult education and training among unemployed adults.

Figure 5.4. **Adult participation in education and training by employment status**

Percentage of adults, 25-64 year-olds (2012 or 2015)



Note: Chile, Greece, Israel, New Zealand, Slovenia and Turkey: Year of reference 2015. All other countries: Year of reference 2012. Data for Belgium refer only to Flanders, and data for the United Kingdom refer to England and Northern Ireland jointly.

Source: OECD calculations based on the OECD (2016e), Survey of Adult Skills (PIAAC) (Database 2012, 2015), www.oecd.org/site/piaac/publicdataandanalysis.htm. OECD (2014e), *Education at a Glance 2014: OECD Indicators*, http://dx.doi.org/10.1787/eag-2014-en.

StatLink http://dx.doi.org/10.1787/888933638410

Firm size also matters. According to various data sources, such as the European Union Labour Force Survey, the European Union Continuing Vocational Training Survey and the Eurobarometer Survey, in 8 of 12 EU countries participating in the OECD review, over 70% of companies tend to provide training for their employees. However, disparities by company size are striking – and would be even more so if companies with fewer than 10 employees had been included in the survey. In Portugal and Spain, for example, the share of enterprises with more than 250 employees that provide training is four and three times higher, respectively, than the share among firms with 10 to 49 employees.

In the majority of OECD countries, employers invest more in the non-formal education of an employee with a high level of education than in an employee with a low level of education. According to *Education at a Glance* (OECD, 2012), the annual cost of the working time devoted to employer-sponsored non-formal education per employee amounted to USD 931 in 2007, which represented 2.4% of the average annual labour cost of an employee. The amount increased from USD 659 for employees with a low level of educational attainment to USD 1 235 for employees with high levels of education on average across OECD countries. Exceptions are Canada and Denmark, where relatively more investment goes to employees with a low level of education. The differences in investment related to

the educational level of the employees are also small in Estonia, Finland, the Netherlands, Norway and Sweden.

Make adult education more effective and inclusive

The demand for skills is changing rapidly in the labour market, and if individuals are to get quality jobs, make decent earnings or even create jobs, they need to continue learning throughout their lives. This is even more critical for those who failed to obtain baseline learning outcomes and education attainment level from their initial education and training. Adult education and training programmes offer a second chance for adults to improve their levels of education, gain necessary skills to do their existing job better, secure new jobs or change careers. Despite the benefits of adult education and training, less than optimal participation rates have been observed in adult learning programmes, especially among those with very low levels of skills and education.

Reasons that adults may not participate include the cost, time constraints and having the necessary prerequisites. In addition, a crucial issue is how useful the content of adult learning is for an individual's specific needs, and how it translates into the labour market and socio-emotional outcomes. Meeting learners' needs and proving relevant and useful education and training programmes at an affordable cost can be very challenging. The adult population is a large group with varying socio-economic and demographic characteristics, such as age, gender and immigrant status. Adult learning must be understood and approached differently from initial learning. The range of needs is wider and the barriers each group faces are different. Financing the programmes is more complex, and achieving desirable outcomes is a challenging task.

To promote lifelong learning for those who need it most, *i)* learning should be focused on improving employability of adults through a combination of education and training and practical job training. *ii)* Targeted support needs to be provided to adults with a low level of educational attainment and without basic literacy and numeracy skills. Particular attention should be paid to young adults who are not in employment or in education (NEETs), women who had to leave the labour market due to their child care responsibilities and single mothers, as well as the immigrant population. *iii)* Barriers to participation in adult education need to be removed through financing mechanisms such as co-financing, tax credit and allowances. To contend with situational and time constraints, iv) delivery methods need to be more innovative and flexible. The following sections will discuss these four topics.

Increase employability by combining adult education and practical job training

One of the main goals of learning and training is to prepare and equip learners for the labour market. Education and training have a critical role in equipping leaners with skills, knowledge and personal attributes that increase the likelihood of being employed and pursuing occupations of their choice (in other words, their "employability"). The usefulness of adult education and training programmes depend very much on the types of support provided to learners, which help them acquire the necessary skills and attitudes to find employment, get a promotion or an increase in salary.

There are several ways to improve employability. The first step is to ensure that job-seeking adults have the basic requirements for the jobs. In most jobs in OECD countries, having a basic level of literacy, numeracy and computer skills is a minimum requirement for securing a job. *i)* Education and training programmes that focus on offering a second

chance to gain basic cognitive skills and mastery of the use of digital technology can help improve the employability of adults whose skills are below the baseline. The next step is to *ii)* combine learning with work experience whenever possible. When adult learners can see how what they learn in class can be applied in the workplace and have the chance to interact with their employers and colleagues, they can improve their job-related skills, through learning by doing. It also helps them enhance the socio-emotional skills they need for the jobs and *iii)* provide career information, advice and guidance in local communities.

Focus on improving basic literacy, numeracy and computer skills

Many adults who have dropped out of school early may have less than a basic level of literacy and numeracy skills. This can lessen their chances of participating in the job market or in further training later in life. In addition, lack of basic literacy skills can limit civic participation and the ability to benefit from the opportunities society has to offer (OECD, 2003; OECD, 2013; OECD 2016b). It is therefore crucial that these adults be provided with opportunities to improve their basic skills, such as literacy, numeracy and computer skills.

The results of the *Survey of Adult Skills* show that adults with the lowest literacy or numeracy proficiency are much more likely than the general population to report never engaging in literate and numerate practices, such as reading, writing and using numeracy at work or outside work (OECD, 2016b). In addition, they are more likely not to have computer experience and to lack baseline proficiency in using technology to solve problems related to work and daily life (OECD, 2015d). Since most of these adults are engaged in jobs that demand and require very little literacy or numeracy, their opportunities to practice and improve their skills are highly limited.

According to the survey of adult education and training programmes in 22 countries (OECD, 2005), most countries offer basic skills programmes at the national level. Basic adult education is generally financed by education ministries at no cost, for those who wish to participate. The programmes are either provided by the ministries, or subsidies are given to private providers. In some countries, loans or grants are available for adults to seek programmes they wish to attend. Basic skill instruction has been a priority in Canada, the United Kingdom, Denmark, Norway and Sweden. National-level programmes have aimed to increase skills by offering primary or secondary education and other instruction to adults.

The analysis of *Survey of Adult Skills* demonstrated that for adults below the baseline literacy proficiency, engagement in continuous reading of text is crucial. Such practices need to be started as soon as the programmes begin (Grotlüschen et al., 2016). Encouraging more intense engagement in literate practices is an important mechanism through which literacy is improved and developed. The first step is to create an environment that encourages literacy, which may be cultivated pro-actively by policies and learning programmes. This involves creating more opportunities and support for literacy engagement in all areas of individuals' and their families' lives. Reading material should be readily accessible for these adults, and programmes need to be designed to encourage reading both in and out of classrooms (OECD, 2003). Ways to improve skills in information and computer technology (ICT) include improving access to ICT, increasing adult learning programmes for improving ICT skills, as well as increasing the use of ICT in public services (OECD, 2015d). Online or distance learning can help make it easier to participate in adult education, and adults without ICT skills should be encouraged first to take classes that improve their basic computer skills.

Combining learning with work experience

It has long been recognised that job-related training and opportunities to get work experience can result in better labour market outcomes for adults (Kis, 2016; OECD, 2015b; OECD, 2005; OECD, 2003). In particular, apprenticeships and work-based learning for adults can encourage job-related learning and hands-on work experience, which, in turn, can improve their employability (Kis, 2016; OECD, 2005; OECD, 2003). France and the United Kingdom, for example, have made internships a compulsory component of university qualifications, and have integrated work-based training into their curricula along with other initiatives to enhance their graduates' employability. In Germany and Switzerland, work-based learning is often required for an upper secondary or post-secondary vocational education and training (VET) qualification. If work-based learning programmes are to ensure a smooth transition of adults into jobs, they need to be designed to meet the needs of both workers and employers. Co-operation between education providers, employers and other stakeholders is essential for developing quality work-based learning programmes. Aligning the education and training programmes with the needs of the labour market is vital for integrating the workers successfully into employment (OECD, 2015b).

According to a recent report (Kis, 2016), determining how long work-based learning should continue is a key element in its success. A judicious balance needs to be found to enhance productivity. If the programmes are not long enough, it will be hard to attract employers. Programmes that are too long can be unattractive to learners, because they hold them back from finding full-time jobs. The study recommends that in designing programmes, the interests of both employers and trainees be taken into consideration. It also suggests targeted training for the supervisors of trainees, and offering tools and resources to help firms both to manage work-based learning effectively and to increase the impact of the programmes.

Often, vocational education and training offer courses on a specific set of technical skills that can be directly applied to the job market and can offer work experience. Austria offers one-year "intensive apprenticeships" for adults who wish to take short, intensive vocational courses. These second chances at learning provide recognised vocational qualifications equivalent to any conventional apprenticeship programmes. In 2002, 5 300 people took the intensive apprenticeship exam and then started a trade, a number equivalent to more than 10% of the people starting a trade after finishing a conventional apprenticeship. In Poland, the success of apprenticeship programmes for young people has raised interest in developing similar programmes for low-skilled adults (OECD, 2005).

A number of countries, such as the Netherlands, Norway and Sweden, have similar programmes to help integrate their immigrant populations. Norway and Sweden have developed a specific introductory programme for immigrants, featuring intensive language training and social integration courses. In the Netherlands, where immigrants represent almost 20% of the population, immigrants who have arrived within a year (called newcomers) are required to participate in social integration programmes – primarily language courses – unless they can prove their command of Dutch upon entry. Immigrants who have been in the country for more than a year (called "old comers") are also required to take language courses until they reach a minimum level of proficiency. To provide stronger incentives for immigrants to participate, the Regional Education Centres (ROCs) and other training providers have been using curricula that cover practical, everyday subjects such as childcare, legal advice and financial management. In addition, ROCs use a generational learning strategy:

parents are taught not only the Dutch language but also other useful life skills, and learning takes place at the schools their children are most likely to attend. Germany and the United States have also introduced such intergenerational learning environments.

Other initiatives, sometimes known as bridging programmes, have been mounted in Canada, Finland, Germany and Norway to help adults of immigrant backgrounds integrate into the labour market. In Canada, Career Bridge[3] is a national internship programme run by the Toronto-based non-profit Career Edge Organization and designed to address the dilemma of getting a job for those without work experience. The 4- to 12-month internships for skilled immigrants are paid positions that provide a crucial bridge between the international and Canadian workplace. In Finland, pre-vocational preparatory education for immigrants, known as VALMA,[4] seeks to help immigrants improve language skills and other abilities that are needed for studying, according to individual study plans. Preparatory education lasts between 6 and 12 months. Immigrants are also provided information and guidance on different occupations and vocational studies. When immigrants later apply for an upper secondary vocational programme through the joint application system, they can receive extra points for completed preparatory education.

Providing career guidance and information

Career guidance can help provide a complete picture of the potential career pathways available to those who are not employed. Information on job training and education opportunities, and practical tips on getting a job or changing career, can be very helpful for young adults and unemployed adults, as well as those who have been inactive in the labour market for a while. Such efforts can help adults make informed decisions to prepare them to transition into the labour market (OECD, 2015b).

Guidance can be provided through several channels. Some countries establish physical centres where job seekers can come to speak to counsellors and learn about local employment or education opportunities. Canada boasts over 10,000 career guidance centres, and the province of Saskatchewan has developed a network of 20 centres to provide advice on finding jobs, changing careers and the education programmes that can help accomplish these goals (OECD, 2005). Virtual guidance centres can also be established through online platforms. In Belgium, the Bruxelles Formation Carrefour is one such website. It serves both job seekers looking for work and for ways to improve their skills and competences, and employers looking to hire (EC, 2015).

Some countries have developed facilities to provide both guidance and adult education and training courses under a single roof. In 2010, Denmark set up 13 guidance centres, called "VEU centres" (*Voksen- og EfterUddannelse*), throughout the country. They are described as a "one-stop entrance" for adult education and training, and provide free one-on-one career guidance sessions, as well as a variety of educational programmes (EC, 2015). Some of these centres also run second-opportunity programmes for adults who were early school leavers, while other centres offer intensive VET and technical skills training.

The key to successful career guidance depends on sharing timely and relevant information on the job opportunities, short- and long-term labour market returns of various career paths and appropriate education and training programmes that can help individuals to obtain necessarily qualifications and skills for the jobs they aim to find. Given the rapid changes in labour market needs, it is crucial to provide accurate and timely information on the availability of jobs.

In addition to career information and guidance, more information on both formal and non-formal adult education and training programmes needs to be provided. Efforts need to be made to link individuals to appropriate training and learning programmes, depending on their needs and the careers they aspire to embark on. A lack of information is a significant barrier for those who wish to participate in adult learning (Comings et al., 1999; Lee et al., 2000; BMBF, 2003). Many jobless people who wish to work or find training and education opportunities that may lead to employment, do not know how or where to start. Guidance services are one of the most effective strategies to inform unemployed adults of their options and encourage them to pursue new opportunities. Many adults have not been able to take advantage of such a service since their school years, since adult guidance is an undeveloped resource in many countries (OECD, 2005).

Provide targeted support

In order for adult learning to be effective, targeted support is crucial. The most vulnerable groups of adults need to be identified and offered targeted learning opportunities tailored to their needs. This report has focused on providing learning opportunities to adults with a low level of education and skills. They include specific population groups who experience particular challenges and barriers to learning, such as: unemployed young adults; women who have been out of the labour market for a long period; single mothers; and immigrants without language skills. Each group faces different challenges and barriers, and policies and support systems need to address their particular concerns. This report has singled out three groups of adults: young NEETs, women with childcare responsibilities who are not in the labour market; and immigrants, particularly those who have been in their new country for less than six years.

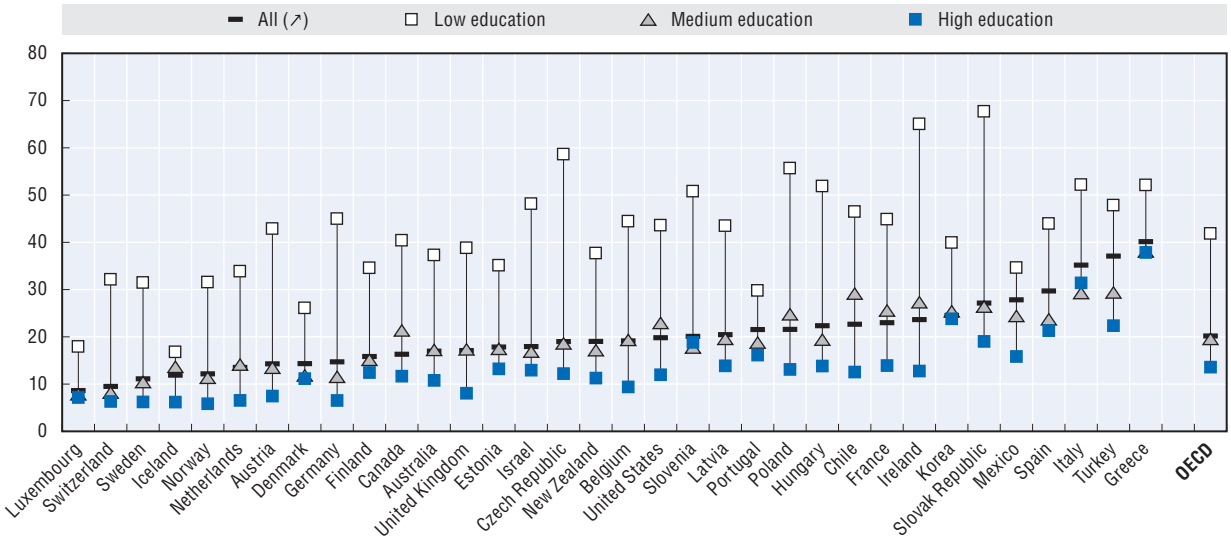
The NEETs

According to 2016 *Society at a Glance* report (OECD, 2016d), 15% of the OECD youth population were not in employment, education or training (NEET), a total of about 40 million young people in 2015 (OECD, 2016d). This rate varies from country to country, ranging from 30% in Turkey, 27% in Italy and 25% in Greece. NEETs are far more vulnerable to economic downturns. The NEET population includes young adults aged 15 to 29 who have left the education system and are either looking for jobs or unsuccessful in getting one, and thus are unemployed, not looking for a job and classified as inactive in the labour market. Young people were hit hard by the recent economic crisis in general. Almost 1 out of 10 workers under 30 lost their jobs between 2007 and 2014. In Spain, Greece and Ireland, the number of employed youth was halved (OECD, 2016d). Those with low levels of educational attainment were particularly at risk of losing their jobs during the economic crisis and have experienced much slower recovery in finding jobs (OECD, 2016d).

NEETs are a diverse group. On average across OECD countries, 31% of NEETs have attained lower secondary or lower level of education attainment, 43% of NEETs have upper-secondary or post-secondary education and only 26% of NEETs obtained tertiary education. Those who left the education system early and have not obtained baseline proficiency are much more likely to experience challenges in the labour market and fall into the NEETs category. NEET rates are also three times higher among young people who attained less than upper secondary level of education and 1.5 times greater for young adults with upper-secondary education attainment than their peers with tertiary education. Unsurprisingly, young people who left the education system early are at greater risk of having poor literacy or numeracy skills and more likely to become NEETs. In terms of literacy proficiency, 29%

of NEETs scored at Level 1 or below, which is below the baseline proficiency in the *Survey of Adult Skills* on average. Only 8% of NEETs scored at Levels 4 or 5 (Figure 5.5.).

Figure 5.5. **NEET rates are substantially higher among young people with low education levels**



Note: Data in Panel B refer to 2014, except for Australia, Chile, Germany, Israel, Korea, Mexico, New Zealand and Turkey (2013). No data were available for Japan.
"Low education" denotes lower-secondary school and lower (Levels 0-2 in the International Standard Classification of Education [ISCED]); "medium education" refers to upper- or post-secondary education (ISCED Levels 3-4); and "high education" means higher, or tertiary, education (ISCED Levels 5-6).

Source: OECD calculations based on the European Labour Force Survey and national labour force surveys for Australia, Germany, Israel, Korea, Mexico, New Zealand and Turkey, OECD (2017), "Education at a glance: Transition from school to work", OECD Education Statistics (database). http://dx.doi.org/10.1787/58d44170-en (Accessed on 28 November 2017).

StatLink http://dx.doi.org/10.1787/888933638429

NEETs also tend to come from disadvantaged backgrounds or families of low socio-economic status. Almost one third have parents with less than an upper secondary level of education, twice the rate among non-NEET youth. NEETs are 80% more likely than other young people to have parents with no upper-secondary schooling and twice as likely to have parents who do not work. As noted throughout this report, parents' level of education plays a critical role in children's learning and labour market outcomes.

Women's lack of participation not only in the labour force, but in educational opportunities, is reflected in the NEET statistics. While a low educational level is the most common reason young people find themselves without work or a sufficient education, being female often lessens an individual's chances of becoming a NEET. Across the OECD, women are 1.4 times more likely to become a NEET than their male counterparts, while in countries such as Mexico and Turkey, women are closer to three to four times more likely to become NEETs. Again, the most common explanation of these high NEET rates among women is their decision to stay at home to care for their children. The rate is particularly high among women from 25 to 29 years. In this age group across OECD countries, over a quarter of women are NEETs, about 11 percentage points more than men in this same age group. They listed care-giving and family responsibilities among the top three reasons for not participating in the workplace. These did not feature high on the list of reasons for not working cited by men. Furthermore, young people born outside their country of residence are 1.5 times more likely to be NEET than those without immigrant backgrounds. On average across OECD countries, about 13% are foreign-born NEETs.

Negative consequences of being NEETs

Within the OECD, 1 out of 5 16-29 year-olds have experienced an entire year of being NEETs. Long periods of inactivity can have negative consequences. The longer individuals spend time as a NEET, the more likely they are to lose their skills, which affect their chances of finding employment. Those who spend time unemployed in their youth are more likely to find themselves working in low-wage jobs or unemployed again later in life (Carcillo, 2015). Being a NEET can also have a negative impact on the mental and emotional health of young people. When asked to rate the importance of work in life, NEETs responded "very important" at equally high rates as non-NEETs, which suggests that many NEETs feel at least some frustration that they cannot attain something upon which they place great value. NEETs also reported being unhappy more frequently: 22% report low levels of life satisfaction, compared to 14% of non-NEETs. High NEET rates can also have a serious impact on social cohesion. NEETs report higher levels of distrust in others and a lack of interest in politics, potentially indicating strong feelings of isolation from society (OECD, 2016b).

Re-engaging NEETs in education and the labour market

One advantage NEETs have is that they are young and may be easier to reintegrate into education and training. This is particularly true for the 16-19 year-old cohort, many of whom are early school leavers, and who may be able to reintegrate into the public education system. However, 45% of all NEETs are 25-29 year-olds (Carcillo, 2015). Although they are still young, they are well past formal schooling age. Alternative strategies are needed to re-engage this older cohort in education or the labour market. Given how difficult it is to reintegrate NEETs back into the education system, leaving school early should be avoided at all costs. One in six 25-to-34 year-olds does not have an upper-secondary qualification on average across OECD countries (OECD, 2016d). As discussed in Chapter 4, performance needs to be evaluated early and extra support given to prevent dropouts.

Public services need to reach out to NEETs to prevent long-term inactivity. Employment services, social services and non-governmental actors can play a central role in engaging disconnected youth. Once a young person is registered, extensive profiling can help match support to purpose and save costs by ensuring that interventions target the right youth. Many NEETs require only a little assistance to find employment, while successful programmes for young people with severe or multiple barriers tend to be intensive and expensive. The most promising combine schooling and practical training with counselling, psychological support and housing. Some have been shown to be cost-effective, by raising earnings potential and reducing criminal behaviour.

Vocational education and training is a valuable alternative to academic schooling. It prepares young people for the labour market with a view to responding to employers' needs for skills. The practical training component of VET should be work-based, ideally in the form of apprenticeships matching young people with employers at an early stage. Such programmes may be particularly attractive and beneficial for youth who have grown tired of school. Pre-apprenticeship programmes can prepare those who lack the necessary literacy, numeracy or social skills to function in the workplace.

Women from disadvantaged backgrounds

Women, especially those from disadvantaged backgrounds, face a particular set of challenges in accessing adult education and skills training opportunities. Providing education and upskilling opportunities to women is especially important, since they are far more

likely than men to drop out of the labour market for an extended period, due to childcare responsibilities. Their potential reintegration into the workforce may therefore require an intensive update in knowledge or competencies. Across the OECD, the most common reason that women leave the labour market, or fail to enter it in the first place, is to provide childcare. This workforce inactivity can result in women's losing the opportunity to improve their skills and lose proficiency in those they already may have (OECD, 2016d). Women with families who do work are far more likely than women without children to be working in part-time jobs, which, with lower wages and less stability, also provide fewer opportunities for skills development and training (OECD, 2012a). Disadvantaged women, especially those with children, find themselves all too often in a low-skills trap.

Women from disadvantaged backgrounds face several barriers in accessing adult education and skills opportunities. They are far more likely to experience long periods on unemployment due to family responsibilities. Across the OECD, only around 50% of women with children under 3 years of age are in employment (OECD, 2016d). For some women, staying home with their children is a personal choice, but for many women of low socio-economic backgrounds, it is a matter of economic necessity. As noted in Chapter 3, early childhood education and care expenses are high in many countries, and it may make financial sense for a mother to stay home with her children rather than spend an entire pay check or more on professional childcare services. Since employers are one of the largest providers of adult education and skills training opportunities, many women are simply excluded from such opportunities because they are not working.

Single mothers may face extra challenges

Among disadvantaged women, single mothers often find themselves in particularly challenging circumstances. In 2012, on average across OECD countries, 86% of single-parent families were headed by single mothers. In the United States and also Hungary in 2012, 21% of 15-year-old students lived in single-parent families. These two countries have the highest rates of single-parent families among OECD countries (Woessmann, 2015). For single mothers, educational attainment has a major impact on their likelihood of being employed. On average, only 40% of single mothers are working, as compared to 80% of single mothers of high educational attainment (OECD, 2016d). Without a partner to help contribute to the family income or help with childcare responsibilities, many single mothers are prevented for financial reasons or a lack of time from improving their level of basic skills through adult education or training (OECD, 2016b). NEET rates, unsurprisingly, are particularly high among single mothers. Those who do work run a high risk of suffering from poverty.

Disadvantaged women run the risk of falling behind in today's rapidly evolving labour market

Women, particularly those with children and those who are from disadvantaged backgrounds, are at particular risk of falling behind in today's labour market. Maintaining and gaining the skills and competencies needed to participate is a challenging proposition in general. Driven by innovation and globalisation, the workplace is evolving at a faster rate than ever before. Certain skills and knowledge can be relevant one year and obsolete by the next. It is thus important that employees constantly be improving their skills and expanding their knowledge (IMF, 2013). Women who are either not participating in the workforce or are participating through part-time employment are at a disadvantage. Meanwhile, a clear gender difference is seen in the amount of time spent in job-related

education. Across the OECD, men on average spend 4 more hours in job-related education over their career. This gap is particularly high in a few countries such as the Netherlands (19 hours) and Norway (16 hours) (OECD, 2012a).

Addressing barriers and encourage reintegration to the labour market for women

Any solutions designed to make adult education more accessible to women from disadvantaged backgrounds must address the specific barriers these individuals are facing. Policy interventions must focus on increasing levels of education and skills attainment by eliminating the financial and other obstacles that so often stand in the way. For many mothers, the largest obstacle to participating in adult education is a lack of time. It is often difficult to find the time to continue their own education if they are working one or more full- or part-time jobs and/or caring for their children. This challenge is amplified to an even greater extent for single parents who may not have a partner on whom they can rely to shoulder some of the financial or childcare responsibilities. Delivering inexpensive and high-quality childcare is therefore a crucial element in guaranteeing greater female participation in the labour force, since it removes the pressure on women to be the primary provider of childcare (for information on childcare services, see Chapter 3). Policies should also open new labour market pathways to unemployed women who want to reintegrate back into the workforce. Innovative and flexible solutions may be the best answer to address these issues.

Intergenerational learning programmes are one effective way to offer learning opportunities to women occupied in childcare duties at home. By encouraging learning as a shared endeavour between parents and children and bringing the learning directly to the home, such programmes can benefit multiple generations under a single roof. The Turkish Mother-Child Education Programme, for example, targets 25 000 women annually and has provided thousands of low-cost and home-based courses to mothers and their children aged 5 to 6 who do not have access to preschool education (EC, 2015). Another example of a successful intergenerational learning programme is the *Family Literacy Project* by the UNESCO Institute of Education. Since 2004, the State Institute for Teacher Training and School Development in Hamburg (*Landesamt für Lehrerbildung und Schulentwicklung*) has offered intergenerational family literacy programmes for children and parents from low-income and migrant backgrounds that promote linkages between kindergartens and schools and home-based learning. The project has improved adult participants' communication skills, self-esteem, and integration into German society. As a result of the project, many schools in Hamburg have established family literacy rooms where parents can meet. Between 2004 and 2011, the programme benefited about 1 000 parents and 1 000 children annually.

In addition, programmes that aim to provide the skills and experience necessary to enter or re-enter the labour market not only provide the training needed to succeed, but can also boost women's confidence levels and smooth their transition into the workforce. Between 2000 and 2007, the German state of Hesse instituted an extremely successful VET training scheme for single parents. It offered them the opportunity to join in-company training courses and encouraged firms to take on single parents as trainees. The training time was reduced by 25% to allow for more flexible hours, and participants could participate in either full-time or part-time options, depending on what best fit their schedule. Almost all the trainees successfully graduated from the programme, and over half were directly employed in the company where they completed their apprenticeship. Reviews of the programme found

that it boosted confidence and motivation levels among participants, because it provided respite from the social isolation many single parents experience (UNESCO-UNEVOC, 2016).

Low-skilled adult immigrants

In a number of countries, the number of immigrants has been rising rapidly. Between 2011 and 2012, the share of the immigrant population increased by two percentage points in OECD countries. In 2011, the OECD was home to 115 million foreign-born residents, or 9% of the population (OECD, 2015e). This can partly be explained by political circumstances, but also to changing labour force requirements and skills shortages. This has increased the urgency for successful integration of immigrants and for them to obtain a working knowledge of their new country of residence.

According to the *Survey of Adult Skills*, immigrants perform below than their native-born counterparts in both numeracy and literacy. On average, foreign-born adults scored 24 points lower in literacy than native-born adults. Across the OECD, 33% of foreign-born adults scored at Level 1 or below in literacy, as compared with 15% of native-born adults. In most countries, recent immigrants who arrived in the host country less than five years ago scored particularly poorly. This is hardly surprising, since literacy performance depends on mastery of the host country's language. However, foreign-born adults fluent in their host country's language scored significantly higher than other immigrants and had almost the same levels of proficiency as native-born adults (OECD, 2016b). Foreign-language immigrants from disadvantaged backgrounds had lower scores than foreign-language immigrants from advantaged backgrounds, but the more advantaged cohort still scored below native-born adults from disadvantaged backgrounds. This indicates that a lack of opportunity to develop the language skills of the host country exists for all immigrants, regardless of background (OECD, 2013).

On arrival in a new country, immigrants face a number of challenges. They are often not native speakers of their host country's language, and their average levels of educational attainment are below that of the native-born population in most cases. They may be unemployed or illegally employed because finding employment is difficult, and due to the stigmatization of immigrants in many societies, they may experience discrimination. Adult education and training is thus a crucial tool both for integrating immigrants into their new home country and for improving outcomes not only for them but for their children. Unfortunately, it is often too challenging for them to access such education opportunities.

Addressing low skills among immigrant populations is extremely important

When large proportions of adult immigrants lack these basic skills, the result is damaging not only for the individuals but for society. Low education attainment and/or poor proficiency in the host country's language make integration into society and the labour market difficult. On average, immigrants' participation rate in the labour market is 8 percentage points less than that of the children born to native parents (OECD, 2015e). Even those who do find employment are still more likely to experience higher rates of income inequality. The median income of immigrant households is 17% lower than native-born households' and 16% of immigrants fall into the lowest income decile. The host countries also face problems stemming from these inequalities, since in addition to the economic burden of supporting large groups of residents who are unemployed or living in poverty, any country with a considerable population of people who feel segregated or left out are bound to suffer from social instability. While 12% of immigrants on average said they felt

discriminated against due to their foreign-born status, the number is higher for poorly educated immigrants (17%) and unemployed immigrants (19%) (OECD, 2015e).

The most effective intervention occurs just after immigrants have arrived in their host country

If targeted interventions, such as language and integration programmes, are to be effective, it is critical that they reach immigrants as soon after their arrival as possible. Without such intervention, the immigrants may become segregated from society, and the longer they are not provided with education intervention, the worse this segregation can become. Segregation has serious and negative long-term effects for the immigrants, their children and their host country. It is not enough to rely on the belief that integration will happen in time. A concerted effort is required to bring those arriving to a new country into the social fold. In some OECD countries, the time elapsed since an immigrant's arrival has little effect on their proficiency in literacy and numeracy, indicating that either the incentives are not in place or the opportunities are insufficient for these immigrants to learn the language of their host country (OECD, 2013).

Language programmes for Immigrants

The biggest challenge facing newly arrived immigrants, regardless of education levels, is most often the language and cultural barriers. It is important that education and training programmes being offered to adult immigrants focus on reducing these barriers. Different methods are used to provide language acquisition support in OECD countries. Traditional classroom programmes are offered in most countries. In Sweden, a language course is offered free of charge to all immigrants who have little to no knowledge of Swedish. The courses are offered to three levels of students: those with the most basic education (0-5 years), those who have completed education up to the secondary level and a final level for those who have the equivalent of an upper-secondary degree or higher. These courses can be combined with basic adult education courses, intermediate adult education courses, an internship, a job or other occupation.[5] In the United States, programmes often combined language and cultural integration courses. The English as a Second Language (ESL) programme is a key element of US policy for the integration of immigrants. It serves a diverse population and offers flexibility for overcoming the barriers adults encounter in general (scheduling, location, duration, etc.). Courses cover a wide scope of subjects in addition to English, ranging from integration topics including information on civil rights and civic responsibility, to vocational programmes where language teaching is adapted to the workplace. With overall funding said to be insufficient and uneven, these programmes unfortunately tend to have waiting lists (OECD, 2005). In Germany, the online language portal, *Ich will Deutschlernen*, which is based on the curriculum of the integration courses of the Federal Office of Migration and Refugees (BAMF), offers courses for learning German from beginner's to intermediate level. It also offers special exercises for those who cannot read and write. Between August 2013 and the end of 2013, 5 000 learners (2 750 individual learners, 2 250 as part of an integration course) and 600 tutors registered (EC, 2015).

Remove barriers: making adult learning more accessible

As noted earlier, numerous barriers prevent participation in adult education and learning. Removing these barriers, especially for socio-economically disadvantaged groups of individuals, is crucial in improving equity in learning and labour market outcomes.

Financing adult education and training

Among financing schemes designed to remove costs and to provide incentives for disadvantaged or low-skilled adults to participate in skills training, co-financing and tax incentives can be particularly effective. Co-financing is a logical approach, since evidence has shown that greater levels of skills among adult populations lead to benefits that are spread across society. To be effective, such arrangements should allow individual learners to choose which skills and competencies they wish to pursue as well as how, where and when they can do so (OECD, 2004). Furthermore, governments should develop these schemes to target particular groups that might otherwise face barriers in acquiring training and education, such as low-skilled or disadvantaged adults.

Co-financing arrangements for adult education and skills training

There are a variety of co-financing arrangements policymakers could consider, including Individual Learning Accounts (ILA), vouchers and training allowances and training leave. An ILA is an account set up exclusively for adult-learning purposes, and provides its investors with favourable tax treatment. The intention of such an account is to shift the responsibility for adult learning from the individual to several different stakeholders who can contribute to the account. Stakeholders can include adults, private sector firms and the government. The Netherlands, which set up accounts for low-educated disadvantaged adults, and the United States and Canada, which designed similar schemes for low-skilled adults, all experienced positive results and saw an increase in participation in adult learning activities by the targeted groups (OECD, 2005)

Governments can also provide subsidies for adult training and education in the form of vouchers that can cover direct costs, such as the training course fees, or indirect costs, such as providing a stipend partially covering relinquished wages. Such vouchers or training allowances can be vital in breaking down financial barriers for adults who may not otherwise be able to take skills courses. To be successful, this system requires a low barrier to entry for new adult learning providers, making information on the quality and content of the courses widely available to interested adult learners, and a way for participants' results to be validated and recognised by labour market stakeholders. Voucher schemes targeting low-skilled or unemployed adults have experienced success in countries such as Austria, Germany and Switzerland (OECD, 2005).

Training leave encourages participation in continued education or training. It can minimise the risks for individuals who may want to take part but fear financial or employment-related repercussions. It is designed to support individuals who may need to stop or reduce working hours for an extended period in order to receive training or education. Most importantly, such a scheme needs to involve the close co-operation of employers, so that the participant is guaranteed employment on completion of the programme. To increase its effectiveness, training leave should also be combined with other schemes, such as vouchers or training allowances, to ensure that the adult learner is receiving the financial support needed to complete the training successfully. Training leave schemes vary from country to country in terms of duration, motivation and the level of support and the resources offered to participants. For instance, workers in Sweden interested in continuing their post-upper-secondary education are eligible for a 20-week leave to pursue their studies. An allowance is provided for this time from both their employer and the government. Adults in the Netherlands who participate in extended skills training can be granted full wage

costs. The money comes out of a collective sectoral training fund to which both employer and employees contribute (OECD, 2005).

Tax-based incentives to increase returns on skills while decreasing costs

In most countries in the OECD, governments have set up tax-based mechanisms that reduce the tax liability on at least part of an individual's spending directly related to skills training costs. Such tax incentives can increase the returns to skills by making the costs of skills acquisition deductible for personal tax purposes. Two primary instruments can be used: tax allowances and tax credits. Tax allowances are deductions normally granted for training that is linked to, or even necessary for, a worker's current employment. Some countries implement caps that restrict the amount of expenditure on skills, which is eligible for deduction from taxable income. Tax credits, on the other hand, mostly target adults interested in re-entering or continuing post-secondary education, rather than career-related skills training. Like tax allowances, caps vary from country in determining how much an individual can deduct from taxable income. Some countries set thresholds, providing credits for education only above a certain amount (OECD, 2017a).

One popular form of tax credit or tax allowance is the Personal Income Tax Relief for Expenditures on Education and Training (PIT), which is currently available in over 30 OECD countries and can cover up to 100% of the direct costs of education or training. PIT provides financial support based on private expenditures on education and training, and is most often distributed in the form an allowance for eligible expenses, although it can also be granted as a tax credit of the amount of the related expenses. An eligibility requirement for PIT is different among countries, with some focusing support on career-related training and others on education. Norway, for instance, provides a tax allowance for "knowledge upgrading" through training that is offered outside basic education, such as university or VET programmes. Canada, however, grants allowances for taxable tuition assistance for various levels of education (Torres, 2012). Through the leverage of public funding to encourage greater adult education, co-financing and tax-based incentives can be effective strategies not only for increasing access to education and skills training to disadvantaged or low-skilled adults but also for raising the demand for such educational opportunities.

Providing innovative and flexible learning opportunities to overcome access barriers

Time constraints are one of the most frequently reported barriers to participating in adult education and training. Providing flexible learning opportunities that are compatible with individuals' daily lives can increase participation in adult education and training. This is particularly true for employed adults and adults with family responsibilities and other situational restrictions (OECD, 2003; OECD, 2005). To remove situational, time and geographical barriers, innovative and effective adult learning programmes, such as online and distance learning, flexible learning arrangements such as modular classes, evening, weekend and part-time courses may also reduce non-financial barriers to the participation of disadvantaged adults.

Online and distance learning

Distance learning, which in recent years has mostly taken the form of "e-learning", is a way for adults to participate in educational programmes without leaving their homes. Past iterations of distance learning have normally involved the exchange of lessons, materials and assignments between participants and instructors by post. With the advent of e-Learning, however, this process has become far less cumbersome, and today, most training and courses

are provided through online platforms. Instructors and students can interact more directly (through email, messaging systems or Skype), which facilitates the exchange of questions, answers and feedback between them. Students also have greater access to a variety of learning tools and resources. Since online classes are quite often far cheaper, if not free of charge, this helps to break down cost barriers related to enrolment and supply fees (such as textbooks) as well as transport costs.

E-learning can also develop as either an informal or formal tool. Informal versions might resemble large databases that provide materials, exercise and instructions, but adult learners are expected to navigate this vast landscape of resources themselves. In Germany, a large open learning web portal, ich-willlernen.de ("I want to learn" in German), has been developed by the German Adult Education Association with funding from the Federal Ministry of Education and Research. Between 2003 and 2014, more than 400 000 different accounts were created. Account holders have access to over 31 000 basic literacy, numeracy and German language exercises, as well as guidance on important life skills, such as managing finances, applying for jobs and understanding intercultural norms. In Ireland, an organisation dedicated to improving adult literacy called the National Adult Literacy Agency (NALA) has launched the interactive website *www.writeon.ie*, which aims to improve adult learners' reading, writing and numeracy skills to help them pass national qualifications (EC, 2015).

Alternatively, in more formal classroom-style e-learning courses, an instructor "teaches" lessons to a group of students during a specific timeframe, and attendance may be taken. These might serve as a more useful approach for those adults who prefer to rely more on outside accountability rather than strong self-motivation to ensure they use the service, or for those seeking accreditation of different kinds. One example of this adopted by many different countries is the Open University, which allows adults without a tertiary degree to complete courses online for credit. Since these universities are run by private providers, however, it is important that they receive government approval and are held to high standards.

Despite the benefits of online and distance learning, adults with low proficiency in literacy or numeracy have much lower participation rates in open and distance education than those proficient at Level 4 or 5. This is probably explained by a lack of access to ICT or a lack of proficiency in the use of ICT. The average rate of participation of the low-proficiency population is 4.5%, compared to 15.4% for adults with high literacy proficiency. The participation rates among adults with low proficiency are especially low in France, the Slovak Republic and the Czech Republic, where it is less than 2%. They are highest in the Netherlands (10%), Finland (8%), and the United Kingdom (8%). As noted earlier, to improve access to online learning, it is important to first provide training to improve ICT skills.

Providing courses at times convenient to the learner

Many adults may still prefer physical classes where they can interact at first hand with an instructor and other students more easily. Such adult education programmes can be held on off-hours, at night or on the weekends, allowing adults who are may be busy during the day with work or childcare to attend. In Austria, weekend courses and training for adults are held both by secondary schools and by VET programmes. In Hamburg, Germany, a 2005 literacy programme, which was run through the *Volkshochschulen* (VHS) for extramural studies, provided 90 minutes of instruction a week at hours convenient to its participants. It proved to be an effective strategy, since half of the adult students enrolled also had full-time jobs (OECD, 2005).

In addition, most OECD countries offer part-time learning opportunities, which allow adults to combine work and learning at the same time. The majority of VET students in Australia study part-time. VET programmes are designed as a single module or unit of competency, or to advanced diplomas. The types of training range from formal classroom learning to workplace-based learning and may include flexible, self-paced learning or online training. The courses are offered in private and public registered training organisations: in schools, universities or other higher education institutions, adult or community education centres, and various cultural, religious or other bodies providing specific training (OECD, 2015b). In Austria, the *Fachhochschulen* (post-secondary special-subject colleges) were established in 1994 to expand vocation and job-oriented programmes that would take the place of tertiary education. The main programmes target full-time university-aged students preparing for employment, but several *Fachhochschulen* have programmes for working adults, who attend in the evenings or on a part-time basis. By design, *Fachhochschulen* work extensively with employers in establishing their curricula, and their programmes generally combine classroom work with on-the-job experience (OECD, 2005).

Notes

1. See OECD 2017a and 2017b.
2. See Eductus.
3. Canadian Immigrant.
4. Finnish National Agency for Education (EDUFI), StudyInfo portal.
5. See Note 2.

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OVERCOMING INEQUALITY THROUGHOUT THE LIFE COURSE

Equitable educational opportunities can help to promote long-lasting, inclusive economic growth and social cohesion. Successful education and skills policies can empower individuals reach their full potential and enjoy the fruits of their labour, regardless of their circumstances at birth. However, as this report shows, far too many children, students and adults from socio-economically disadvantaged backgrounds fall behind. In many countries, substantial learning gaps exist between students at opposite ends of the socio-economic scale, and these differences tend to increase in the transition into adulthood.

All countries have ample room for improvement to ensure better learning outcomes for all. Early childhood education has been identified as an important element in future success, and requires investment, as do family and community-based support and programmes for children from families that have not attained a high level of education and skills. In the schools, targeted support is necessary for low performers from disadvantaged backgrounds and for poorly performing schools. As for the adult population, learning should be focused on improving employability, through a combination of education and practical job training. Barriers to participation in learning need to be removed, and delivery methods need to be more innovative and flexible. Targeted support is needed for the most vulnerable members of society.

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