



Organisation for Economic Co-operation and Development

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Effective Financing of Education and Skills Systems: as prepared by the OECD for the G20 Education Working Group

1. Effective financing of education and skills systems

1. How to govern, distribute and manage resources so that they contribute to achieving countries' educational objectives is a key question all governments face. This short paper will discuss how funding policies can help achieve quality, equity and efficiency objectives in school education and broader skills policies.

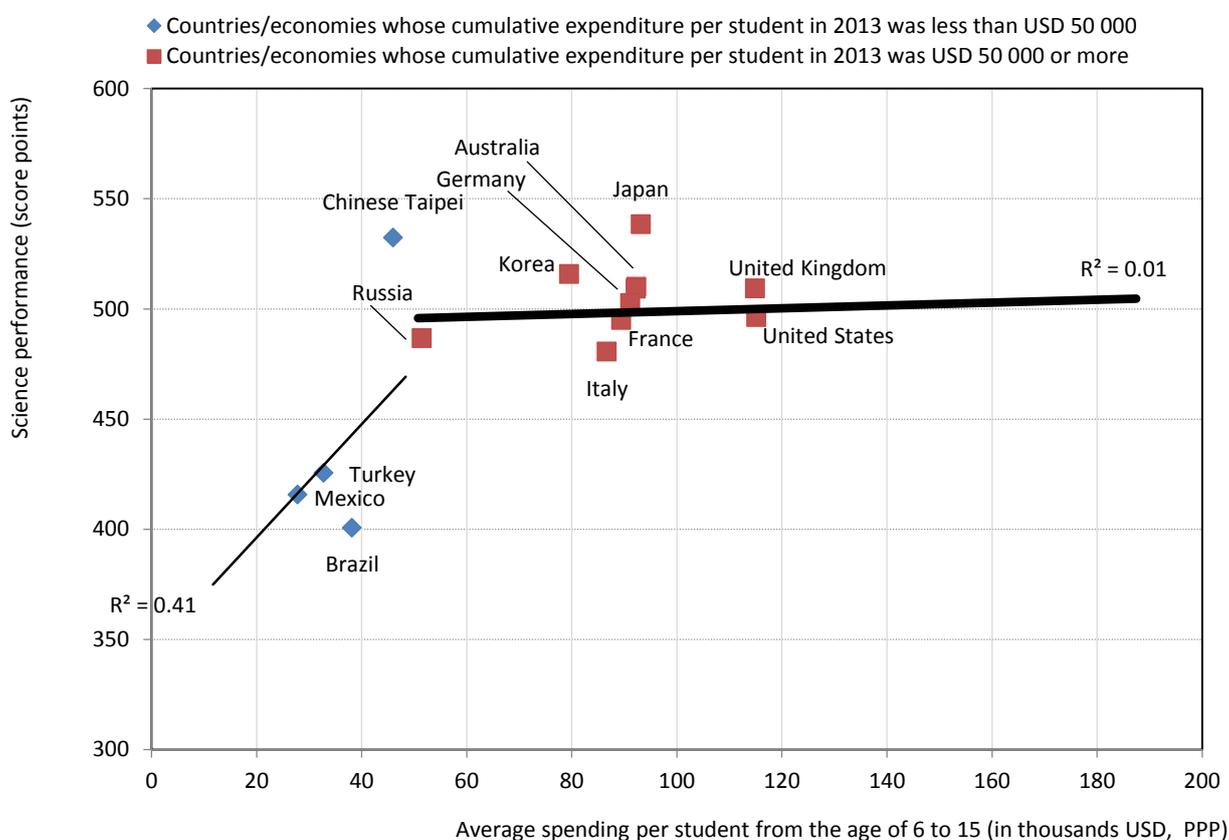
Relationship between investment and outcomes

2. Governments have become increasingly interested in the relationship between the amount of resources devoted to education and student learning outcomes. They seek to provide more and better education for their population, while at the same time ensuring that public funding is used efficiently, particularly when public budgets are tight.

3. The level of investment in education is often measured in relation to GDP. It is worth noting that comparative analyses based on this variable may be misleading, because it does not take into account major demographic differences between countries. In countries with ageing populations a relatively small investment per GDP may result in large investments per student, while the opposite may be true in countries with a large share of young people. Thus, public expenditure in education by student provides a more meaningful measure.

4. While larger education budgets are no guarantee of better student results, a minimum level of spending per student is necessary for ensuring good quality education provision. A school system that lacks quality teachers and school leaders, adequate infrastructure and textbooks will have more difficulties to promote quality education. At the same time, evidence from the OECD's *Programme for International Student Assessment (PISA)* indicates that the overall level of school funding does not seem to be a key factor for the success of high performing school systems (see Figure 1)¹. This suggests that beyond a certain level of investment the design of education policies, the mechanisms through which funds are allocated and how these determine where additional resources are channelled matters more than the aggregate level of expenditure.

¹ PISA data indicates that among countries with lower overall levels of school funding (falling below a cumulative spending per student threshold of roughly USD 50 000 in purchasing power parity [PPP] terms), there is an observed positive correlation between cumulative spending per student (age 6-15) and student performance at age 15. But among the countries with higher overall levels of school funding, there is no observed relationship between cumulative spending per student and students' performance.

Figure 1. Relationship between investment and student performance

Note: Only countries and economies with available data are shown. A significant relationship ($p < 0.10$) is shown by the black line. A non-significant relationship ($p > 0.10$) is shown by the blue line.

Source: OECD (2016a), *PISA 2015 Results (Volume II): Policies and Practices for Successful Schools*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264267510-en>

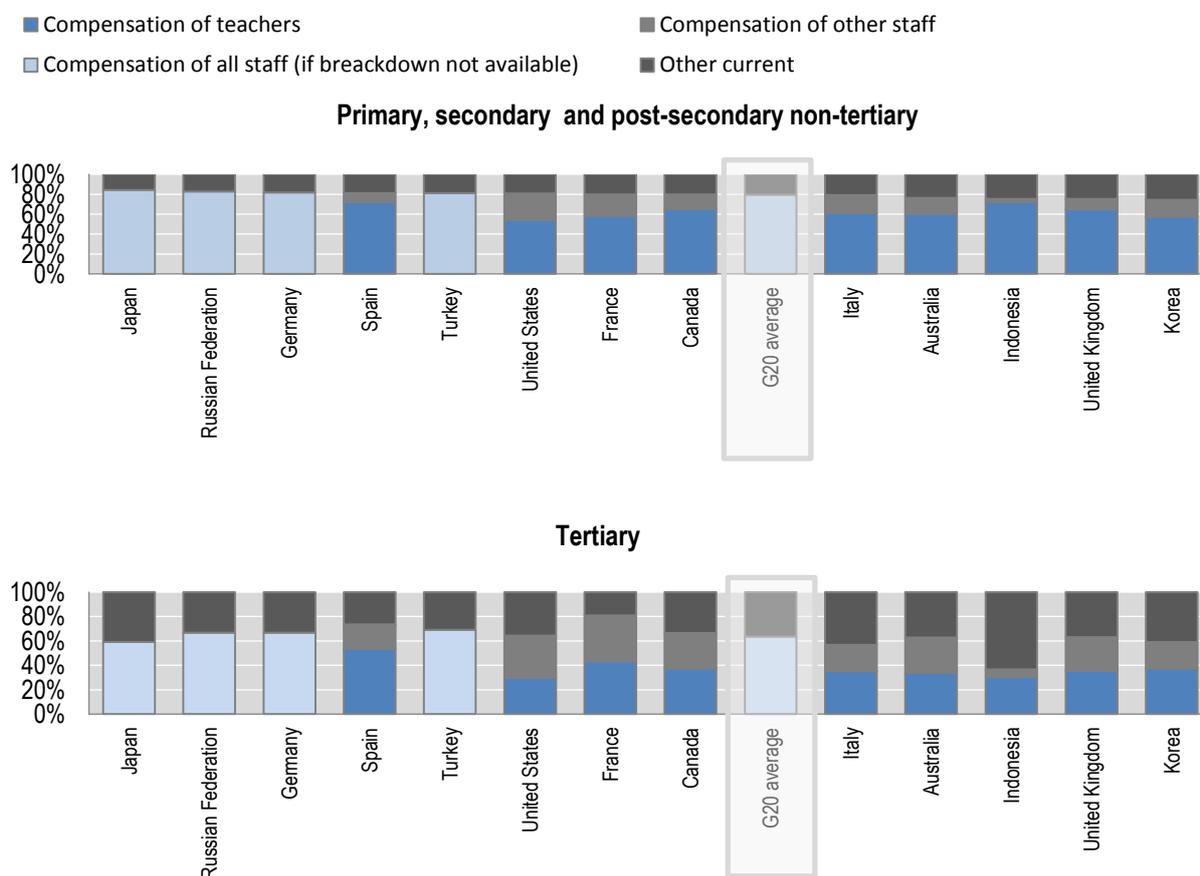
Resources allocation

5. Educational expenditure refers to the financial disbursements of educational institutions for the purchase of the various resources or inputs of the schooling process such as administrators, teachers, materials, equipment and facilities. Decisions about how resources are allocated between current and capital expenses affect the material conditions under which instruction takes place, and can also influence the organisation and operation of educational institutions. Given education's labour-intensive nature, current expenditure, and in particular staff salaries, make up the largest expense. In 2014, an average of 91% of total expenditure by educational institutions in G20 countries was on current expenditure across all education levels from primary to tertiary, of which 83% was dedicated to staff salaries.

6. On average across G20 countries, there are small differences in the allocation of current expenditure by educational level, where almost three-quarters of current expenditure is spent on staff salaries at all levels of education. However, there is significant variation among G20 countries individually (Figure 2), particularly in the level of funds allocated to salaries of teachers and other staff employed in education. When looking at pre-tertiary education, compensation of staff ranges from lower than 75% in

Korea to higher than 80% in Japan and the Russian Federation. At the tertiary level, staff salaries range from lower than 60% in Italy, Indonesia, Japan and Korea to more than 80% in France.

Figure 2. Composition of current expenditure in public educational institutions (2014)



Note: G20 average is computed based on data availability. Data for Indonesia refers to the year 2015.

Source: OECD (2017), *Education at a Glance 2017: OECD Indicators*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/eag-2017-en>

7. Expenditure on staff compensation depends largely on the number of teachers, which is a function of the class size, and the teacher's salaries. Given the fact that staff compensation usually accounts for the largest share of expenditure on education, a change in spending on either class size (which determines the number of teachers) or teachers' salaries are the two options that would have most impact on overall levels of investment in education. Comparative evidence from the OECD shows that the best performing countries tend to privilege investment in teachers' quality over class size.

Improving the quality and equity of education systems

8. High quality education systems do well in both student performance and equity. Given that teachers have more direct impact on student learning than budgets, curricula, inspection and accountability systems or governance; countries are increasingly making teachers a priority. In order to improve student learning outcomes, investment in high quality initial teacher training and continuous professional development is key. The

investment associated with providing support and training to teachers includes the need to have highly qualified trainers and mentors, and also the costs derived from allowing teachers to spend time on these activities outside of the classroom. Putting in place evaluation systems and the right incentives to attract, develop and retain high quality teachers have proven to be valuable policies to support teachers in world that is constantly changing. As the demands on teachers have become increasingly complex, it is important that both new and more experienced teachers are well supported to meet nationally agreed professional standards and equip students with a wide range of skills.

9. High quality education systems have high standards for all students, but also put in place measures to support students who are facing greater challenges. Many countries achieve this winning combination of excellence and equity by addressing factors known to hinder student performance, such as socio-economic background, gender and immigrant status. Policies to minimise the impact of these factors include providing good-quality early childhood-education and care, identifying students at risk of dropping out and offering them additional support and alternative pathways. Implementing policies to achieve education excellence and equity involves distributing, evaluating and making spending choices that support all students in achieving their full potential.

Distributing funds equitably across schools

10. As countries seek to enhance the performance of all students while also providing more equitable learning opportunities for different groups, there has been greater focus on ensuring that resources are directed to where they are most needed. Developing an equitable distribution of educational funding requires countries to take into account both horizontal equity (allocating similar levels of resources to similar types of provision) and vertical equity (allocating different levels of resources to student groups with different needs).

11. It is important for countries to strike a balance between targeted and regular funding to more efficiently support equity. The use of targeted programmes – where funds are earmarked for a particular purpose – allows for better steering and monitoring of public resource use at the school level, but a multiplication of such programmes risks generating overlap, inefficiencies due to imposed restrictions on schools, greater administrative costs and a lack of long-term sustainability for schools. There are, therefore, arguments to reduce transaction costs by limiting the number of targeted programmes and including adjustments for equity within the main funding stream.

12. Well-designed funding formulas are a particularly effective means to distribute funding for current expenditure in a transparent, efficient and equitable way. By including weights to distribute additional funds based on particular school characteristics such as school location (e.g. rural, remote or urban), programmes offered (e.g. special educational needs programmes, different vocational fields) and student backgrounds (e.g. specific elements of disadvantage), funding formulas can play a critical role in aligning the distribution of resources with a country's educational priorities.

Evaluating the use of school funding

13. While many countries invest considerable resources to improve the educational opportunities for disadvantaged students, this financial commitment is not always matched with a strategy for monitoring progress and outcomes of these groups. In many countries, the governance of school funding is characterised by increasing fiscal decentralisation, considerable responsibility of schools over budgetary matters and

growing public funding of private school providers. The more discretion is given to different actors over the use of public funding, the greater the need for adequate evaluation of outcomes at these different levels.

14. Giving schools autonomy over a range of budget decisions can provide them with needed flexibility to use allocated resources in line with local needs and priorities. But it needs to be accompanied with adequate accountability, capacity building, disaggregated data, and mechanisms to avoid widening inequities. In addition, horizontal accountability measures that involve multiple stakeholders, including scrutiny by school boards on provision for different student needs and its impact, can usefully complement traditional measures of vertical accountability.

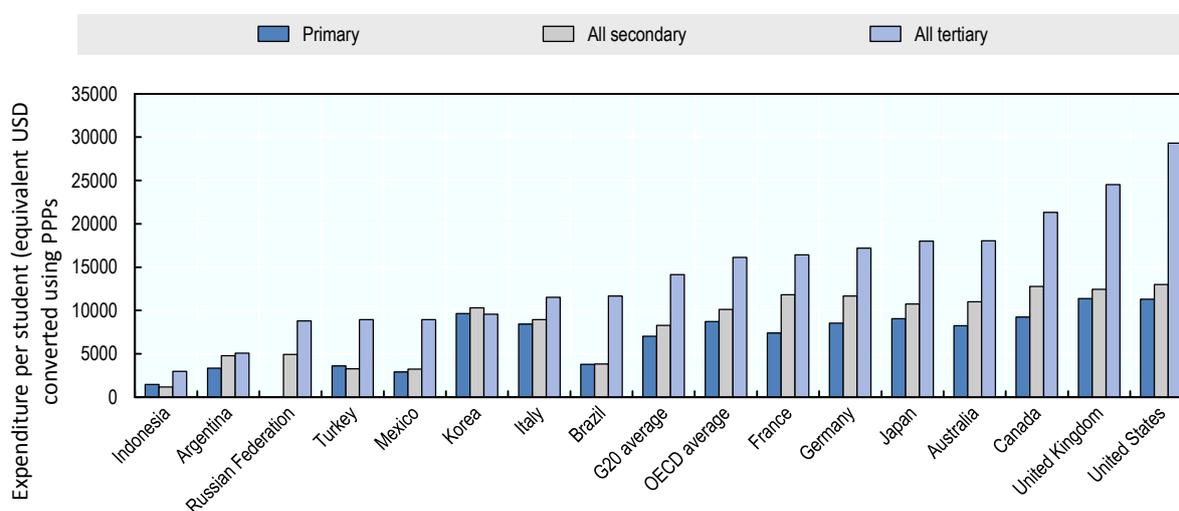
15. Not only individual schools, but school systems as a whole need to be accountable for progress in matching school funding to learner needs. School system evaluation should include analysis of financial and non-financial data, presenting budgetary information alongside reporting about the quality and equity of a school system in relation to established policy objectives and targets. This can help communicate the goals of investments in the school system and build social consensus about fiscal efforts for schooling.

Making spending choices to prevent educational failure

16. The OECD's School Resources Review highlights that the pursuit of equity and efficiency can go hand in hand when it comes to the allocation of resources. For example, shifting investments towards the early years of education, preventing educational failure and investing in teacher quality can help reduce systemic inefficiencies while improving equity across student groups.

17. Despite the demonstrated importance of the early years of schooling for lifelong learning, data from the OECD's *Education at a Glance* publication shows that several school systems allocate resources in a traditional pattern in which students who progress through to the end of secondary education and beyond are treated from a funding angle as requiring higher spending than those at earlier levels of schooling (Figure 3).

Figure 3. Annual expenditure per student by educational institutions by level (2014)



Note: PPP and USD stand for Purchasing Power Parity and United States Dollars respectively. 1. Public institutions only (for Italy, for primary and secondary education; for Canada and Luxembourg, for tertiary education and from primary to tertiary; for the Slovak Republic, for bachelor's, master's and doctoral degrees). 2. Primary education includes data from pre-primary and lower secondary education. 3. Upper secondary education includes information from vocational programmes in lower secondary education. 4. Year of reference 2015. Countries are ranked in descending order of expenditure on educational institutions per student in primary education. G20 average includes data for the following G20 countries: Argentina, Australia, Brazil, Canada, France, Germany, Indonesia, Italy, Japan, Korea, Mexico, Turkey, United Kingdom and United States.

Source: OECD (2017), *Education at a Glance 2017: OECD Indicators*, OECD Publishing, Paris. <http://dx.doi.org/10.1787/eag-2017-en>

18. However, education is a self-reinforcing process, in which new knowledge and skills are attained building on a previous solid basis of both those factors. Early cognitive and non-cognitive development makes it easier to acquire knowledge, skills and social competencies later in life. Conversely, failing to provide the adequate level of resources to sustain high quality early learning is likely to result in increased expenditure needs for remedial education at later stages of the schooling process.

19. As investments in high quality early learning have a multiplicative effect over an individual's life cycle, there is a case to be made for seeking greater balance in funding across educational levels, with a particular focus on supporting students at risk of falling behind as early as possible.

Investing in skills systems and lifelong learning

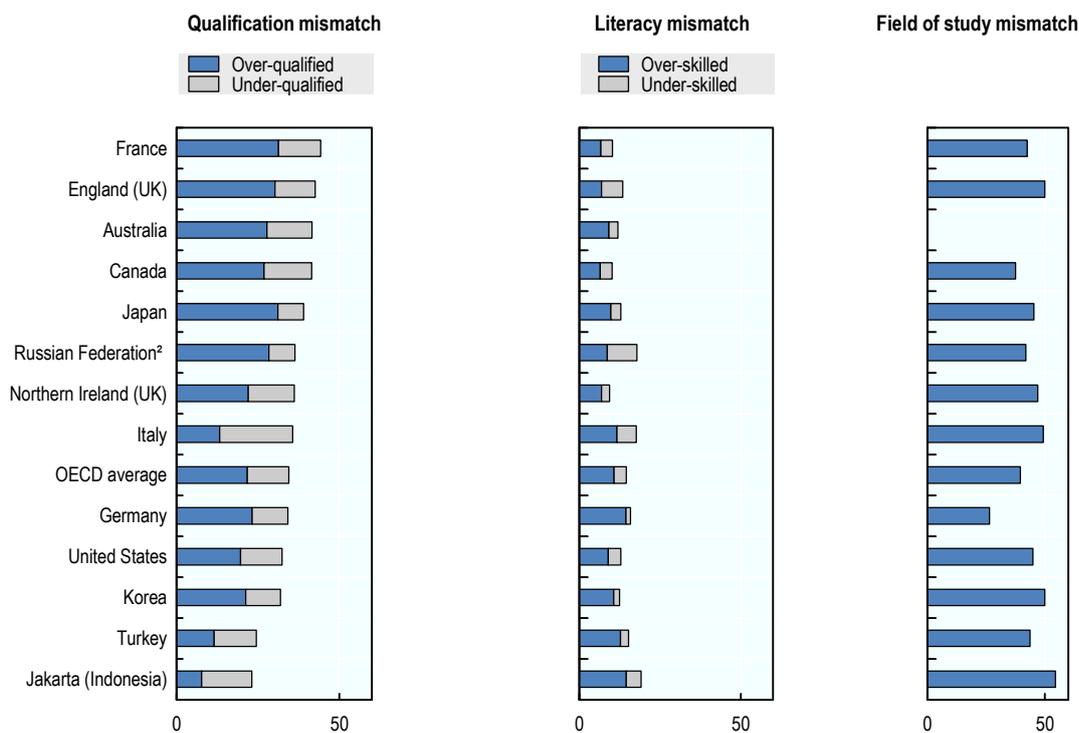
20. To promote productivity and social cohesion, governments need to raise the overall levels of skills for their population. This requires maintaining a strong focus on cognitive skills while developing innovative teaching strategies, flexibility in the curriculum choice and well-designed entrepreneurship education. Since teachers will lead this change, they should be provided with the appropriate training and support.

21. In addition, adults need to continuously develop and adapt their skills to meet the changing needs of the labour market, especially given the impact of digitalisation and automation. In order to re-skill and up-skills adults, traditional models of front-loaded education systems whereby education only takes place from early childhood to youth,

must evolve into efficient lifelong learning for the whole population. This requires developing flexible on-the-job training opportunities, improving access to formal education for adults, and making it easier for workers to combine work and training. Greater recognition of skills acquired informally would also help workers gain further qualifications and adapt their careers to changing needs. The change will also require re-designing models of governance and financing to support a more complex system that provides better learning opportunities for adults.

22. The costs and returns of skills investments should be shared among governments, individuals, and the private sector. In order to achieve this, the right incentives must be put in place, the roles of different actors well-defined, common standards agreed, and accountability mechanisms established. Furthermore, skills can only enable countries to perform well economically if people are making good use of their skills. Better alignment between the skills of the population and the needs of the labour market is required to ensure investments in adult learning are as efficient as possible. The extent of various types of skills mismatch can be seen in Figure 3.

Figure 3. Qualification, literacy and field-of-study mismatch



Note: Field-of-study mismatch is unavailable for Australia due to the unavailability of ISCO 3-digit information for Australian workers in the Survey of Adult Skills (PIAAC). Countries and economies are ranked in descending order of the prevalence of qualification mismatch (overqualification or underqualification).

Source: 12 Survey of Adult Skills (PIAAC) (2012, 2015), Table A5.7.

Statlink: <http://dx.doi.org/10.1787/888933366353>

23. Skills can be acquired through different means, at different costs, and at all stages of life. Returns to skills investments are also highly heterogeneous and difficult to

predict; however OECD evidence from the Survey of Adult Skills (PIAAC) suggests that higher skills proficiency may provide potentially significant economic and social returns for individuals and society as a whole. For example, on average across countries that participated in PIAAC, the median hourly wage of salaried employees scoring at the top literacy levels (Level 4 or 5) was 65% higher than that of workers scoring at or below Level 1. This, together with market imperfections surrounding the skills formation process, such as asymmetries of information and credit constraints provides a strong rationale for governments to regulate, steer and find the best financial mechanisms to boost the acquisition of skills.

24. The evidence collected after working with several OECD countries shows that there is often a split between responsibilities and resource allocation. This may cause, in turn, some disconnect between policy design and policy implementation. Good governance arrangements should generate flexibility in funding allocation. Mirroring a holistic approach to skills policies, financial resources should be able to flow across different policy sectors and levels of governments and support effectively and efficiently skills policies when needed, and where is needed. Monitoring and evaluation systems should assess that there is constant equilibrium in the system between policy responsibilities and funds allocation.

25. Finally, governance systems support long-term (strategic) funding of skills policies. Skills policies (especially those dealing with skills development and innovation policies – which are complementary to skills) require to be supported by long-term strategic investment. It is not only about the possibility to guarantee access to basic services such as education (at all levels), but also about the possibility to coordinate different sectors within policy cycles.

Conclusions and policy recommendations

1. While a minimum level of spending per student is necessary for ensuring good quality education provision, beyond a certain threshold the overall level of school funding is unrelated to student outcomes. This suggests that above a certain level of investment, the design of education policies, the mechanisms through which funds are allocated and how these determine where additional resources are channelled, matters more than the aggregate level of expenditure.
2. Most of the expenditure on education is allocated to staff costs. Thus, overall levels of investment are a combination of the number of teachers, which is a function of class size, and teacher salaries. Comparative evidence from the OECD shows that the best performing countries tend to privilege investment in teachers' quality over class size.
3. High quality education systems do well in both student performance and equity. Given that teachers have direct impact on student outcomes, countries are increasingly making teachers a priority: investment in high quality initial teacher training and continuous professional development is key
4. High quality education systems have high standards for all students, but also put in place measures to support students who are facing greater challenges. Policies to minimise the impact of factors, such as socio-economic background, immigrant status or gender, include providing good-quality early childhood-education and care, identifying students at risk of dropping out and offering them additional support and alternative pathways.
5. These policies may lead to targeted programmes, but it is important to reduce transaction costs by limiting their number and including adjustments for equity within the main funding stream
6. Giving schools autonomy over a range of budget decisions can provide them with needed flexibility to use allocated resources in line with local needs and priorities. But it needs to be

accompanied with adequate accountability, capacity building, disaggregated data, and mechanisms to avoid widening inequities.

7. Not only individual schools, but school systems as a whole need to be accountable for progress in matching school funding to learner needs. School system evaluation should include analysis of financial and non-financial data, presenting budgetary information alongside reporting about the quality and equity of a school system in relation to established policy objectives and targets
8. As investments in high quality early learning have a multiplicative effect over an individual's life cycle, there is a case to be made for seeking greater balance in funding across educational levels, with a particular focus on supporting students at risk of falling behind as early as possible
9. Given the impact of digitalisation and automation on the changing nature of jobs, adults need to continuously develop and adapt their skills to meet the changing needs of the labour market. In order to re-skill and up-skills adults, traditional models of front-loaded education systems whereby education only takes place from early childhood to youth, must evolve into efficient lifelong learning for the whole population
10. The costs and returns of skills investments should be shared among governments, individuals, and the private sector. In order to achieve this, the right incentives must be put in place, the roles of different actors well-defined, common standards agreed, and accountability mechanisms established

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