



How PISA examines equity in education: Inclusion and fairness

This chapter discusses how PISA defines and measures equity in education through two related principles: inclusion and fairness. Inclusion means ensuring that all students acquire essential foundation skills. Fairness relates to students' access to a quality education and, more specifically, to the degree to which background circumstances influence students' education outcomes. The chapter specifies the types of students who are most at risk when education systems do not give all students the same chances to succeed, and discusses how school systems can provide equal opportunities to all students.

Equity in education is a central and long-standing focus of PISA and a major concern of countries around the world. The United Nations Sustainable Development Goals (SDGs) advocate for “ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all” (United Nations, 2015). The principle that every person has a fair chance to improve his or her life, whatever his or her personal circumstances, lies at the heart of democratic political and economic institutions. Ensuring that all students have access to the best education opportunities is also a way of using resources effectively, and of improving education and social outcomes in general.

SHAPING A SUSTAINABLE FUTURE AND A BETTER WORLD

By measuring the skills of 15-year-old students over a range of subjects, PISA provides an indication of how well a country is preparing for its future. Education systems should equip young people with the knowledge and tools needed to address the many challenges facing our modern societies: fast-changing labour markets, ongoing digitalisation of economies and societies, social mobility, growing inequality within countries, large international migration flows, and climate change.

Equity in education is key to achieving sustainable and inclusive growth. Analysis shows that school policies that aim to ensure that all students attain at least a minimum level of proficiency in the core subjects assessed by PISA (i.e. reading, mathematics and science), and not only universal enrolment, may have a significant and long-lasting impact on a country's economic development (OECD, 2015^[1]). Given that many predictions warn of a shortage in the supply of skills needed in a more automated world, education systems can respond by preparing all young people for lifelong learning, as the risk of skills mismatch may jeopardise economic growth (OECD, 2019^[2]). When only a few individuals at the top benefit from the best learning opportunities, the labour force may be deprived of the talent that could fuel economic growth.

Today more than ever it is essential for young people to master a wide range of skills and to have the capacity to update them continuously; these are the keys to a successful career and active engagement in society. To keep pace with technological changes, knowledge-based economies require workers with a high level of digital proficiency, who can handle non-routine tasks, and understand new concepts and ideas. However, too often, children are not given the same opportunities to succeed, to pursue their interests, or to develop their talents and skills. The place where students are born, the language they speak at home or their parents' occupations are often strong predictors of achievement in school. In many places, girls' and boys' aspirations are limited by a lack of role models. These individual circumstances, over which students have no control, too often affect the quality of the schooling provided, the educational path students choose, and even the shape of students' dreams for their future.

Many education systems try to support those children who start school at a disadvantage. However, the ways in which education systems are organised, how students are allocated to schools, the learning environment, and teaching practices are all factors that may reinforce, rather than reduce, the education gap between advantaged and disadvantaged students. Inclusive and equitable school systems should provide equal learning opportunities to all students, disseminate a common knowledge base, promote civic values and help all students realise their potential. Meeting these objectives is essential for ensuring not only social cohesion but also a country's capacity to compete in a global economy.

HOW PISA EXAMINES EQUITY IN EDUCATION

Equity is a complex concept. Consistent with previous PISA reports (OECD, 2016^[3]), this volume concentrates on two related principles: inclusion and fairness. Inclusion refers to the objective of ensuring that all students, particularly those from disadvantaged backgrounds or from traditionally marginalised groups, have access to high-quality education and attain a minimum level of skills. Fairness refers to the goal of fully realising every student's potential by removing obstacles over which individual students have no control, such as unequal access to educational resources and school environments.

Equity does not mean that all students achieve the same results, but that every student has acquired the skills he or she needs to participate fully in society, and has been given an equal opportunity to realise his or her potential. Equality of opportunity means that performance should not depend on personal circumstances that stem from the randomness of birth, but to individual effort (Roemer and Trannoy, 2016^[4]).

A large body of evidence shows that, in many places, socio-economic status (OECD, 2018^[5]), gender (OECD, 2015^[6]) and immigrant background are strong predictors of academic achievement and education outcomes. These individual circumstances may contribute to shaping students' aspirations, motivation and attitudes, with consequences for their cognitive outcomes. Some children, from birth, benefit from cultural and financial resources at home that will underpin future achievement, notably at school. Equitable school systems are those that are able to weaken the link between individual circumstances and education outcomes. While some degree of variation in education outcomes is to be expected in any school system, equity means that whatever variations there may be in education outcomes, they are not related to students' background, including socio-economic status, gender or immigrant background. Furthermore, equity does not imply that every student is exposed to a “one-size-fits-all” approach to teaching and learning. Rather, it corresponds to the objective of creating the conditions that minimise any adverse

impact of a student's background on his or her performance so that all students are given the opportunity to reach or maximise their own potential. This involves allocating resources to meet students' specific needs.

Equity in PISA is measured by whether education outcomes, such as access to schooling, student performance, students' attitudes and beliefs, and students' expectations for their future, are related to a student's personal background. The weaker the relationship, the more a school system is able to compensate for unfavourable learning environments outside of school, and thus may be considered to be more equitable.

EDUCATION OUTCOMES

This volume examines the following four aspects of education outcomes: access to schooling, student performance, students' attitudes and beliefs, and students' expectations for their future.

School enrolment rates

Access to schooling can be seen as a precondition for children to benefit from education. Access is mainly reflected in school enrolment rates. More equitable and inclusive systems succeed in minimising the share of the school-age children who have dropped out early or are significantly delayed in their progression through school. While PISA is not designed to estimate enrolment rates *per se*, it provides a range of indices that measure its coverage of the population of 15-year-olds enrolled in grade 7 or above in each country and economy (also known as the "target population"). PISA relies on an age-based definition of its target population to overcome comparability problems that arise from differences in the structures of national education systems. To be eligible to participate in PISA, students must be between 15 years and 3 months and 16 years and 2 months of age at the beginning of the assessment period, and enrolled in an educational institution in grade 7 or higher (see *PISA 2018 Results [Volume I]: What Students Know and Can Do* (OECD, 2019_[7]), for a detailed description). Specifically, Coverage Index 3 in PISA reflects the proportion of the national population of 15-year-olds (enrolled and not enrolled in school) who are represented by the PISA sample. Low values of Coverage Index 3 may be attributed to 15-year-olds who were no longer enrolled in school or who had been held back in primary school. *PISA 2018 Results (Volume I): What Students Know and Can Do* (OECD, 2019_[7]) provides some details on this issue, while Chapter 2 of this volume summarises the main results.

Student performance

Variations in performance related to students' individual characteristics provide a measure of equity in education. Equity in education should not come at the expense of excellence; no one should be satisfied with a school system where everyone, whatever their personal background, performs equally but poorly. PISA consistently finds that high performance and equity in education are not mutually exclusive (OECD, 2016_[8]): some school systems have been able to weaken the relationship between individual circumstances and student performance while maintaining ambitious standards for school achievement. Recent evidence suggests that school systems that show the greatest improvements in average performance are those that are also able to reduce inequalities in performance (Parker et al., 2018_[9]). Excellence in education may be achieved by providing an opportunity for all students to attain high levels of performance, rather than by selecting the most promising students while leaving the weakest behind.

Previous evidence has shown that some students can break the cycle of disadvantage, beat the odds against them and achieve better performance in PISA than would have been expected given their socio-economic status (OECD, 2018_[5]). In this volume, resilient students are defined as those who are socio-economically disadvantaged, or from an immigrant background, and who score amongst the highest performers in PISA in their own country/economy.

Students' attitudes and beliefs

Schools are not only places where students acquire academic skills; they are also where children develop many of the social and emotional skills they need to thrive. Schools that nurture children's development in these ways help students attain a sense of control over – and satisfaction with – their lives. Schools can help students become more resilient in the face of adversity, feel more connected with the people around them, and aim higher in their aspirations for their future. In other words, what happens in school is crucial for students' well-being. PISA helps document many factors related to the well-being of students, notably students' satisfaction with lives, their motivation to achieve, how they perceive themselves, their relationships with peers, teachers and parents, and how they spend their time outside of school (OECD, 2017_[10]).

Previous evidence from PISA suggests that disadvantaged students and immigrant students are more likely to have poorer socio-emotional outcomes (OECD, 2018_[11]). This volume describes those school systems that provide sufficient support to all students so that they are resilient in the face of adversity, they feel satisfied with their lives, they feel they belong at school, and they do not lack confidence when they face challenging tests and tasks. In addition, as attitudes towards learning, motivation to achieve and self-perceived feelings of competence have been shown to be strong predictors of future outcomes, the volume also examines how these dispositions may vary, depending on the circumstances of individual 15-year-old students.

Students' expectations for their future

It is commonplace to say that the education of today will shape the future of our society. But are students prepared for their future? School systems that aim to narrow, rather than reproduce, social inequalities should help students make informed and realistic decisions about their future careers by nurturing their aspirations, goals and expectations, regardless of their background. PISA not only assesses students' proficiency in reading, mathematics and science, but also asks them about their expectations of future education and employment and, in some countries, whether and how they prepare themselves for their future career.

Technological advances and increasing globalisation are changing labour markets around the world. Some jobs are likely to be completely or partially automated in the future, while new occupations will be created. These transformations are, in turn, changing the types of skills demanded of the workforce. This may result in mismatches between the skills demanded by the labour market and the skills available amongst working-age adults. Thus, education needs to ensure that young people have acquired the kinds of fundamental skills and attitudes towards learning – including motivation and self-efficacy – that will enable them to benefit from lifelong learning (OECD, 2017_[12]). The ability to acquire new skills throughout a lifetime is not only essential for thriving in constantly changing labour markets, it can help people update their skills, or learn new ones, regardless of their age.

Accurate knowledge about labour market conditions may help students make appropriate choices for future education. But existing evidence suggests that young people often have little understanding of labour market demands (OECD, 2017_[13]). While today's teenagers will enter a very different labour market than that in which their parents worked, their career expectations are often informed by and reflect what they observe in their close circle of family and friends (Howard et al., 2011_[14]; OECD, 2015_[6]). Students whose parents had not participated in higher education often underestimate the net benefits of tertiary education (OECD, 2018_[5]). Children from disadvantaged backgrounds, and from first- and second-generation immigrant families are less likely to enrol in higher education (OECD, 2018_[15]). While girls are more likely than boys to pursue higher education, the career expectations of 15-year-old girls tend to reflect the gender stereotypes that they have absorbed – and that reinforces gender-related inequalities (OECD, 2015_[6]). Education systems should thus provide students with sufficient information to help them get a fuller picture of possible future careers, and the education and skills needed to pursue and succeed in them.

MEDIATING STUDENT BACKGROUND AND EDUCATION OUTCOMES

Several factors may mediate the statistical relationships between personal background circumstances and education outcomes. The equity framework in PISA 2018 focuses on access to educational resources, and on academic and social segregation between schools.

In order to achieve fairness in education, all students should have access to the educational resources they need. Fairness requires that all students, especially disadvantaged students and those with special learning needs, receive sufficient support so that they may have a fair chance to realise their full potential. PISA provides information on how school systems allocate their resources for education and whether that allocation is related to student and school characteristics, such as socio-economic status, immigrant background and school location. School systems may choose to allocate additional resources, such as educational material and staff, to struggling schools; however, quantity may not always compensate for quality. While effective teaching is considered to be one of the most important school-related factors contributing to student performance, of prime importance is not only the number of teachers allocated to the schools that need them most, but also the quality of those teachers (OECD, 2018_[16]).

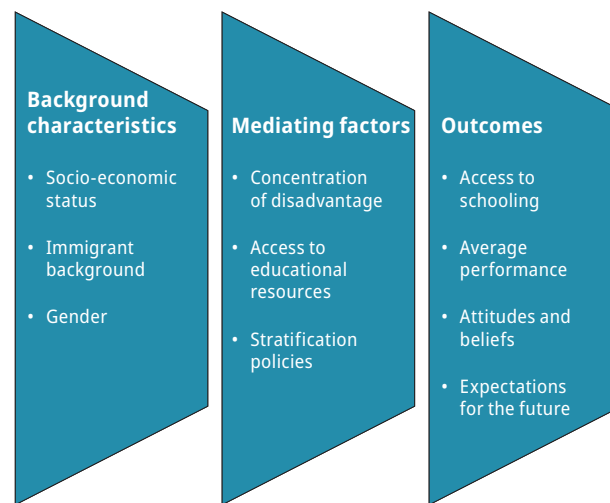
Previous results from PISA suggest that equity in education may be related to whether or not students are tracked into different streams based on their prior performance. Comprehensive education systems, where all students follow a similar path through education, regardless of their academic performance, often perform better and are more equitable than education systems that rely on horizontal stratification (e.g. tracking students based on ability or interests) or on grade repetition (OECD, 2016_[17]). The more stratified an education system, the more likely it is that disadvantaged students are placed in the least academically oriented or demanding learning environments if the education system behind early tracking is not well-structured, well-resourced, and does not include various opportunities along students' path through education to correct some obvious socio-economic imbalances (Iannelli, Smyth and Klein, 2015_[18]; Van de Werfhorst and Mijs, 2010_[19]; Brunello and Checchi, 2007_[20]; van Elk, van der Steeg and Webbink, 2011_[21]; Neugebauer and Schindler, 2012_[22]; Horn, 2009_[23]).

Both academic and social segregation between schools are negatively related to equity in education. PISA results have shown that countries where schools are less socially diverse also have less-equitable education systems (OECD, 2019_[24]). Disadvantaged students do not always benefit from the same high levels of parental support as their more advantaged peers, and being enrolled in a school with a high concentration of other disadvantaged students is often an additional barrier to success (OECD, 2018_[25]). For instance, some teachers may be dissuaded from applying to work in disadvantaged schools as they anticipate more difficult working conditions. When many students in the same class perform poorly at school, some of their peers may be deprived of the attention they deserve to achieve their potential. School admissions policies and the degree of freedom for parents to choose a school for their child may also affect both the academic and socio-economic diversity of schools (OECD, 2019_[24]).

EXAMINING EQUITY IN THIS REPORT

Figure II.1.1 provides a general framework for the analyses discussed in this report. These analyses aim to describe how certain student outcomes, namely performance in PISA, attitudes towards learning, and expectations for future education and careers, are related to several individual characteristics: socio-economic status (Chapters 2 through 6), gender (Chapters 7 and 8), and immigrant background (Chapters 9 and 10). The analyses focus mainly on performance in reading, which was the main subject assessed in PISA 2018 (Chapters 2, 7 and 9). Relative performance amongst boys and girls in mathematics and science, in addition to reading, is examined in Chapter 7. The volume also highlights those socio-economically disadvantaged students (Chapter 3) and students with an immigrant background (Chapter 9) who were able to beat the odds against them and performed at high levels in PISA. In addition to cognitive outcomes, the volume discusses students' attitudes and well-being (Chapter 3, 8 and 10), and their expectations for their future (Chapters 6 and 8). While most of these analyses are considered at the student level, between-school differences in performance and socio-economic profile (Chapter 4), and differences in how resources are allocated to schools, depending on the schools' socio-economic profile, are also examined (Chapter 5).

Figure II.1.1 **A conceptual framework for examining equity in education in PISA 2018**



This is not the only volume of the *PISA 2018 Results* that covers the issue of equity in education. *PISA 2018 Results (Volume I): What Students Know and Can Do* (OECD, 2019_[7]), provides an in-depth analysis of the proportion of the population of 15-year-olds who were not enrolled in grade 7 or higher (the “target population” of the sample in PISA) when the 2018 assessment was conducted. It also describes the range of student performance in each country and economy. These are amongst the main measures of inclusive education.

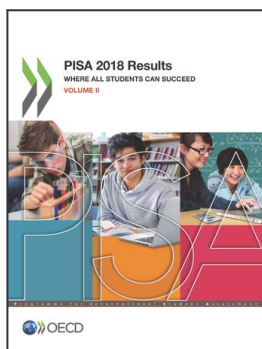
PISA 2018 Results (Volume III): What School Life Means for Students’ Lives (OECD, 2019_[26]) analyses some of the attitudes, behaviours and approaches to learning amongst 15-year-old students, and whether they may differ across gender and family characteristics. These factors, too, are associated with inequities in the acquisition of knowledge and skills.

PISA 2018 Results (Volume V): Effective Policies, Successful Schools (OECD, forthcoming_[27]) examines how the policies and practices adopted in schools and school systems are related to performance and equity, including school organisation (such as vertical and horizontal organisation), material and staff allocated to education, time devoted to learning in school, and the types of evaluations used in school. While some of these policies are introduced in this volume, Volume V discusses them in greater depth.

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